

# REPORT



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## Youth Gambling: A Critical Review of the Public Health Literature

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Health Literature**

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## EXECUTIVE SUMMARY

To date, there is a paucity of all but prevalence-based research addressing adolescent gambling behaviour. The majority of research has adopted an epidemiological approach which has demonstrated that gambling is a common and peer approved activity amongst adolescent populations. Epidemiological research on adolescent gambling has been mostly conducted within a 'dysfunctional' based paradigm, and as such has focused upon the risks and subsequent problems associated with gambling.

Complications arise when comparing findings due to a lack of consensus with regard to factors such as measurement tools (SOGS-RA, DSM-IV-J, MAGS etc), and methodology (telephone surveys vs. school-based surveys). As such, rates of adolescent:

- lifetime involvement in gambling range from 20.5% to 99%,
- regular involvement in gambling range from 1% to 35.1%; and,
- problematic gambling range from 0.9% to 11.2%.

There is an abundance of correlational data suggesting that adolescent at-risk and problem gamblers are more likely than other adolescents to:

- be male;
- have a higher disposable income;
- belong to an ethnic minority;
- have parents who have gambling or other addiction issues;
- initiate gambling at an early age;
- have more accepting attitudes regarding gambling;
  - view gambling as an appropriate activity for young people;
  - view gambling as a good way to make money;
  - think that gambling is not harmful;
  - view gambling as an important leisure activity;
- perceive a significant skill factor in gambling;
- engage in other potentially addictive behaviours;
- engage in delinquent behaviours;
- report experiencing depression; and,
- experience frequent dissociative reactions to gambling.

However, it must be noted that these relationships are not explanatory, nor are they well understood. Little is known about the underlying mechanisms, or the causal nature of these relationships.

To date, there has been limited utilisation of qualitative, longitudinal, and quasi-experimental research designs, possibly due to i) the dominance of a dysfunctional paradigm (where gambling is seen as a dysfunctional or risky behaviour), and ii) financial, methodological, and temporal constraints. However, non-epidemiological based research has contributed invaluable to the current body of knowledge. In particular, qualitative research has highlighted the social rewards that gambling offers and the social role which gambling can play within youth culture. Different typologies of gamblers have been investigated with the acknowledgment that gamblers do not form a homogeneous group: an individual's gambling behaviour is motivated and maintained by different factors.

Longitudinal research has indicated long-term trends for adolescent gambling behaviour and underlying mechanisms. In particular, it is apparent that gambling preferences change with age: from informal to formal modes of gambling. Indicating a career path of increasing involvement for some adolescents. There is also greater fluctuation and experimentation by older youth. It appears that participation and problem rates are fairly constant across time, with the involvement of most youth remaining stable, and a minority experiencing increasing problems. There is also some evidence to support the concept of a 'general problem behaviour syndrome', suggesting that behaviours such as gambling and alcohol use are manifestations of a common underlying issue.

Overall, research into adolescent gambling has not addressed issues such as the role of gender and ethnicity. These issues need to be investigated, as does the validity of screening tools such as the SOGS-RA.

## **KEY RECOMMENDATIONS AND IMPLICATIONS FOR LATER RESEARCH**

To date, there has been limited investigation (Clarke & Rossen, 2000; Sullivan, 2001) of adolescent gambling in New Zealand: nationwide prevalence surveys have only assessed samples aged 18 and above (Abbott & Volberg, 1996, 2000). There is an urgent need for a comprehensive strategy of gambling research (including adolescent gambling) in New Zealand. In accordance with international findings and the vision<sup>1</sup> and recommendations made by Brown and Raeburn (2001) for a responsible gambling strategy in New Zealand, it is recommended that:

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<sup>1</sup> "Our long-term vision is of a society that is healthy, well adjusted, informed, and chooses to gamble responsibly in a way that is sustainable for the community. Gambling blends into the social and cultural context of society at levels that are safe for the individual, their family and the community" (Brown & Raeburn, 2001, p.36)

1. Government commissions a quantitative investigation to validly measure the involvement of New Zealand youth in gambling, associated factors, and rates of subsequent gambling-related problems. It is critical that this research incorporates a longitudinal research programme, which will provide for long term monitoring of adolescent gambling behaviour.
2. A wider range of research methodology and paradigms be fostered, in particular, the encouragement of non-dysfunctional models which incorporate preventative and harm minimisation principles. The utilisation of qualitative methodologies such as theme analysis, discourse analysis, and grounded theory would greatly advance our understanding of the issues pertinent to adolescent gambling (for example, the role of gambling in youth culture).
3. The role of gender in adolescent gambling involvement be further investigated. In particular, the meanings, motivating factors, and interpretations of gambling for males and females. Those mechanisms which influence higher rates of male involvement, and subsequent problems need to be explored. The validity of diagnostic tools also needs to be examined for female populations.
4. As with gender, the role of ethnicity in adolescent gambling involvement be further investigated. In particular, the meanings, motivating factors, and interpretations of gambling for adolescents from ethnic minorities. Those mechanisms which influence higher rates of involvement, and subsequent problems need to be explored, as does the validity of diagnostic tools for Maori, Pacific Island, and Asian youth.
5. The effects on adolescent populations of regulatory policy and the subsequent proliferation of gambling be investigated. There is a need to examine the relationships between Governmental gambling policy and availability of gambling, to adolescent involvement in gambling. This could be best achieved via cross-jurisdictional comparisons or comparative studies.
6. Research is commissioned to investigate the design and implementation of appropriate intervention strategies specifically for adolescent populations. Anticipated strategies include public and school-based educational programmes, community development projects, health promotion, primary health and service treatment interventions. This should include the training of school personnel in recognising gambling-related problems and how to manage and refer students to appropriate agencies.

# 1. INTRODUCTION

This review of the literature was prepared by the author as partial requirement of a PhD being conducted in the Discipline of Applied Behavioural Science at the University of Auckland. The goal of this review is to critically appraise the body of literature pertaining to adolescent gambling. This includes research which employs epidemiological, longitudinal, quasi-experimental, and ethnographic or qualitative methodology.

## 1.1 Scope

This review focuses upon literature which addresses gambling within adolescent populations. The term 'literature' refers to journal articles (including electronic journals), books and book sections, conference proceedings, technical reports, dissertations, reports accepted for publication, and unpublished reports. Literature addressing all degrees of gambling was included, from social and non-problematic to problematic or pathological levels. Thus, a wide range of literature was gathered and reviewed, with the scope including: measurement of gambling behaviour, prevalence/incidence rates of gambling and problem gambling, patterns of gambling behaviour, associated problems, perceptions pertaining to gambling, beliefs and attitudes towards gambling, socio-demographic variables associated with gambling, progression of gambling behaviour, social context of gambling, and access to gambling.

Literature that explored the formation and testing of theories was also included. As a resiliency or preventative based approach is being adopted for the authors PhD, it was decided that items with a primary focus on treatment issues would not be included in this review. Searches were not limited by date, or region, but were restricted to the English language.

## 1.2 Methodology

### ***Phase One: University Library Searches***

#### *Sources*

University library databases available in New Zealand were searched for relevant literature.

These included:

- The University of Auckland (Voyager)
- Auckland University of Technology
- Lincoln University
- Manukau Institute of Technology
- Massey University (Kea)
- University of Canterbury (PAC)

- University of Otago
- University of Waikato
- Victoria University of Wellington

### **Keywords**

The following keywords were utilised in all searches of university databases. Where appropriate, the terms were truncated (e.g. gamb\*), and searches combined:

- |                                   |                      |
|-----------------------------------|----------------------|
| - Gamble                          | - Gaming             |
| - Gambling                        | - Gambling Addiction |
| - Gambler                         | - Amusement Arcade   |
| - Gamb*                           | - Adolescence        |
| - Pathological Gambling / Gambler | - Adolescent         |
| - Compulsive Gambling / Gambler   | - Childhood          |
| - Problem Gambling / Gambler      | - Young Adulthood    |

### **Phase Two: Electronic Databases**

#### **Sources**

The following electronic databases were searched:

- Anthropological Literature
- Dissertation Abstracts
- Education Complete
- ERIC
- Medline
- PsychINFO
- Social Sciences Abstracts
- Sociological Abstracts

#### **Keywords**

As with phase one, the following keywords were utilised. Where appropriate terms were truncated (e.g. gamb\*), and searches combined:

- |                                   |                      |
|-----------------------------------|----------------------|
| - Gamble                          | - Gaming             |
| - Gambling                        | - Gambling Addiction |
| - Gambler                         | - Amusement Arcade   |
| - Gamb*                           | - Adolescence        |
| - Pathological Gambling / Gambler | - Adolescent         |
| - Compulsive Gambling / Gambler   | - Childhood          |
| - Problem Gambling / Gambler      | - Young Adulthood    |

### **Phase Three: World Wide Web**

#### **Sources**

The following major search engines were employed to search the world wide web:

- Yahoo
- Altavista
- Google
- Ask Jeeves

- SearchNZ

### *Keywords*

As with phase one and two, the following keywords were utilised with the above search engines. Where appropriate, the terms were truncated (e.g. gambl\*), and searches combined:

- Gamble
- Gambling
- Gambler
- Gambl\*
- Pathological Gambling / Gambler
- Compulsive Gambling / Gambler
- Problem Gambling / Gambler
- Gaming
- Gambling Addiction
- Amusement Arcade
- Adolescence
- Adolescent
- Childhood
- Young Adulthood

### ***Phase Four: Unpublished Work***

#### *Sources*

In an attempt to access unpublished work or 'works in progress', requests were sent to 59 researchers who had been primary or secondary authors of literature already sourced within the adolescent gambling field.

The resulting literature was screened for relevance, those included have been reviewed according to the primary methodology that was utilised. The review begins by examining estimates of problem gambling in adolescents via epidemiological research, and proceeds on to examine longitudinal, qualitative, and quasi-experimental research. Finally, conclusions and recommendations are made.

## **2. ESTIMATING PROBLEMATIC GAMBLING IN ADOLESCENT POPULATIONS: THE TOOLS**

To date, a wide variety of tools have been employed to estimate rates of adolescent problem gambling. Fisher (1998) has defined a screen for problem gambling as being “a list of items known to be correlated with problem gambling which is used to classify people as problem and pathological gamblers in a given population” (p. 17). It is important to recognise that a gambling screen can only provide a ‘best estimate’ of prevalence figures - there will always be false positives and negatives. The accuracy of this ‘best estimate’ is particularly important as prevention, treatment and regulation programmes will only succeed if they are based upon accurate information (Fisher, 1998). Furthermore, information based upon such screens can influence governmental responses (e.g. the introduction of appropriate legislative measures) to the issue of adolescent gambling.

Throughout the literature, three screens are extensively cited as providing accurate estimates of adolescent problem rates: the SOGS (see Appendix A), the DSM-IV-J (see Appendix B), and the MAGS (see Appendix C). Details regarding each screen are discussed in the following section. Generic considerations are also discussed.

### **2.1 South Oaks Gambling Screen - Revised for Adolescents (SOGS-RA)**

The SOGS-RA remains the most widely utilised adolescent gambling screen, particularly in surveys throughout America and Canada (Adebayo, 1998; Carlson & Moore, 1998; Govoni, Rupcich, & Frisch, 1996; Poulin, 2000; Volberg & Moore, 1999; Westphal, Rush, Stevens, & Johnson, 2000; Wiebe, 1999; Winters, Stinchfield, & Fulkerson, 1993a, 1993b). Therefore, a sizeable proportion of international prevalence data is based upon its use.

The SOGS was initially developed and intended for diagnostic use with adults in a clinical setting. The SOGS-RA (a 16-item scale) was adapted from the SOGS in an attempt to provide an accurate measure for adolescent gambling behaviour and problem gambling. The adolescent version examines negative behaviours and feelings arising from gambling (Poulin, 2000). It also places more emphasis upon frequency and behavioural indices of gambling behaviour. This contrasts with the financial emphasis of the adult version (Derevensky, & Gupta, 2000). Satisfactory validity and reliability (.80) measures have been reported. However, due to inadequate testing, reliability is unclear with regards to adolescent female problem gamblers (Derevensky, & Gupta, 2000).

Many researchers have expressed concern regarding the appropriateness of the SOGS (-RA) in an epidemiological context. Despite these concerns, it has continued to be widely used. While having advantages, this almost exclusive reliance upon one screening tool could be particularly dangerous. For example, if its validity or reliability is questioned, the quality of any research based upon its use must also be questioned (Ladouceur, Bouchard, Rheaume, Jacques, Ferland, Leblond, & Walker, 2000). The findings discussed below have serious implications regarding our present understanding of the incidence of problem gambling among adolescent populations.

Some researchers have argued that the SOGS overestimates problem rates for the general population (Abbott & Volberg, 1996; Ladouceur et al., 2000; Walker & Dickerson, 1996). This generic overestimation has been hypothesised to be due to misinterpretation of the questionnaire items. Subsequently, Ladouceur et al. (2000) investigated interpretation issues with three populations: 9-12 year olds, adolescents, and adults. The SOGS-RA was administered to 587 adolescents in a classroom setting. A subsequent 126 participants were then interviewed regarding their interpretation of individual screen items. They found evidence that a large proportion of items were misunderstood, only 30.8% of the participants correctly understood all the SOGS-RA items. With subsequent clarification of misunderstood items the proportion of the sample classified as problem or probable pathological gamblers was substantially reduced - 41.8% fewer than the initial number.

The near universal use of an assessment tool is advantageous in that research findings are relatively comparable. However, variations in scoring criteria for the SOGS-RA have meant continuing disparity. In an attempt to introduce a standard nomenclature for assessing gambling status and appropriate intervention, Shaffer and Hall (1996) proposed a 'level' scoring system for the SOGS-RA. Five levels of gambling involvement were proposed:

- level 0 – non-gambling;
- level 1 – non-problem gambling;
- level 2 – in-transition gambling;
- level 3 – gambling-related disorder with impairment; and,
- level 4 – impaired gambler who displays willingness to enter treatment.

Levels are defined by a score compiled of two sections which measure:

1. the frequency and mode of gambling activities participated in; and,
2. signs and symptoms of pathological gambling (as dictated by the DSM-III-R criteria).

Two estimates result from the above sections: narrow and broad criteria. The "narrow criteria" gives an estimate based upon the SOGS-RA score, thus, the symptoms of pathological gambling are addressed but the frequency and modes of gambling are not taken into account. The "broad criteria" utilises both sections of the SOGS-RA. Thus taking into account gambling

patterns and resulting problems and enabling the measurement of progression of gambling behaviour from non-problematic to problematic (and vice versa) over time. A function which may be particularly useful for longitudinal studies. While this scoring system has resulted in some consensus, it has not achieved universal endorsement.

A further criticism of the SOGS-RA is its lack of questions addressing preoccupation with gambling. Derevensky and Gupta (2000) posited that preoccupation is an essential element for a gambling screen as:

- i. it is a criteria central to all addictions (as defined by the DSM-IV) (APA, 1994); and,
- ii. clinical experience has consistently shown it to be relevant to adolescent populations.

## **2.2 Diagnostic Statistical Manual - IV - Adapted for Juveniles (DSM-IV-J)**

The DSM-IV-J is based upon the adult diagnostic criteria for pathological gambling as defined by the American Psychological Association (American Psychiatric Association, 1994). It was adapted to measure past year gambling behaviour among 11-16 year olds via a questionnaire administered in a classroom setting (Fisher, 2000).

The questionnaire consists of 12 items, with 'yes' or 'no' responses. Responding positively to four of the 12 criteria has been found sufficient to classify respondents as 'probable pathological gamblers' (Fisher, 1992). Nine dimensions of gambling are considered within the screen: progression and preoccupation; tolerance; withdrawal and loss of control; escape; chasing; lies and deception; illegal acts; family and academic disruptions; and, financial bailout (Derevensky & Gupta, 2000). Options for financial funding of gambling behaviour differ to those in the adult version.

Fisher (1998) recently revised the screen further (DSM-IV-MR-J: Diagnostic Statistical Manual - IV - Multiple Response - Adapted for Juveniles), resulting in nine items, with four response options: 'never'; 'once or twice'; 'sometimes'; and, 'often'. This form of scoring was adopted to address the appropriateness of yes/no responses in a non-clinical setting, given the lack of opportunity for probing. As with the previous version nine dimensions are evaluated. 'Financial bailout' is not included within this version, and 'withdrawal and loss of control' have been conceptualised as separate dimensions.

To date, this version has not been fully validated, although initial investigations reveal acceptable reliability (0.75) and validity. All items were found to discriminate effectively between social and problem gamblers. As with the SOGS-RA, males are significantly more likely than females to endorse each of the items and thus be classified as problem gamblers (Fisher, 2000).

## 2.3 Massachusetts Gambling Screen (MAGS)

The MAGS is probably the least used of the standardised screens available for measuring problem gambling in young people. It was developed to assess the biological, psychological and social problems associated with excessive gambling in people who may or may not be in treatment. The usefulness of the MAGS is partially constrained by its binary basis. Of its 26 items, all but one question require 'yes' or 'no' responses. There are two subscales, with the first comprising 14 items adapted from a binary-based instrument: the Short Michigan Alcoholism Screening Test (SMAST). The second consists of 12 questions based upon the DSM-IV criteria. Biological, psychological, and social dimensions associated with excessive gambling are examined within the context of the previous year. Subsequently, respondents are classified as either pathological, in-transition, or non-pathological gamblers. Overall, the screen has been assessed as having good reliability and validity, but is not frequently utilised (Shaffer et al., 1994).

## 2.4 Issues for consideration regarding gambling screens

The above section illustrates several methodological issues, which require consideration when employing a problem gambling screen, particularly in an epidemiological context. Some researchers such as Fisher (2000), argue that the diagnostic process for pathological gambling is most appropriately conducted by either the gambler themselves or a treatment professional. Some generic methodological issues are discussed below.

Despite wide acknowledgment that gambling behaviour lies upon a continuum, *diagnostic* tools inherently endorse assumptions from an underlying disease model. With the exception of the latest version of the DSM-IV-J, individual screen items are mostly dichotomous and binary based. Consequently they result in a final diagnosis that is dichotomous and categorical, i.e. problem or non-problem gambler. It would seem more constructive to actively endorse the widely held view that gambling behaviour lies upon a continuum. It should be acknowledged that some researchers have begun to include a third category of 'at-risk'<sup>2</sup>.

Adolescent gambling screens have been found to differ in their diagnostic sensitivity. For example, Derevensky and Gupta (2000) conducted an empirical comparison of the SOGS-RA, DSM-IV-J and the Gamblers Anonymous (GA) 20 Questions. Nine hundred and eighty adolescents were administered all three screens. The most conservative measure of problem/pathological gambling resulted from the DSM-IV-J screen (3.4%), followed by the SOGS-RA (5.3%), and GA 20 Questions (6.0%). Therefore, prevalence rates are partially

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<sup>2</sup> In general the category of 'at-risk' is defined as 'gambling that is likely to lead to a problematic level if it were to continue' (as indicated by scores between 2 and 3 on the SOGS-RA) (Wiebe, 1999).

determined by the screening tool employed and must be assessed accordingly. Alternatively, it could be argued that the implications of a 2.6% discrepancy between screens are not that great.

Gender differences in gambling behaviour are regularly observed regardless of the screen utilised. However, the magnitude of gender differences vary according to the screen used. For example, in the study previously referred to, Derevensky and Gupta (2000) found that within an adolescent population: the DSM-IV-J identified 1%; the SOGS-RA identified 1.5%; and, the GA 20 Questions identified 3.5%, of the same sample of females as problem gamblers (whereas, rates for male problem gambling were largely consistent regardless of the screen utilised). To clarify, two main differences are observed according to gender:

1. Differences are consistently observed between male and female populations (males tend to obtain higher scores); and,
2. Scores for female populations exhibit greater variance according to the utilised screen than those for male populations.

Perhaps these observed differences are due to the fact that, to date, as for most addictions, research into gambling has been based upon male experiences (Mark & Lesieur, 1992). Men are treated as the 'norm', with gender being conceptualised as a one-dimensional variable. There has been extremely limited analysis of the meaning of gender in a gambling context. Consequently, there is an underlying assumption that gender is largely irrelevant for screening purposes: screening tools are largely neglectful of the possibility for different characteristics, culture, motivators, interpretations, and experiences of male and female (problem) gamblers. Therefore, it is probable that inaccurate conclusions are reached regarding both genders, but in particular female problem gamblers. It seems likely that estimates for male and female problem gambling would become more accurate with the establishment of specific criteria.

As with gender, there has been extremely limited consideration of ethnic or cultural interpretations of gambling. An underlying assumption appears to be that cultural identity is of little consequence to the development, administration, and interpretation of gambling screens. For example, the MAGS is based upon an initial sample consisting of 95-97% White, and 1-2% African American adolescents (Shaffer et al., 1994). Lesieur and Henry (1994) argue that the validity and reliability of the SOGS needs to be examined when employed in cross-cultural instances – a phenomenon not frequently observed. Given these arguments and the consistent finding that ethnic minority groups demonstrate higher rates of problematic gambling behaviour, it would seem logical that this assumption needs to be examined.

The process of verifying the discriminative power of screens and their individual items appears to be somewhat circular or tautological. Questionnaires partially utilise their own

resulting classification and individual items (or those from similar screens) for verification. The arguments and concepts measured are self-fulfilling and cyclic in nature.

The screens lack acknowledgement of socio-cultural factors which influence gambling behaviour – a particularly pertinent factor for youthful populations. Factors such as familial/peer/societal gambling, values and beliefs around gambling, and cultural influences are largely ignored. Behaviour such as gambling cannot be accurately examined out of context as tends to be the case with gambling screens, particularly when used in an epidemiological context.

Existing standardised gambling screens could be further criticised for their inherent pathology approach - at present the dominant model. As mentioned above, existing screens focus upon individualistic negative feelings and behaviour that have arisen due to gambling. The wider social contexts and rewards of gambling are not acknowledged. Problematic gambling is viewed as being a result of personal dysfunction, and such models are problem based rather than focusing upon solutions. Subsequently, practitioners and researchers are placed in an expert role, while 'gamblers' are labelled and have to contend with the associated stigma of being a 'pathological' gambler.

In summary, it appears that accurate verification of problem gambling rates is unachievable through the use of screens on their own. However, despite constant acknowledgement of this fact, numerous studies continue to estimate problem gambling rates through the use of questionnaires that include problem screens.

## 3. EPIDEMIOLOGICAL RESEARCH OF ADOLESCENT GAMBLING

### 3.1 Estimates of Adolescent Involvement in Gambling

Rates of adolescent involvement in gambling have been well documented over the past two decades. Most countries, and many Western states have conducted extensive prevalence studies of their youth's gambling behaviour, some of which are briefly discussed below. However, it needs to be noted that there is an overall lack of consensus for existing research methods. Griffiths (1995) has discussed such issues with regard to electronic machine gambling (EGM)<sup>3</sup>. He acknowledges that comparing and evaluating existing studies is difficult given the wide "variety of methods, sampling procedures and population sizes" (p.54). One could argue that this assessment is applicable to all research within the adolescent gambling field, regardless of the mode of gambling which is under investigation. In essence, after considering differences in the age, location, and size of the sample, and measurement issues, it can be difficult to directly compare studies and to further identify temporal trends for gambling prevalence rates.

In a recent review of the socio-cultural gambling literature, McGowan, Droessler, Nixon, & Grimshaw (2000) found that reported prevalence rates for 'ever gambling' ranged between 76% and 91%. An examination of the wider literature reveals rates of involvement ranging from 20% (Jacobs, Marston, Singer, Widaman, & Little, 1985) to 91% (Lesieur & Klein, 1987). Most studies however, find that the majority of adolescents have taken part in gambling activities, with 60-90% of their sample having 'ever' participated in gambling of one form or another (Browne & Brown, 1994; Carlson & Moore, 1998; Fisher, 1993a; Govoni et al., 1996; Gupta & Derevensky, 1998a; Lesieur, Cross, Frank, Welch, White, Rubenstein, Moseley, & Mark, 1991; Lesieur & Klein, 1987; Poulin, 2000; Stinchfield, 2000; Volberg, 1993; Volberg & Moore, 1999; Wallisch, 1996; Waterman & Atkin, 1985; Wiebe, 1999; Winters et al., 1993a; Winters, et al., 1993b). Prominent findings from prevalence studies are displayed in Table 1.

For example, Poulin (2000) surveyed 13,549 Canadian adolescents from grades 7, 9, 10 and 12. She found that 70.3% had gambled in the last 12 months. The most popular gambling activities included scratch tabs (55.9%), card games (35.1%), and lotteries (33%). Similarly, telephone surveys of Washington adolescents revealed similar rates of involvement: 65% had gambled within the last 12 months, and 8% had gambled on a weekly basis. However, card,

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<sup>3</sup> For the purpose of parsimony, the term electronic gambling machine (EGM) will be used throughout the text when discussing what other authors have referred to as fruit machines, pokie machines, video lottery terminals, video gambling machines, and gaming or gambling machines. It should be noted that in some cases characteristics of machines (such as maximum prize levels and payout schedules) do vary.

dice or board games, skill games, and sporting events were the most popular gambling activities (Volberg & Moore, 1999). Similar rates of involvement have been found in the UK. Fisher (Fisher, 1998, 1999) reported that the majority (75%) of the ten thousand adolescents surveyed had played EGM's in their lifetime. Overall figures for lifetime, and regular rates of gambling (on any gambling mode) were not reported. Presumably, the great variance for involvement in EGM's between studies such as Volberg and Moore's (1999) and Fisher's (1998,1999) can be partially attributed to the availability of EGM's in different localities<sup>4</sup>.

**Table 1: Prevalence estimates of youth gambling involvement (ever and regularly) from population based surveys (1987-2000)**

Rates of lifetime gambling (%)	Rates of regular gambling (%)	Assessment tool	Location of Study	Researcher(s)
99	20	DSM-IV-J	England	(Fisher, 1993a)
98	-	SOGS-RA	Canada (Alberta)	(Adebayo, 1998)
91	32	DSM-III	USA (NJ)	(Lesieur & Klein, 1987)
91	22	SOGS	USA (NV)	(Oster & Knapp, 1998)
90.8	-	SOGS-RA	Canada (Ontario)	(Govoni et al., 1996)
90	21.7	SOGS & Jacob's Health Survey	Canada (Quebec)	(Ladouceur, Dube, & Bujold, 1994b)
89	8.3	SOGS-RA	USA (MN)	(Winters et al., 1993b)
86	4.6-6.4	SOGS-RA	USA (MN)	(Winters et al., 1993a)
86	40	Non-standardised questionnaire	Canada (Quebec)	(Ladouceur, Dube, & Bujold, 1994a)
86	-	SOGS-RA	USA (LA)	(Westphal et al., 2000)
85	23	SOGS	USA (5 states)	(Lesieur, Henry R et al., 1991)
83	32	Unknown	England	(Walton, 1990)
81	24	Unknown	England	(Mayne & Tyreman-Wilde, 1993)
80.2	35.1	DSM-IV-J	Canada (Montreal)	(Gupta & Derevensky, 1998a)
80	2	Non-standardised questionnaire	USA	(Browne & Brown, 1994)
78	-	SOGS-RA	Canada (Manitoba)	(Wiebe, 1999)
75	-	1995 Nechi Adolescent Gambling Questionnaire & 1992 Gamblers Self-report Inventory	Canada (Alberta)	(Eckstrom, 1996)
71	11	SOGS	USA (WA)	(Volberg, 1993)
70.3	-	SOGS-RA	Canada (Atlantic provinces)	(Poulin, 2000)
67	-	SOGS-R	Canada (Alberta)	(Wynne, Smith, & Jacobs, 1996)
66.9	11.4	SOGS	USA (TX)	(Wallisch, 1996)
66	14	SOGS	USA (TX)	(Wallisch, 1993)
66	13.3	SOGS-RA	USA (OR)	(Carlson & Moore, 1998)
65	24	DSM-III	Canada (Quebec)	(Ladouceur & Mireault, 1988)
65	10	Unknown	Canada (Ontario)	(ICR, 1994)
65	8	SOGS-RA & DSM-IV	USA (WA)	(Volberg & Moore, 1999)
65	-	SOGS	Canada (Ontario)	(CFCG, 1994)
62	-	DSM-IV-J	UK	(Fisher, 1992)
40	21	Unknown	England	(Huxley & Carroll, 1992)
37	3	DSM-IV	England	(Fisher, & Balding, 1996)
20.5	9	Unknown	England	(Rands & Hooper, 1990)
45-75 **	-	DSM-IV-J-R	England and Wales	(Fisher, 1998)
46.8-71.1 *	-	Non-standardised questionnaire	USA (MN)	(Stinchfield, Cassuto, Winters, & Latimer, 1997)
-	>4	DSM-IV	England	(Griffiths, 2000)
-	1-8 *	Non-standardised questionnaire	USA (MN)	(Stinchfield, 2000)
-	10.7-24.9 **	DSM-IV-MR-J	England and Wales	(Ashworth & Doyle, 2000)

\* - dependant upon gender; \*\* - dependant upon gambling mode

<sup>4</sup> Within the UK, EGM's are widely available in forums such as amusement arcades where there is no legal age restriction (legislation varies according to the maximum prize). Within the US, age restrictions vary according to

## 3.2 Estimates of Adolescent Problem Gambling

Both the realisation in the mid 1980's that adolescents could experience gambling related problems, and the proliferation of gambling opportunities have resulted in numerous prevalence studies of adolescent problem gambling. The vast majority of prevalence studies are strongly grounded within a pathology-based paradigm. They have tended to measure: levels of adolescent involvement in gambling activities; levels of experienced problems; and - variables associated with problems. Table 2 details estimates of problematic gambling from prominent population based surveys.

**Table 2: Rates of at-risk, problem, and pathological gambling for adolescents and youth from population based surveys (1987-2000)**

Rates of pathological (*) and/or problem (**) gambling (%)	Rates of at-risk gambling (%)	Assessment tool	Location of study	Researcher(s)
23.5%**	-	SOGS-RA	New Zealand	(Sullivan, 2001)
12.7%**	-	DSM-IV-J-R		
11.2 *	-	SOGS	USA (NV)	(Oster & Knapp, 1998)
9.6 ** - 5.6**†	-		USA (MN)	(Zitzow, 1996)
8.7 **	17.1	SOGS-RA	USA (MN)	(Winters et al., 1993)
8.1 **	9.4	SOGS-RA	Canada (Ontario)	(Govoni et al., 1996)
6.4 **	8.2	SOGS-RA	Canada (Atlantic provinces)	(Poulin, 2000)
5.7 *	-	Non-standardised questionnaire	USA (NJ)	(Lesieur & Klein, 1987)
5.7 *	-	DSM-IV-J	England	(Fisher, 1993a)
5.6 **	-	DSM-IV-MR-J	England	(Fisher, 1999)
5.5 *	-	SOGS	USA (5 states)	(Lesieur et al., 1991)
5.4 *	-	DSM-IV	England and Wales	(Ashworth & Doyle, 2000)
5 **	11.7	SOGS	USA (TX)	(Wallisch, 1993)
5 *	-	DSM-IV	England	(Griffiths, 2000)
5 **	-	DSM-IV-J-R	England and Wales	(Fisher, 1998)
5 **	-	SOGS-RA	Canada (Montreal)	(Vitaro, Ferland, Jacques, & Ladouceur, 1998)
4.7 *; 3.3**	-	DSM-IV-J	Canada (Montreal)	(Gupta & Derevensky, 1998a)
4.1 **	11.2	SOGS-RA	USA (OR)	(Carlson & Moore, 1998)
4 *	-	SOGS	Canada (Ontario)	(CFCG, 1994)
3 **	8	SOGS-RA	Canada (Manitoba)	(Wiebe, 1999)
2.3 **	9.9	SOGS	USA (TX)	(Wallisch, 1996)
1.7 *	-	Non-standardised questionnaire	Canada (Quebec)	(Ladouceur & Mireault, 1988)
1 **	9	SOGS	USA (WA)	(Volberg, 1993)
.9 **	7.5	SOGS-RA & DSM-IV	USA (WA)	(Volberg & Moore, 1999)

† - dependent upon ethnicity (9.6=American Indian; 5.6=Non-Indian)

NB: where applicable figures quoted above are broad estimates of problem gambling, some figures are based on singular gambling modes e.g. lottery gambling.

As with prevalence rates of gambling involvement, comparing rates of problematic gambling is difficult, partly because a variety of tools have been employed. An overall lack of consensus for estimates of adolescent problem gambling has resulted. Furthermore, a recent finding that

locale, but are generally between 18 and 21.

the SOGS-RA may generate large proportions of false positives has significant implications for the validity of reported problem rates (Ladouceur et al., 2000).

Estimates are further complicated by discrepancies amongst variables such as sample size, location, sampling methods (telephone interviews vs. classroom questionnaires), and demographics (e.g. age group examined). For example, some prevalence studies such as that by Stinchfield et al. (1997) can be commended for employing extremely large samples (122,700). In effect, surveying the entire school based population of Minnesota (for grades 6, 9, and 12). However, they did not employ a standardised questionnaire, thus the ability to compare findings with other research is limited.

Overall, estimates for rates of pathological gambling are reasonably diverse, with rates ranging from 1.7% (Ladouceur & Mireault, 1988) to 11.2% (Oster & Knapp, 1998). Similarly, rates of problem gambling have been found to range between 0.9% (Volberg & Moore, 1999) and 9.6% (Zitzow, 1996). A meta-analysis of studies on adolescent gambling in North America revealed that between:

- 9.9% and 14.2% of adolescents were at-risk of developing serious gambling problems; and,
- 4.4% and 7.4% of adolescents exhibited compulsive or pathological gambling (Shaffer & Hall, 1996).

### **3.3 Variables Associated With Gambling Involvement**

#### **3.3.1 Demographic Variables**

##### *Gender*

Demographically, gender is a significant variable with regards to adolescent gambling. Findings are often inconsistent, but it is generally agreed that overall, males are more involved in gambling than females (both in terms of frequency and expenditure), and that they experience more gambling related problems than females (Griffiths, 1991; Winters, 1993; Rosenstein, 1980; Volberg, 1993; Winters, 1993; CFCG, 1994; Buchta, 1995; Gupta, 1998; Carlson, 1998; Stinchfield, 1997; Stinchfield, 2000; Fisher, 1996; Ide-Smith, 1988; Volberg, 1999]. For example, Stinchfield et al. (1997) found clear evidence for gender effects. Data on gambling behaviour were collected in 1992 and 1995 via the Minnesota Student Survey (a multiple domain questionnaire). Public school students in grades 6, 9, and 12 were administered the survey. Overall, males were found to be significantly more involved in gambling: boys gambled more often than girls; between 3 to 4 times as many boys than girls gamble on a weekly/daily basis; boys played more games on a weekly/daily basis than girls; and, boys exhibited higher rates of gambling problems than girls.

Preferences regarding certain gambling activities appear to be related to gender. However, research findings on these preferences are often inconsistent and sometimes contradictory. For example, males have been found to have a preference for gambling on games of skill, card games, and betting with friends (Fisher, 1993a; Govoni et al., 1996; Stinchfield, 2000; Wallisch, 1996). While females have been found to have greater participation in lotteries, card games, EGM's, bingo and horse racing (Stinchfield, 2000; Wallisch, 1996; Gupta, 1998). Conversely, some researchers have found insignificant gender differences, particularly in relation to lottery and EGM's gambling (Browne & Brown, 1994; Fisher, 1993a; Govoni et al., 1996). Fisher (1993a) also found little evidence for gender bias in her survey of nearly 500 students. The main focus of the survey was EGM's, although other related activities were also investigated. She found that males and females were relatively equal with regards to gambling frequency, extent of participation, expenditure, and choice of gambling activity.

Fisher argues that in the UK there is increasing evidence for a levelling out of gender differences, and as such, there has been a general shift away from focusing on male adolescent gambling. Furthermore, Stinchfield (2000) found that gender differences evened out with increasing age in the US. In the ninth grade, males were found to prefer gambling on cards, skill games, and sports, while girls preferred card games. By the 12<sup>th</sup> grade, both boys and girls preferred lottery related games.

While current research on gambling is less male-focused than in previous years, most studies have conducted poor analysis of gender differences with regard to gambling preferences. In general, results may be reported according to gender, but no further analysis is conducted. Gender is treated as a dichotic, constant, independent variable. There is poor understanding of the mechanisms responsible for the observed gender differences. It may be that gender differences are partially attributable to the variance of employed sampling methods, sample size, sample characteristics, methodology, survey instrument, and operational definitions.

### *Ethnicity*

The role of ethnicity in gambling behaviour is unclear. Some studies have found no relationship between ethnicity and problem gambling (Carlson & Moore, 1998; Fisher, 1999). However, a substantial number have found significant relationships, with adolescents from ethnic minority groups being more likely to gamble and to exhibit problematic gambling behaviour than youth from non-minority groups (Carlson & Moore, 1998; Fisher & Balding, 1996; Lesieur et al., 1991; Stinchfield, 2000; Stinchfield et al., 1997; Sullivan, 2001; Wallisch, 1996; Zitzow, 1996). For example, Wallisch (1996) found that African American adolescents preferred gambling on slot machines and flipping coins, while Anglos preferred lotteries and horse racing, and Hispanics participated in Bingo more frequently than other youth.

It should be noted that these ethnic differences are dynamic in nature, with both likelihood of involvement in gambling and activity preferences changing with time (Wallisch, 1996). There is a paucity of adolescent gambling research addressing youth from minority populations (such as Asian, Pacific Island, and Maori youth).

### *Age*

An overall relationship has been found between age and participation in gambling activities, with older adolescents being more likely to participate in gambling activities (Buchta, 1995; Carlson & Moore, 1998; Volberg & Moore, 1999). It seems likely that this observed relationship is linked to increasing availability of gambling with age.

Initial age of gambling has been identified as an important factor in the development of gambling problems. Adolescent problem gamblers have been found to begin gambling at an earlier age than other young people (Fisher, 1993a; Huxley & Carroll, 1992; Jacobs, 1989b; Wallisch, 1993, 1996). Most studies have not found a relationship between current age and problem gambling (Carlson & Moore, 1998; Fisher, 1999; Gupta & Derevensky, 1998a; Wiebe, 1999), although Wallisch (1996) found that at-risk and problem gamblers were significantly more likely to be younger than other participants.

### *Socio-economic status and disposable income*

Interpreting the links between adolescent socio-economic status (SES) and gambling is difficult. However, a more pertinent factor than SES appears to be the adolescent's personal disposable income (Wallisch, 1996; Volberg, 1993; CFCG, 1994; Fisher, 1998; Fisher, 1999; Wiebe, 1999; Ide-Smith, 1988; Fisher, 1996).

For example, Volberg (1993) observed that regular gamblers (weekly) were more likely than non-regular gamblers to have an average weekly income of \$50 or more. This finding was replicated in a follow-up study six years later (Volberg & Moore, 1999). In addition, regular gamblers were substantially more likely than less frequent gamblers to work 10 or more hours per week. Other research supports this finding, as employment has been found to be related to gambling involvement for the previous 12 months (CFCG, 1994; Wiebe, 1999). Wiebe (1999) found that youth who gambled (regardless of gambling category) worked significantly more hours per week than non-gambling youth. In addition, non-gamblers had significantly lower incomes than gamblers. Conversely, Winters et al. (1993a) found no significant relationship between personal weekly income and gambling status (no-problem, at-risk, and problem).

### 3.3.2 Socio-demographic Variables

#### *Gambling Companions*

As with venue, gambling companions vary according to gambling mode, gambling status, and age. Overall however, young people appear to prefer gambling with their peers (Fisher, 1993a; Griffiths, 1990a, 1990c; Gupta & Derevensky, 1998a; Ladouceur & Mireault, 1988; Wiebe, 1999)

In Manitoba, Wiebe (1999) found that regardless of gambling intensity (non-problem, at-risk, and problem) the majority of youth gamble with friends. Gambling alone was uncommon, but most frequent within the problem gambling category (9%). Those in the non-problem gambling group were most likely to gamble with parents (29%). However, these differences were insignificant, and overall there was no significant relationship between gambling companions and gambling intensity. Similarly, Wallisch (1996) reported that gambling category was related to having friends that gamble: 81% of problem gamblers; 59% of at-risk gamblers; and, 24% of non-problem gamblers reported that most of their friends gamble.

Choice of 'gambling companions' appears to be related to the particular activity, and gambling status (Fisher, 1998; Fisher, 1999; Ide-Smith & Lea, 1988; Volberg, & Moore, 1999). For example, Fisher (1998) reported a significant relationship between gambling companions and mode of gambling: EGM's were mostly played with friends; scratchcards and lottery draws were mostly played with parents. Furthermore, problem gamblers were more likely to play scratchcards, lottery draws, and EGM's with their friends or alone (i.e. not with parents/family) than other children. This was supported by Volberg and Moore (1999) who found that non-problem gamblers were more likely than others to report gambling with family members.

Gender and age differences have also been found in regard to choice of gambling companions. Females are significantly more likely to report gambling with family/siblings than males, who are more likely to report gambling is a peer activity (Browne & Brown, 1994; Govoni et al., 1996; Gupta & Derevensky, 1998a). Males are also more likely than females to report having a friend with a gambling problem (CFCG, 1994). Gambling with family members has been observed to decrease with age, while gambling with peers or alone increases (Gupta & Derevensky, 1998a).

#### *Parental approval of gambling*

As discussed above, young people are often introduced to, and participate in gambling activities with their parents. It appears that young people generally perceive their parents as being aware of their subsequent gambling behaviour. One of the first studies concerned with adolescent gambling revealed that 79% of the adolescents surveyed believed that their parents were aware of their gambling (Arcuri, Lester, & Smith, 1985).

The relationship between gambling status and perceived parental approval is unclear. Problem and at-risk gamblers have been found to be significantly more likely than other adolescents to state that their parents are unaware of their gambling (Wallisch, 1996). Conversely, Fisher (1998, 1999) has found that problem gamblers in the UK are significantly more likely to report that their parents approved of or do not mind them gambling.

### *Parental Participation in Gambling Activities*

Parental gambling practices have been strongly linked to adolescent gambling behaviour (Browne & Brown, 1994; Buchta, 1995; Carlson & Moore, 1998; Fisher, 1993a, 1998, 1999; Griffiths, 2000; Volberg, & Moore, 1999; Wiebe, 1999). For example, in the US Carlson and Moore (1998) found that overall, children whose parents gambled were significantly more likely than other children to gamble, gamble more frequently, and to begin gambling at a younger age.

The influence of parental gambling appears to be contingent upon parental gambling mode. For example, Browne and Brown (1994) found that students whose parents gambled on lotteries were significantly more likely to buy lottery tickets themselves, and that parental gambling was one of the strongest predictors of gambling status. Similar evidence has been found in the UK: adolescent gambling on scratchcards and EGM's is specifically related to parental gambling on these activities. Thus, young people whose parents gamble heavily or experience problems with these modes of gambling are more likely to do so themselves (Fisher, 1993a; Griffiths, 2000).

Parental gambling behaviour has consistently been shown to be a reliable predictor of adolescent gambling status. Problem gamblers are more likely to have parents who either gamble regularly, or who experience gambling related problems themselves (Browne & Brown, 1994; Buchta, 1995; Carlson & Moore, 1998; Fisher, 1993a, 1998, 1999; Griffiths, 2000; Volberg, & Moore, 1999; Wiebe, 1999). In particular, parental problem gambling has frequently been shown to be strongly correlated with adolescent problematic gambling practices (Carlson & Moore, 1998; Jacobs, Marston, Singer, Widaman, & Little, 1987; Lesieur et al., 1991; Lesieur & Klein, 1987; Wiebe, 1999; Winters et al., 1993a). Interestingly, Fisher (Fisher, 1999) found that problem gamblers were three times more likely than other adolescents to report thinking that their parents gamble "too much".

Browne (Browne & Brown, 1994) observed that engaging in a variety of gambling activities, parental gambling and peer gambling were the most predictive factors of gambling status. They argue that these relationships between parental and peer gambling provide support for social learning theory. Social learning theory, as described by Bandura (1977, 1986) supposes that people are most likely to emulate the behaviour of those they respect (e.g.

parents or peers), and that this modelling plays a large part in shaping a wide variety of behaviour (Browne & Brown, 1994). They further argue that overall, parental gambling may be more influential than that of peers, as it occurs earlier in life than peer influences.

Wiebe (Wiebe, 1999) briefly investigated the relationship between adult/parental 'support' and adolescent gambling. 'Having a parent or other adult in their life that they could talk to about problems' was significantly related to gambling status. Twenty six percent of problem gamblers reported that they didn't have anyone they could talk to, compared with 10% of at-risk gamblers, 5% of non-problem gamblers, and 2% of non-gamblers. The causal nature of this relationship is unclear. Particularly as a common consequence of adolescent gambling is the deterioration of familial and peer relationships.

### *Purchasing Behaviour*

Despite the majority of research investigating involvement in both formal and informal gambling practices by youth, few researchers have directly investigated underage access to formal gambling modes. Overall, it appears that young people find accessing formal gambling activities relatively easy.

Ashworth and Doyle (2000) surveyed two and a half thousand UK youth and reported that the majority obtain lottery tickets or instants (scratch tickets) through an adult. However, they also found that 7% reported making an underage purchase of National Lottery products (Draw, Instants, Thunderball) during the week prior to the survey. Most of these underage purchases were made by the young people themselves, or by another young person on their behalf. Underage purchases were more likely to be associated with Instants.

More than four out of ten underage purchase attempts were successful. Findings have consistently shown that those most likely to make underage purchases are males, aged 14-15, who have spending money of £10 or more per week, and attend an independent school (Ashworth & Doyle, 2000; Fisher, 1998, 1999).

The purchasing habits of American youth may be more alarming. Carlson and Moore (1998) surveyed 1000 youth and reported that approximately one-third had participated in lottery gambling in the last 12 months. Of these youth, 35% reported purchasing lottery products themselves (illegally). Grocery (18.6%) and convenience stores (12.9%) were listed as being the two most popular venues for underage purchases. However, as with the UK research, the majority (50%) reported obtaining tickets through parents, siblings, or other relatives.

### *Gambling Venue*

Findings regarding gambling venue tend to vary according to gambling mode, gambling status and demographic variables such as location.

Wiebe (1999) found a significant relationship between gambling intensity (non-problem, at-risk, and problem), and usual venue for US adolescents. Overall, young people preferred gambling at a friend's house, with problem gamblers being most likely to usually gamble at a friend's house. Gambling at a pool/bingo hall was the next most popular venue for both at-risk and problem gamblers. However, after a friends house, non-problem gamblers were most likely to give 'other' as their usual gambling location. The least common location for usually gambling at was a casino, followed by a bar or pub. Obviously, this was related to gambling mode: of the 6% who had gambled on EGM's, the majority (61%) had done so in a bar or pub and hardly any (1%) had done so in a casino.

Similarly, in the UK Fisher (1993a, 1998, 1999) has found pubs and amusement arcades to be the most popular venues for gambling on EGM's. In the most recent survey, she found that 44% of the youth had gambled on pub EGM's in the previous week, 35% in seaside arcades, and 32% in inland arcades. Alarming, since 1993, rates for gambling on EGM's in pubs (20.2%) have more than doubled (Fisher, 1993a). Age was highly significant with respect to gambling venue: positive linear relationships were found between age and both gambling in pubs and amusement arcades.

Poulin (2000) investigated the relationship between gambling and the use of fake identification. A significantly higher rate of problem gambling was found among underage students who reportedly used fake ID than those who did not. Furthermore, lying about ones age or using a fake ID was found to be an independent risk factor for problem gambling. Gambling on EGM's was the activity associated with the highest rates of using fake ID.

The relationship between regulatory policy and gambling behaviour has not been explored. Given Poulin's (2000) and Fisher's (1993a) findings, it would be interesting to examine the association between gambling policy (availability, age restrictions, venues) and adolescent involvement in various gambling activities.

### **3.3.3 Beliefs and Attitudes Regarding Gambling**

The beliefs and attitudes which young people form about gambling may be instrumental in understanding the mechanisms involved in persistent gambling. Some of the more recent prevalence studies have briefly investigated relationships between gambling behaviour and attitudinal factors (Carlson & Moore, 1998; Gupta & Derevensky, 1998a; Wallisch, 1996; Wiebe, 1999). Pertinent findings are discussed below.

#### *Teens should be allowed to gamble?*

The sparse findings on young peoples views regarding their 'right' to gamble are inconsistent. Rosenstein and Reutter (1980) found that a high proportion (78%) of their sample approved of

legalised gambling. Conversely, other studies have found students to be more or less evenly divided. For example, Wallisch (1996) found that 55% of the Texan students surveyed agreed with the statement “If teenagers want to bet money, they should be able to” (p.74). Furthermore, at-risk and problem gamblers were more likely than other teens to agree that they should be allowed to gamble if they want to. The authors propose that problem gamblers may be more aware of possible risks, as they were less supportive of gambling than teenagers who were categorised as being at-risk of developing problems. There was further evidence that attitudes regarding ‘rights to gamble’ are related to gambling behaviour. For example, 79% felt that it was wise for the Texas Lottery to have an age restriction. Those less in favour were more likely to have played the lottery themselves.

### *Importance of gambling as an activity*

It appears that most adolescents do not perceive gambling as a particularly important activity in their life. Wiebe (1999) in the US asked the adolescent participants in her study to rate the importance of gambling as an activity compared to other leisure options. There were four possible responses: ‘very important’; ‘somewhat important’; ‘not very important’; and ‘not important at all’. Most participants (98%) indicated that gambling was ‘not very important’ or ‘not important at all’. As might be expected, significant differences in attitudes were found in relation to gambling behaviour. At-risk and problem gamblers were significantly more likely to agree that gambling was an important activity in their life: Of the problem gamblers, 16% responded ‘somewhat important’; compared to 7% of at-risk gamblers; and 1% of non-problem gamblers.

Interestingly, very few youth indicated that gambling was ‘very important’ to them: only 1% of both at-risk and problem gamblers and 0% of non-problem gamblers.

### *Motivation to Gamble*

There is increasing evidence that young people generally gamble for fun and/or excitement, and that motivating factors differ according to gambling status (Griffiths, 1990a, 1990c; Gupta & Derevensky, 1998a; Volberg, 1993; Wiebe, 1999).

Wiebe (1999) presented participants with a list of ten reasons why people might gamble, and asked them to select those considered personally relevant. Regardless of gambling category, the primary reason cited was for fun or entertainment. Other common reasons were to win money, to do things with friends, and because it’s exciting and challenging. Significant differences were found according to gambling category. Youth categorised as being at-risk and problem gamblers were significantly more likely than non-problem youth to cite the following reasons for gambling: to do something with their friends; because it is challenging and exciting; because they think they are lucky; to win money; to forget problems; and because they think they are good at it.

Gupta and Derevensky (1998a) found similar trends in motivators for Montreal adolescents. Overall, most adolescents (79.5%) endorsed enjoyment as the main reason for engaging in gambling activities. Other popular reasons included desire to make money (61.9%) and excitement (59.4%). Problem and pathological gamblers were significantly more likely than social gamblers to cite the above and following reasons: escape problems, alleviate depression, relaxation, to feel older, and social involvement.

### *Gambling as a way to make money*

It appears that most teens do not endorse the belief that gambling is a good way to make money. For example, Carlson and Moore (1998) asked participants “to what extent, in general, do you feel gambling is a good way to make money?” (p.14). Possible responses included: very good, somewhat good, and not good. Overall, 88% stated ‘not good’, 11% ‘somewhat good’, and only 0.7% ‘very good’. Furthermore, gamblers were significantly more likely than non-gamblers to believe that gambling is a ‘somewhat’ or ‘very good’ way to make money.

Similarly, year eight students were asked whether they agreed (yes or YES!) or disagreed (no or NO!) with the statement “Gambling is a way to make money”. Percentages of males emphatically agreeing (YES!) were more than twice those of females (Jackson, Patton, Thomas, Wyn, Wright, Bond, Crisp, & Ho, 2000).

Wallisch (1993, 1996) found that a sizeable proportion (25% in 1996 and 21% in 1993) of students agreed with the following statement “I think I could make a lot of money playing games of chance like the lottery”. Furthermore, at-risk and problem gamblers were more likely to agree with this statement than other adolescents, with 56% of the problem gamblers and 39% of the at-risk gamblers agreeing. However, the wording of this statement results in an ambiguous concept. It is a *fact* that someone *could* make a lot of money through participation in lotteries. More pertinent issues are how likely they believe this possibility to be, and how they perceive the likelihood of their winning as compared to other individuals.

### *Gambling is harmful?*

Jackson et al. (2000) asked respondents if they agreed or disagreed with the statement “Gambling is OK as long as you don’t overdo it”. Overall, the majority agreed (responding either YES! or yes), with percentages of males strongly agreeing being higher than those for females. Similarly, Wallisch (1996) found that students were evenly divided on whether they perceived gambling for money as harmful or not. At-risk and problem gamblers were more likely than other teens to say that gambling is not harmful. As with questions on whether teens should be allowed to gamble or not, at-risk gamblers were more likely than problem gamblers to perceive gambling as not being harmful. It appears that the mode of gambling being

considered is also relevant to attitudes regarding harmfulness. For example, attitudes regarding lotteries were more lenient, with almost three quarters agreeing that lotteries served a useful purpose. They found that older teens and males were more likely to approve of lotteries than other teens. Regional differences were also found, with teens from particular areas being more likely to view lotteries in a positive light.

However, some of the questions asked by Wallisch (1996) (as discussed in the above section) are vaguely worded, leading, and adopt a dichotomous approach. For example, the young people surveyed were read the following statement:

“Some people say that lotteries are a good idea because they help raise money for state programs that can benefit people. Others say lotteries are a bad idea because they encourage people to waste their money on something that is a long shot. Which statement best reflects your view of lotteries: Lotteries are a bad idea or Lotteries serve a useful purpose” (p.77).

### **3.3.4 The Role of Cognitive Factors**

#### *Perceptions of Skill and Luck in gambling*

The perception of the role of both skill and luck in gambling have received a fair amount of attention for the adolescent population. Overall, young people appear to believe that skill and luck play a substantial role in winning at gambling. For example, Gupta and Derevensky (1998a) measured the perceived roles of skill and luck in relation to young peoples gambling via a 7-point Likert scale (1=none, 7=a lot). Overall, students indicated that gambling was primarily luck driven (mean score of 5.69), although skill was also perceived as playing a large part in succeeding in gambling activities (mean score of 4.66). Significant gender differences were found with respect to the perceived amount of luck involved: males were more likely to endorse the role of luck than females. This trend was observed for both pathological and non-pathological groups. Interestingly, both genders agreed upon the role of skill involved, regardless of gambling status (a finding not supported elsewhere). Unfortunately only the attitudes of gamblers were observed, it would have been interesting to examine possible differences between non-gamblers and gamblers.

Similarly, Manitoba adolescents were asked how much skill they felt was needed to win at gambling: a lot of skill, a little skill, and no skill. They found that beliefs were significantly related to gambling category, with non-gamblers being the least likely to endorse the role of skill. On further examination, the relationship was found to be more complex than just gambling status. They found a significant relationship between participation on games of skill<sup>5</sup> and perception of skill involvement. Thus, those with the greatest participation in games of

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<sup>5</sup> The phrase ‘Games of skill’ generally refers to activities such as bowling, pool, and golf. Some researchers (eg. Wallisch, 1996) have also included video arcade/computer games in this category. It should be noted that chance is still a crucial factor in games of skill.

skill were most likely to endorse the belief that skill played a role in winning at gambling. Contrary to Gupta and Derevensky's (1998a) findings, males were more likely than females to endorse this belief. A finding consistent with greater male participation in games of skill.

One study found that young people tended to rate themselves as being slightly above average at gambling (Derevensky, Gupta, & Cioppa, 1996). Overall, males were found to rate themselves as having greater ability than females. They also found that in general the young people desired to be above average at gambling, but not excellent.

### **3.3.5 Adverse Factors Associated with Gambling**

Many adverse factors related to problematic gambling have been documented. The most prominent include involvement in other potentially addictive behaviours, delinquency, dissociative reactions, poor school performance, disruptions to family/peer relationships, and eating disorders. Prominent findings are discussed in the following section.

#### ***Involvement in other potentially addictive behaviours***

The relationship for adolescents between gambling and other potentially addictive behaviours has been frequently investigated. It is widely acknowledged that young peoples involvement in gambling (including gambling related problems) is positively correlated with use of tobacco, alcohol, illegal drugs, and general delinquency (Volberg, 1993; Lesieur, 1991; Winters, 1993; Wallisch, 1996; Stinchfield, 1997; Carlson, 1998; Gupta, 1998; Fisher, 1999; Fisher, 1998; Volberg, 1999; Wiebe, 1999; Poulin, 2000; Vitaro, 1998). As such, gambling is increasingly being conceptualised as one behaviour within a constellation of risky behaviours. However, as most studies only document that these behaviours co-exist, the nature of the relationships is not well understood.

Fisher (Fisher, 1998, 1999) found a significant relationship between problem gambling and use of alcohol, cigarettes, and illegal drugs. Overall, alcohol was the most popular substance, with 73% of problem gamblers and 46% of non-problem gamblers, having partaken in the previous week. Forty-seven percent of problem gamblers had smoked cigarettes in the past week, compared with 22% of non-problem gamblers. Over three times as many problem gamblers had used illegal drugs in the past week than non-problem gamblers (28% and 9% respectively). Furthermore, problem gamblers were at least twice as likely to participate in these behaviours frequently.

These findings are supported by Winters and Anderson (2000) who computed odds ratios for involvement in gambling and drug use. They found that students were:

“3.1 times more likely to never have gambled if the person had never used drugs compared to those who had used drugs, and students were 3.8 times more likely to be a weekly/daily gambler if they were also a weekly/daily user of drugs compared to students who used drugs less than that” (p.187).

A large proportion of the adolescents in Fisher's UK study (Fisher, 1998, 1999) reported feeling bad regarding their use of cigarettes, alcohol, illegal drugs and gambling within the previous year. Overall, alcohol and EGM gambling were the activities that raised most concern. Of the 9774 adolescents surveyed:

- 23% felt bad about the amount of alcohol they consumed;
- 22% felt bad about the amount they had gambled on EGM's;
- 19% felt bad about the amount of cigarettes they smoked;
- 12% felt bad about the amount they had played National Lottery Scratchcards; and,
- 8% felt bad about the amount of illegal drugs they had used.

Those adolescents who were classified as problem gamblers were significantly more likely to be concerned about all the above behaviours. Their concerns were ranked in the same order, except that gambling on EGM's became the primary concern followed by alcohol consumption. Of the 549 young people identified as problem gamblers:

- 58% felt bad about the amount they had gambled on EGM's;
- 41% felt bad about the amount of alcohol they consumed;
- 37% felt bad about the amount of cigarettes they smoked;
- 35% felt bad about the amount they had played National Lottery Scratchcards; and,
- 21% felt bad about the amount of illegal drugs they had used.

As demonstrated above, there is a further body of evidence that adolescent problem gamblers are significantly more likely to experience alcohol or drug related problems (Volberg, 1993; Volberg & Moore, 1999; Wallisch, 1993, 1996), and to report having sought assistance for these problems (Gupta & Derevensky, 1998a; Volberg & Moore, 1999).

### ***Delinquency***

Delinquent behaviours have frequently been associated with gambling status: adolescents demonstrating problematic gambling behaviour are more likely to engage in delinquent behaviours (Arcuri et al., 1985; Fisher, 1993a, 1999; Ladouceur & Mireault, 1988; Lesieur et al., 1991; Oster & Knapp, 1998; Steinberg, 1988; Stinchfield, 2000; Stinchfield et al., 1997; Wallisch, 1996; Wiebe, 1999; Winters et al., 1993a).

Behaviours typically classified as delinquent include issues of school performance. Poor school performance has frequently been associated with gambling status. Compared to other students, youth who are experiencing gambling related problems are more likely to: have lower grade point averages, skip school more often, be sent to the principal, and have parents called by the school (Lesieur & Klein, 1987; Wallisch, 1993, 1996; Winters et al., 1993a).

Delinquent behaviours also include illegal or dishonest acts such as stealing money or selling drugs. Involvement with police, and/or arrests for non-traffic offences have been cited by some authors (Fisher, 1993a, 1999; Lesieur et al., 1991; Wallisch, 1996; Wiebe, 1999). Behaviours such as using lunch money to gamble with, demonstrating antisocial behaviour, and selling possessions to get money to gamble with have also been reported (Fisher, 1993; Stinchfield, 1997; Stinchfield, 2000; CFCG, 1994).

### ***Depression***

Depression has frequently been found to co-exist with adult pathological gambling. Several studies have found higher rates of depression among pathological than non-pathological gamblers (Blaszczynski, McConaghy, & Frankova, 1990; Blaszczynski & McConaghy, 1988; Linden, as cited in Griffiths, 1995; Gupta & Derevensky, 1998b; Lesieur, & Blume, 1990; Lorenz & Yaffee, 1986; McCormick, Russo, Ramirez, & Taber, 1984; Murray, 1993; Wiebe, 1999). Similar findings have been reported for adolescent populations. Some studies have reported that youth with gambling problems and those at-risk are significantly more likely than other youth to experience depression and to report having been unhappy in preceding months (Wallisch, 1993, 1996; Wiebe, 1999).

Furthermore, pathological and problem gambling has been linked to suicide attempts amongst youth (Ladouceur et al., 1994b; Lesieur et al., 1991), and adult populations (Blaszczynski & Farrell, 1998; Livingston, 1974; McCormick et al., 1984). Many authors however, have noted that the direction of causality between depression and gambling remains unclear.

### ***Dissociative reactions***

Some population based surveys have investigated dissociative reactions to gambling. Dissociative reactions are normally classified as having:

- lost track of time while gambling;
- felt like you were a different person;
- felt like you were outside yourself, watching yourself gamble;
- felt like you were in a trance; and,
- experienced a memory blackout for things that happened, while you were gambling.

Correlations between dissociative reactions to gambling and gambling status have been found (Canadian Foundation on Compulsive Gambling (Ontario), 1994; Gupta & Derevensky, 1998a; Insight Canada Research, 1994; Wynne et al., 1996). It appears that dissociative reactions are more frequent and pervasive for adolescents who are experiencing gambling problems (Jacobs, 2000). Losing track of time is consistently the most common effect experienced (31%-75%), followed by feeling like a different person (12%-53%) (Canadian Foundation on Compulsive Gambling (Ontario), 1994; Insight Canada Research, 1994; Wynne et al., 1996).

### 3.3.6 Summary of Epidemiological Research

Epidemiological research has demonstrated that gambling is a common and socially approved activity amongst adolescent populations. Despite this social acceptance, research has focused upon the risks and subsequent problems associated with gambling. Epidemiological research on adolescent gambling has been mostly conducted within a 'dysfunctional' or medically based paradigm.

To date, epidemiological research has documented correlational relationships between many factors and adolescent gambling (as discussed in the above section, and summarised below). However, it must be noted that these correlations do not establish clear causal relationships. They are not explanatory, nor are they well understood. Little is known about the underlying mechanisms which result in these correlations. Furthermore, it is unlikely that these mechanisms will be sufficiently explored by research which is epidemiological in nature.

#### *Correlational Risk Factors*

Research reviewed to date has identified that problem (and at-risk) gamblers are more likely to:

- be male;
- have a higher disposable income;
- belong to an ethnic minority;
- have parents who have gambling or other addiction problems;
- initiate gambling at an early age;
- have more accepting attitudes regarding gambling;
- more likely to think that young people should be allowed to gamble if they want to;
- more likely to view gambling as a good way to make money;
- more likely to think that gambling is not harmful;
- more likely to view gambling as an important activity;
- perceive a significant skill factor in gambling;
- engage in other potentially addictive behaviours;
- engage in delinquent behaviours;
- report experiencing depression; and,
- experience frequent dissociative reactions to gambling.

It should be noted that on the whole, the statistical methods associated with the reported epidemiological research have been mostly descriptive, with analysis being limited to correlational relationships, and analysis of variance.

## **4. LONGITUDINAL AND CROSS-SECTIONAL RESEARCH OF ADOLESCENT GAMBLING**

Longitudinal research enables the investigation of temporal parameter changes within the same sample. As such, long-term trends, patterns, and characteristics of investigated behaviours can be examined. They provide an opportunity to gain some understanding of processes such as the progression of gambling behaviour, from social to problematic and vice versa. Currently, there is a paucity of longitudinal studies investigating adolescent gambling. To date, speculation about long-term trends has been mostly based upon two main sources:

1. replicative studies (which enable the tracking of some parameters across time);  
and,
2. comparison of successive independent prevalence studies.

Researchers in Minnesota have conducted both longitudinal and cross-sectional studies. The cross-sectional study entailed surveying the entire school based population of 6<sup>th</sup>, 9<sup>th</sup> and 12<sup>th</sup> grade students in 1992, 1995, and 1998. Seven gambling items (5 frequency based, 2 problem based) were included in the Minnesota Student Survey, which inquires about multiple health-related domains (Stinchfield, 2000; Stinchfield et al., 1997).

A longitudinal telephone study was initiated in Minnesota in 1990. Seven hundred and two adolescents (aged 15 to 18 years old) formed the baseline sample, with 532 being successfully resurveyed 18 months later (Winters et al., 1993a; Winters, Stinchfield, & Kim, 1995).

These studies supported observations made by prevalence studies. Despite demographic correlations, the most consistent finding is that gambling preferences change in a consistent manner with age. 'Informal' activities such as coin flipping, skill games, and sports betting become less popular as age increases. Whereas lotteries, 'scratchie-cards', and EGM's become more popular with age (Stinchfield, 2000; Stinchfield et al., 1997; Wallisch, 1993, 1996; Winters & Stinchfield, 1993; Winters et al., 1995). These preference shifts have been observed for both males and females (Stinchfield, 2000; Stinchfield et al., 1997; Winters, & Stinchfield, 1993; Winters et al., 1995). Older youth (of legal age) were also observed to have the greatest fluctuations of gambling frequency and choice of activity. Suggesting that older youth become more experimental with their gambling activities. Interestingly, overall participation and problem rates appear to have remained relatively stable over time. It appears that most youth gamble at a fairly constant rate while a small minority experience increasing problems (Stinchfield, 2000; Stinchfield et al., 1997; Winters & Stinchfield, 1993; Winters et al., 1995).

Researchers in Montreal, Canada (Vitaro, Arseneault, & Tremblay, 1999; Vitaro, Brendgen, Ladouceur, & Tremblay, in press; Vitaro et al., 1998) and New York, America (Barnes, Welte, Hoffman, & Dintcheff, 1999) have investigated the relationships between adolescent alcohol use and gambling.

More specifically, Vitaro et al (1999; Vitaro et al., in press; Vitaro et al., 1998) investigated the predictive links shared by gambling, substance use and delinquency for adolescent males. Seven hundred and seventeen adolescents were surveyed as part of an ongoing longitudinal study in Montreal, Quebec. Information on impulsiveness, friends' deviancy, and parental supervision was collected when the participants were aged 13 and 14. At age 16 and 17 information regarding gambling, substance use/abuse, and delinquency was collected.

Overall, the problem behaviours were found to have strong concurrent links, but weak longitudinal links. Thus, the behaviours exerted limited influence on each other: gambling did not explain increases in substance use or delinquency (or vice versa).

Overall, impulsivity, parental supervision, and friends' deviancy each explained unique variance for gambling, delinquency and alcohol/drug use. However, there was one exception: parental supervision did not explain later gambling behaviour or problems. It was hypothesised that this lack of predictive ability may be due to society (and thus parental) viewing of gambling as an acceptable behaviour. However, as concurrent links were strong and the portions of variance explained were modest, it appears that other unknown generic risk factors existed. The authors argue that the findings provide support for the notion of a "general problem behaviour syndrome" (Vitaro et al., in press, p.2). In particular, they argue that these findings provide support for Jessor and Jessor's theory of a general deviance syndrome: Different problems represent different manifestations of a common underlying deviant orientation. This reinforces the argument that gambling should not and cannot be addressed in isolation from other problems and issues in an adolescent's life.

Barnes (Barnes et al., 1999) conducted two complementary longitudinal studies. Both of which entailed interviews with youth and their family members. Several consistencies with the Canadian research (Vitaro et al., 1999; Vitaro et al., in press; Vitaro et al., 1998) were found:

- strong concurrent links were observed between use of alcohol and gambling;
- impulsivity and moral disengagement were significant predictors of both gambling and alcohol use.

As with Vitaro et al. (in press) the researchers also found support for a general deviance syndrome, and concluded that the use of alcohol and gambling are part of a "network of other youthful problem behaviors, including cigarette smoking, illicit drug use, and delinquency" (Barnes et al., 1999, p. 763).

These studies are unusual in that they attempt to explore and explain underlying mechanisms of adolescent gambling. The mechanisms are investigated over a period of crucial developmental significance - adolescence. As with most research addressing adolescent gambling, these authors have conceptualised gambling as an inherently problematic or deviant behaviour. 'Risky' behaviours are treated as being homogenous: different modes of gambling, delinquency, and drug use are not differentiated. Unfortunately participants were almost exclusively male, with those in the Montreal study being of Caucasian background, and from disadvantaged neighbourhoods.

#### **4.1 Summary of Longitudinal Research**

To date there is a paucity of longitudinal research addressing adolescent gambling. It can be seen that present studies provide support for epidemiological findings. They provide an indication of long-term trends for adolescent gambling behaviour and possible underlying mechanisms. In particular, it is apparent that gambling preferences change with age: from informal to formal modes of gambling. There is also greater fluctuation and experimentation by older youth. American and European research suggests that participation and problem rates are fairly constant across time, with the involvement of most youth remaining stable and a minority experiencing increasing problems. There is also some evidence to support the concept of a 'general problem behaviour syndrome', suggesting that behaviours such as gambling and alcohol use are manifestations of an underlying issue. As such, a 'constellation' of high-risk/high-intensity/high-harm behaviours often occurs.

The role of longitudinal research will become increasingly important with the continuing involvement and expansion of gambling technology (e.g. interactive TV and internet gambling).

## **5. QUALITATIVE RESEARCH OF ADOLESCENT GAMBLING**

Qualitative research can be defined as any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification (Strauss & Corbin, 1990). Qualitative research differs in that the interpretative process focus' upon meanings, the nature of relationships are examined, rather than quantified. The role of the researchers assumptions in interpreting the data are also acknowledged. Qualitative research consists of a wide range of approaches that enable researchers to examine the diversity, context, and complexity of behaviour.

As with longitudinal research, there is a paucity of qualitative research addressing adolescent gambling. Those studies which do exist have been mostly concerned with gambling on EGM's within the UK (Fisher, 1993b; Griffiths, 1990; Griffiths, 1991; Griffiths, Mark & Minton, 1997). Some of the research included in the following section is not strictly qualitative, however, this section was deemed the most appropriate. For ease of discussion, research has been categorised according to the utilised methodology: participant observation, interviews, focus groups, and case studies.

### **5.1 Participant Observation**

A particularly comprehensive ethnographic study of adolescent EGM gambling was conducted by Fisher (1993b). Observational data were obtained while the researcher was working (voluntarily) as a part-time cashier in the 'change-box' of an amusement arcade for 14 months. This position provided the researcher with "a prolonged immersion in the subculture of young EGM gamblers, a knowledge of the argot and a longitudinal perspective of arcade culture and the playing behaviours of different players" (Fisher, 1993b, p 454). In-depth interviews with ten young EGM gamblers, and four group interviews with young people from locales, where arcade EGM's were easily accessible, were also conducted.

From the observational data, evidence for five distinct subgroups or typologies of adolescent gamblers emerged naturalistically: Arcade Kings and their Apprentices, Machine Beaters, Escape Artists, Action Seekers and Rent-a-Spacers. These typologies describe the different primary orientations of EGM gamblers in detail. For example, the primary concern of Machine Beaters is their interaction with the machine and the opportunity for making technical decisions i.e. they aim to beat the machine. They may be technically adept, but demonstrate poor emotional management – resulting in poor money management (chasing losses) and 'problem' gambling. They resent spectators and play in isolation. Arcade Kings also demonstrate considerable skill with regard to EGM gambling. However, they often form part of

a cohesive group in which they teach each other skills, share 'earnings', and gamble at different locations to maximise winnings. Unlike Machine Beaters they demonstrate an air of indifference to winning and losing. They are highly respected among other arcade goers, and often have a group of dedicated followers (the apprentices), to whom they teach skills and fulfil a 'mentor' role. They demonstrate good emotional and financial management, with 'social respect' and status being a predominant aim of gambling.

In essence, Fisher argues that distinct typologies of gamblers exist, with different motivating factors. The typologies are not mutually exclusive – with elements of each type being perceived in all the young people. Gender also seems to dictate typology, with girls and boys exhibiting different motivating factors. It could be argued that due to the small sample these conclusions should be treated with caution. One could also question if the forming of behavioural typologies utilises the wealth of observational data to its full potential. By proceeding to categorise the sample it seems inevitable that a certain amount of information is lost and/or under utilised.

This research is unique in that it recognises the social rewards and context of young peoples gambling. Social processes surrounding gambling and the role of gambling in adolescent development are acknowledged. Fisher argues that gambling has been mostly viewed from a social problems approach (even within a sociological framework) – thus neglecting the various social rewards such as ego enhancement which arise from gambling.

Two main points emerge from this research. Firstly, that gambling is a multi-dimensional behaviour: Distinct typologies of EGM gamblers exist. Gamblers do not form a homogeneous group – different factors motivate and maintain gambling behaviour in different individuals. This theme has also emerged in more conventional research areas (Błaszczynski, 1999).

Secondly, there are numerous social rewards to be gained from gambling. This examination of adolescent gambling within its social context has given an indication of the complex social subculture surrounding gambling behaviour. This aspect of gambling is predominantly neglected by researchers, and warrants further investigation.

Several authors have recently noted that EGM's optimally facilitate an illusion of control (Carroll & Huxley, 1994; Griffiths, 1995). Griffiths posited that the introduction of specialist features such as nudge, hold, and gamble buttons were particularly instrumental in stimulating an illusion of control: they facilitate a sense of personal involvement and familiarity with particular machines – to optimise their use necessitates extensive 'knowledge of the reels'; they are perceived as skilful functions – a perception that many regular EGM gamblers endorse. To investigate whether the skill involved in EGM gambling was 'actual' or 'perceived' Griffiths observed and compared the success of regular and non-regular young (average age

23.4 years) EGM gamblers (assuming that if skill is 'actual' rather than 'perceived', regular gamblers should be more successful) (Griffiths, 1995; Griffiths, 1994). All observations were made in the 'natural' setting of an amusement arcade, with skill being defined as the ability of the gambler to positively affect (either gain more gambles and/or more winnings) the outcome of a gambling session with a £3 initial stake.

Overall, it was concluded that there was no difference between regular and non-regular gamblers. However, regular gamblers did manage to stay on machines longer than non-regular gamblers (but the difference was not statistically significant). Thus, Griffiths proposes that there are some limited skilful aspects to EGM gambling (Griffiths, 1995; Griffiths, 1994). In particular, regular gamblers are able to achieve a few more gambles with the same amount of money, in approximately the same time span as non-regular gamblers. This finding reflects reports that the primary aim of many problem gamblers is to remain gambling (or escape) for as long as possible (as opposed to gambling to win money).

## **5.2 Interviews**

In-depth interviews have not been frequently utilised within the adolescent gambling field. However, in the UK Griffiths has conducted a series of studies utilising interviews. The first of which involved an informal group discussion with eight self-confessed addicted EGM gamblers (Griffiths, 1995, 1990b, 1990c). The second recruited 50 young participants (EGM gamblers) as they emerged from an amusement arcade (Griffiths, 1990a). In both studies, explanatory factors such as initial motivation to gamble, maintenance factors for gambling, arousal and affective states, perception of skill, and associated problems were investigated.

Both studies found that initial motivation to gamble (win money, have fun, because parents/friends do, something to do) was markedly different to continuing motivation. The problem gamblers tended to place more emphasis upon the 'high' or excitement/arousal gained through gambling, and the role that this played in continuation of their gambling behaviour. Interestingly, there was little difference in acquisitional factors for problem and non-problem gamblers.

In addition to the study discussed above, Griffiths examined perceptions regarding the role of skill in gambling on EGM's. He found that those youth diagnosed as being pathological EGM gamblers perceived a greater skill orientation than other gamblers (Griffiths, 1995, 1990a, 1990c). The group of eight problem gamblers believed that skill could be used to make money last longer, but that chance could still be an overriding factor. They described skilful playing as involving good tactile, auditory, and visual perception and coordination, and having knowledge of reel positions. Of the 50 EGM gamblers in the second study, 12% thought there was no skill involved in gambling on EGM's; 40% thought it was mostly chance; and, 48%

thought there was some degree of skill involved. Of those who felt there was skill involved, most cited it as being knowledge of particular machine features (e.g. nudge and hold functions, reel positions).

Interestingly, peer pressure was found to fulfil distinct roles for both pathological and non-pathological groups. For the non-problem gamblers peer pressure was a mechanism employed in the maintenance of social gambling: the group looked after other players and tried to stop those who were considered to be gambling too heavily (Griffiths, 1995, 1990a). Conversely, once established within the 'social' group of problem gamblers, pressure was exerted upon one another to continue gambling. There was also a strong gender influence within the group of 8 male EGM addicts. They all adamantly felt that gambling was a male activity and that women wouldn't understand.

These interviews have provided preliminary information of an explanatory nature regarding: changes in motivation to gamble, underlying cognitive factors, and social processes which operate within the frame of adolescent gambling. Griffiths concludes that an emerging theme is that sociological factors appear to be important in the acquisition of gambling behaviour, while the development and maintenance of problematic gambling appears to be sustained by psychological and physiological variables. As with other research the interactions between these variables are not well understood – with further research being required.

### **5.3 Focus Groups**

The body of literature regarding focus groups on adolescent gambling is limited. The Alberta Alcohol and Drug Abuse Commission (AADAC) conducted a series of 11 focus groups with youth aged 12-17 years: 4 with youth from the 'general population'; 5 with youth 'at-risk' of social or behavioural problems; and 2 with youth currently undergoing treatment for gambling problems. Overall, gambling was not perceived to be a relevant issue or problem among teens (as opposed to alcohol and drug issues). However, the groups were well aware of available gambling activities and possible consequences of gambling behaviour. A distinction was made by participants between betting (wagers etc) and gambling activities.

Interestingly, most participants felt that youth involvement in gambling (or betting) activities was unusual, and that youth rarely thought about gambling. However, this was contradictory to the findings of a short questionnaire completed by all focus group participants (upon completion of the focus groups):

- 80% reported gambling in the previous 6 months;
- 70% reported gambling once a week or less; and,
- 25% reported gambling twice or more per week.

These findings may reflect that youth don't consider betting activities as being forms of gambling. As with Wallisch (1996), most participants felt that gambling by teens was an acceptable behaviour and even a part of growing up.

As with the interviews conducted by Griffiths (1995, 1990a, 1990c) themes of skill and luck have emerged from some Australian focus groups. In a series of research projects, 14 focus groups were conducted with young people aged between 12 and 24. Participants were recruited through schools and organisations which deal with unemployed youth. Overall the young people involved had rational attitudes regarding the roles of skill and luck in gambling. They felt that different modes of gambling such as track racing required more skill than other modes such as EGM's (Jackson et al., 2000). However, they revealed that they had experienced themselves, and saw adults have a near-miss, and they felt that these near-miss situations induced disappointment and also encouraged further gambling.

Overall, findings were consistent with those of Smith and MacDonald (1999), as participants did not feel that adolescent problem gambling was a large concern. Rather, their main concerns were centred on the impact of adult or parental gambling on their personal, social, economic, and psychological well-being.

## **5.4 Case Studies**

Within the literature, the only in-depth case study to be reported regarding adolescent gambling is that by Griffiths (1993a, 1995). It provides some insights into the development, maintenance and cessation of problematic gambling behaviour. The case study reports the experiences of an 18 year-old male who had been addicted to EGM's for four years. The experience is also reported from his mother's perspective.

This report highlights the role of sociological factors (frequent exposure to gambling) in the acquisition of gambling behaviour. However, development and maintenance of gambling was attributed to psychological and physiological factors. A clear shift in motivating factors is documented. Initially the boy gambled to: win money; for excitement; display skill; have fun; and because friends play. Eventually the main motivating factors were those of escapism from - 'feelings of depression, confusion and rejection' (Griffiths, 1993a, p 396).

As discussed in the above sections, the role of skill is important in gambling behaviour. However, this report is unique in that it demonstrates that the role of skill shifted over time and was contextually dependant. Initially the boy valued 'skilful' playing for the social rewards which it bought (impressing peers, making him feel good about himself). However as the gambling became problematic, he valued skilful playing for the increased escapist opportunities that it provided i.e. he was able to prolong play and thus escape from problems for longer periods of time.

A combination of approaches were documented as enabling the young man to address his gambling behaviour: Gamblers Anonymous; talking about the problem (particularly with his mother); yoga; and behavioural self monitoring. However, the most critical factor in enabling the young man to address his gambling behaviour appeared to be the personal motivation to stop. Family support and communication was also reported as being particularly important with regards to relapse prevention.

This report provides a detailed insight into the progression and 'regression' of problematic gambling behaviour for an individual. One possible consequence of quantitative research is the reduction of real people into a faceless body of generalised data. A less academic benefit of this qualitative paper, is the insight into the destruction and trauma inflicted upon the boys parents, his sibling, and himself.

## **5.5 Summary of Qualitative Research**

It is apparent that the small amount of qualitative research has disproportionately contributed to our understanding of adolescent gambling. Much of this research has acknowledged the social context of gambling. It appears that gambling fulfils a distinct social role within youth culture, and as such provides many social rewards. Peer pressure has been identified as an important factor in the maintenance of gambling behaviour, and fulfils distinct roles for both problem and non-problem gamblers.

The role of skill for gambling on EGM's has been examined, and it appears that skill is mostly 'perceived' as opposed to 'real'. The 'conceptualisation' of skill also changes with progression of gambling behaviour. Skill is initially valued for the social and financial rewards it entails. As gambling becomes problematic it is valued for enabling continuation of gambling (prolonging time spent on EGM's).

Evidence has been found to suggest that distinct typologies of gamblers exist: Gamblers do not form a homogeneous group. These typologies consist of groups with different motivating and maintaining factors. Furthermore, motivations to gamble shift as gambling progresses from a non-problematic to problematic behaviour. It has been proposed that sociological factors are more pertinent in the acquisition of gambling behaviour, and that psychological and physiological factors contribute more to the development and maintenance of gambling behaviour.

Research by Fisher (1993b) is the first to address youth gambling within its social context. It has begun to examine what gambling means to young people – what functions it fulfils in their life and how it fits into their culture. A greater understanding of such issues would be particularly useful in identifying those aspects which serve as protective factors.

There is clearly potential for more extensive use of qualitative methods. It is unarguable that our understanding of underlying mechanisms would be greatly advanced with the use of qualitative methods such as theme analysis, discourse analysis, and grounded theory.

## 6. QUASI-EXPERIMENTAL RESEARCH OF ADOLESCENT GAMBLING

Unlike the adult literature, there has been little quasi-experimental investigation into adolescent gambling behaviour. To date, these investigations have been limited to the examination of Jacobs' *General Theory of Addictions* (Gupta & Derevensky, 1998b), the role of arousal (Carroll & Huxley, 1994; Griffiths, 1993b, 1995), the role of skill (Frank & Smith, 1989), and the application of social learning theory (Kearney & Drabman, 1992).

### 6.1 Jacobs' General Theory of Addictions

Jacobs formulated a general theory of addictions, which stemmed from the pathological gambling field (Jacobs, 1986, 1987, 1988, 1989a, 1993). He argues that a common dissociative state prevails among individuals while engaging in their specific addictive behaviour. His General Theory of Addictions proposes that two sets of interacting predisposing factors determine an individual's risk of developing and maintaining an addictive pattern of behaviour. The first predisposing factor which must exist is a 'unipolar physiological resting state' (i.e. chronically and excessively either suppressed or excited). The second factor that must theoretically be present is a "childhood and adolescence marked by deep feelings of inadequacy, inferiority, shame, guilt, and low self-esteem, plus a pervasive sense of rejection by parents and significant others" (Jacobs, 1993, p.289). He further proposes that the potential risk for addiction is influenced by the characteristics of the chosen activity or substance. As the number and intensity of the following attributes increase, so too does the potential risk: it blurs reality testing; it lowers self-criticism and self-consciousness; it permits complementary daydreams about oneself. Jacobs argues that gambling (or another potentially addictive behaviour) is a mechanism deliberately employed to achieve and act out an altered state of identity. It is this intent that "distinguishes the true addict from the superficially similar excesses of the abuser" (p.290).

Some support has been found for the applicability of Jacobs' theory to adolescent populations. Gupta and Derevensky (1998b) set out to empirically test Jacobs' theory. They surveyed 817 high school students regarding gambling, substance use/abuse, depression, and personality variables. It was hypothesised that problem and pathological gamblers would be more likely than other adolescents to exhibit or report:

- abnormal physiological resting states;
- lower self-concept;
- higher depression scores;
- tendencies towards being guilt-prone and insecure;
- an unhappy childhood;
- gambling to escape or to alleviate depression;

- greater levels of dissociation when gambling; and,
- comorbidity with regular alcohol and substance use.

They concluded that overall, Jacobs' theory is a plausible and likely explanation for the development of problematic gambling amongst adolescents. Problem and pathological gamblers were found to report greater levels of dissociation, showed greater emotional distress, exhibit evidence of abnormal physiological resting states, and reported greater levels of comorbidity with other addictive behaviours than other adolescents. A path analysis revealed strong paths from both the physical and emotional predispositions, to a deliberate need to escape and then to severity of gambling. Thus, empirical evidence was found that adolescent gambling severity is partially determined by the need to escape (dissociate) which is fuelled by aversive physiological and emotional states.

They also found evidence that males and females may experience different predisposing factors to addiction. Males were found to fit Jacobs' theory better than females. Strong predicting factors for males included the excitability personality factor, and total dissociation score. Depressed mood, dissociation and upper drug use were meaningful predictors for females. However, it should be noted that only eleven females were diagnosed as problem gamblers compared with fifty-three males. As the authors acknowledge, more research examining gender differences is needed.

## **6.2 The Role of Arousal**

Investigations of the role of arousal have tended to be conducted *in situ* in UK amusement arcades (Carroll & Huxley, 1994; Griffiths, 1993b, 1995). Both Carroll and Huxley (1994) and Griffiths (1993b, 1995) have measured cardiovascular activity prior to, during and after gambling sessions on EGM's. Both studies found that regardless of gambling classification (dependant/non-dependant; regular/non-regular), all participants experienced an increase in cardiovascular activity while gambling. There were no significant group differences for the magnitude of these increases: one study found that both groups experienced a mean increase of 22 beats per minute while gambling (Griffiths, 1993b, 1995).

Two interesting factors have been documented. Dependant gamblers tended to have lower basal levels of cardiovascular activity. Suggesting that it may be conventional levels of arousal – not levels induced by gambling – which have discriminatory power between dependant and non-dependant gamblers (Carroll & Huxley, 1994).

Secondly, Griffiths (1993b, 1995) has documented significant group differences in the time taken for heart rates to resume normal levels after a gambling session. Regular gamblers were found to return to basal levels significantly more rapidly than non-regular gamblers. Thus providing empirical evidence that the 'high' precipitated by gambling lasts longer for

non-regular gamblers than those who gamble regularly (i.e. tolerance). It is regrettable that a third category (problem gamblers) was not included in the analysis as it would have been interesting to explore the extent of this relationship further.

### **6.3 The Role of Skill**

Perceptions regarding skill are integral to the cognitive concept of illusion of control. Langer's (1975) contributions towards understanding the illusion of control have been particularly influential. She has defined the illusion of control as 'an expectancy of a personal success probability inappropriately higher than the objective probability would warrant' (p.311). In other words, the belief that someone can personally influence an outcome which is beyond their control. Langer (1975) conducted a series of studies which demonstrated that the introduction of devices normally associated with skill into a situation dictated by chance resulted in a shift in expectations by individuals. Subsequently, their expectations of success increased to unrealistic levels. Evidence suggests that active involvement, planning, task familiarity, competition, and choice are factors that facilitate a false expectancy of success.

Frank and Smith (1989) empirically investigated the applicability of Langer's illusion of control to children. Sixty-six children aged between nine and eleven years old guessed the outcome of 30 coin tosses. They were given 'rigged' individual feedback on their success at guessing. Three feedback patterns existed, all consisted of 15 losses and 15 wins. Overall evidence to support that children can experience an illusion of control was found. Those in the descending condition received two thirds of the positive feedback in the first half of the trials. While the ascending condition received two thirds of the negative feedback. A third condition existed whereupon random feedback was given. They found that children from the descending condition were more likely to attribute their success to skill, and those from the ascending group to chance. The descending group were more likely than the other groups to think they had done well at the task, and to predict a greater level of 'future' success at the task. Gender differences did not reach a level of significance. However, girls were more likely to give lower estimates of their correct responses than boys, but gave higher predictions for future trials than boys.

### **6.4 The Role of Social Learning**

Social learning models view gambling as a learned behaviour. Continuing involvement in gambling is thought to be influenced by the social context or environment of the gambler (opportunities to gamble) (Ferris, Wynne, & Single, 1999). Brown (1988) proposed that opportunities to gamble are influenced by an individual's occupation and leisure pursuits, social group, availability of gambling venues (geographically), and general views regarding the use of money.

Within a social learning model, gambling behaviour is conceptualised as lying along a continuum, from problem free to problematic gambling. Problem gambling is viewed as a transitory state rather than static or permanent. In part, this is derived from the understanding that gambling is a learnt behaviour, and as such can be unlearnt (a view common with behavioural learning theories).

Investigations regarding the applicability of social learning theory to adolescent gambling behaviour have stemmed from the consistent finding that adolescent gambling patterns often reflect those of parents and/or peers. Some studies have cited social learning theory as a likely explanation for young peoples gambling behaviour (Browne & Brown, 1994; Gupta & Derevensky, 1997; Kearney & Drabman, 1992). However, there is a paucity of empirical evidence, with studies being limited to preschool (Kearney & Drabman, 1992) or pre-adolescent children (Frank & Smith, 1989).

For example, the effect of peer modelling on the risk-taking (gambling) behaviour of 4-5 year olds was examined (Kearney & Drabman, 1992). Researchers exposed 10 children (5 boy, 5 girls) to a peer model who had ostensibly won a large prize. A control group of 11 children (6 boys, 5 girls) were exposed to a peer model who had won nothing. Subsequent to exposure to their respective peer models, the children took part in a risk-taking game. Overall, children in the experimental group initiated substantially more risks to win the large prize in a high-risk situation than the controls. This study provides evidence that antecedent modelling behaviour and social learning can influence the gambling behaviour of young children. Further research is required, in particular the effect of modelling gambling has not been empirically documented in adolescent populations.

## **6.5 Summary of Quasi-Experimental Research**

It must be noted that the area of quasi-experimental research addressing youth gambling is at an extremely early stage of development. To date, research has indicated that as for adults, the role of arousal is important in adolescent gambling. It appears that all adolescents (regardless of gambling category) become physically aroused while gambling. However, basal levels of arousal appear to have some discriminatory power between problem and non-problem gamblers. Regular gamblers have also been found to experience shorter 'highs' in relation to gambling – their arousal levels return to normal at a much quicker rate than non-regular gamblers.

Research on pre-adolescent populations has demonstrated both the phenomenon of illusion of control and social learning in gambling-like situations. The implications for adolescent populations are of concern and warrant further investigation. Particularly given the perceptions of 'gambling skill' and wide exposure to socially acceptable gambling that young people experience.

## 7. ADOLESCENT GAMBLING RESEARCH IN NEW ZEALAND

To date, there has been very little investigation (Clarke & Rossen, 2000; Sullivan, 2001) of adolescent gambling in New Zealand: nation-wide prevalence surveys have only assessed samples aged 18 and above (Abbott & Volberg, 1996, 2000). There are presently two studies which have investigated adolescent gambling in New Zealand, both are descriptive and exploratory in nature:

1. A school based survey of Auckland high school students (work in progress) (Sullivan, 2001); and,
2. A retrospective survey of first year psychology students (Clarke & Rossen, 2000).

Sullivan (2001) surveyed students from high schools within the Auckland area. Despite most of the 425 students being unaware of their increased risk of developing gambling problems, between 12.7% and 23.8% (depending upon the utilised screen) met the criteria for problem gambling. Students who were from ethnic minorities and/or low SES groups were disproportionately more likely to fulfil the problem gambling criteria. Most forms of gambling were reasonably popular, including EGM's<sup>6</sup>. With the exception of 16 year olds, more than 10% of students in all age groups had gambled on EGM's within the previous 12 months.

Furthermore, a relationship was found between frequency of videogame playing and i) a perceived ability to 'beat' EGM's, ii) a perceived likelihood of youth to develop gambling problems. In essence, those students who were 'heavy and frequent' videogame players were more likely to think that EGM's could be 'beaten' and that youth were less at risk of developing gambling problems than adults. In the present study, no correlation was found between frequency of videogame playing and gambling problems.

Despite its unrepresentative sample, similar rates of involvement were found in a retrospective study of first year university students. The entire sample had gambled for money at least once, 18% did so regularly, and 17.8% met the criteria for problem gambling (Clarke & Rossen, 2000). Problem gamblers were significantly more likely than non-problem gamblers to participate in continuous modes of gambling, such as EGM's. Despite an age limit of 20 years, 24% of the sample were underage when they gambled in a New Zealand casino.

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<sup>6</sup> In New Zealand there are currently no age restrictions on EGM's. They are generally available in venues that are licensed for alcohol, but can also be accessed in areas such as supervised bars, sports clubs, and bowling alleys.

However, it should be noted that this exploratory study was limited by the small numbers of problem gamblers available for analysis, its retrospective nature, and the non-representative sample (69% of the sample were female; mostly of European descent; University students).

## **7.1 Summary of Adolescent Gambling Research in New Zealand**

There are indications that problem gambling is prevalent amongst adolescent populations in New Zealand: 12.7% - 23.8% (Sullivan, 2001); and, 17.8% (Clarke & Rossen, 2000). These are some of the highest rates to be internationally documented.

As with adult populations, students from ethnic minorities and/or low SES groups are disproportionately more likely to fulfil the criteria for problem gambling in New Zealand. EGM's have been shown to be a reasonably popular form of gambling. Furthermore, involvement in continuous forms of gambling (such as EGM's) has been linked to problem gambling (Clarke & Rossen, 2000). Relationships were found between frequency of videogame playing and i) a perceived ability to 'beat' EGM's, ii) a perceived likelihood of youth to develop gambling problems.

The descriptive data gained from these exploratory studies highlight the need for more research in New Zealand. There is a need for non-descriptive research, while also investigating and monitoring the involvement of youth in gambling activities.

## 8. CONCLUSIONS

From this review it is apparent that gambling is an activity which most youth take part in. The majority manage to do so without experiencing significant problems, however a significant minority do experience serious difficulties. As such, gambling is a genuine mental health issue. Furthermore, families and friends of such youth are negatively affected. Despite high involvement in a potentially harmful activity, little is known about the place of gambling in youth lives or culture. It can be predicted that society will be increasingly affected as young people are increasingly exposed to an environment where government and society support and accept gambling. In particular, little is known about possible effects of new gambling technologies (e.g. TV and internet gambling) for adolescent populations.

To date, a paradigm of dysfunction has been hegemonic, with the majority of research addressing epidemiological issues. As such, risk factors have been identified, but little is known about the underlying mechanisms. Factors which fulfil a protective or defensive role, enabling most youth to gamble in a safe and sustainable manner, have been neglected and are not well understood. Overall, most information is descriptive, and doesn't explain or explore underlying mechanisms. There is little understanding of the socialisation processes associated with adolescent gambling. The role which gambling plays in adolescent culture has been only minimally explored.

The effects of regulatory policy and the subsequent proliferation of gambling are not understood. There is a need to examine the relationships between Governmental gambling policy and availability of gambling, to adolescent involvement in gambling. Cross-jurisdictional comparisons would be particularly informative.

It needs to be noted that the majority of gambling research has conducted insufficient gender analysis. Particularly with problem gamblers as numbers of female problem gamblers appear to be more restricted. Furthermore, the motivating factors and underlying mechanisms in operation for males and females are likely to be significantly different. Similarly, the role of ethnicity in gambling behaviour has been largely ignored, despite findings that minority ethnic groups experience disproportionate rates of gambling problems. Both these areas require further investigation. Due to issues such as high false positives, the validity of screening tools such as the SOGS-RA requires further attention. Particularly for groups such as females and ethnic minorities.

## 9. KEY RECOMMENDATIONS AND IMPLICATIONS FOR LATER RESEARCH

To date, there has been limited investigation (Clarke & Rossen, 2000; Sullivan, 2001) of adolescent gambling in New Zealand: nationwide prevalence surveys have only assessed samples aged 18 and above (Abbott & Volberg, 1996, 2000). There is an urgent need for a comprehensive strategy of gambling research (including adolescent gambling) in New Zealand. In accordance with international findings and the vision<sup>7</sup> and recommendations made by Brown and Raeburn (2001) for a responsible gambling strategy in New Zealand, it is recommended that:

1. Government commissions a quantitative investigation to validly measure the involvement of New Zealand youth in gambling, associated factors, and rates of subsequent gambling-related problems. It is critical that this research incorporates a longitudinal research programme, which will provide for long term monitoring of adolescent gambling behaviour.
2. A wider range of research methodology and paradigms be fostered, in particular, the encouragement of non-dysfunctional models which incorporate preventative and harm minimisation principles. The utilisation of qualitative methodologies such as theme analysis, discourse analysis, and grounded theory would greatly advance our understanding of the issues pertinent to adolescent gambling (for example, the role of gambling in youth culture).
3. The role of gender in adolescent gambling involvement be further investigated. In particular, the meanings, motivating factors, and interpretations of gambling for males and females. Those mechanisms which influence higher rates of male involvement, and subsequent problems need to be explored. The validity of diagnostic tools also needs to be examined for female populations.
4. As with gender, the role of ethnicity in adolescent gambling involvement be further investigated. In particular, the meanings, motivating factors, and interpretations of gambling for adolescents from ethnic minorities. Those mechanisms which influence higher rates of involvement, and subsequent problems need to be explored, as does the validity of diagnostic tools for Maori, Pacific Island, and Asian youth.

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<sup>7</sup> "Our long-term vision is of a society that is healthy, well adjusted, informed, and chooses to gamble responsibly in a way that is sustainable for the community. Gambling blends into the social and cultural context of society at levels that are safe for the individual, their family and the community" (Brown & Raeburn, 2001, p.36)

5. The effects on adolescent populations of regulatory policy and the subsequent proliferation of gambling be investigated. There is a need to examine the relationships between Governmental gambling policy and availability of gambling, to adolescent involvement in gambling. This could be best achieved via cross-jurisdictional comparisons or comparative studies.
  
6. Research is commissioned to investigate the design and implementation of appropriate intervention strategies specifically for adolescent populations. Anticipated strategies include public and school-based educational programmes, community development projects, health promotion, primary health and service treatment interventions. This should include the training of school personnel in recognising gambling-related problems and how to manage and refer students to appropriate agencies.

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## 11. APPENDIX A

### ***South Oaks Gambling Screen – Revised for Adolescents (SOGS-RA)***

1. Indicate how often, if at all, you have done these activities in your lifetime and in the past 12 months<sup>8</sup>.
  - a) Played cards for money
  - b) Flipped coins for money
  - c) Bet on games of personal skill like pool, golf or bowling
  - d) Bet on sports teams
  - e) Bet on horse or dog races
  - f) Played bingo for money
  - g) Played dice games (such as craps or over/under)
  - h) Played slot machines, poker machines or other gambling machines
  - i) Played scratch tabs
  - j) Played the lottery by picking numbers
  - k) Played pull tabs
  
2. What is the largest amount of money you have ever gambled in the past 12 months?
  - a) Never have gambled
  - b) \$1 or less
  - c) more than \$1 up to \$10
  - d) more than \$10 up to \$49
  - e) \$50 to \$99
  - f) \$100 to \$199
  - g) \$200 or more
  
3. Do either of your parents play any games of chance for money?
  - a) Yes
  - b) No
  - c) I don't knowIf yes, which one?
  - a) Mother only
  - b) Father only
  - c) Both mother and father
  
4. Do you think that either of your parents gamble too much?
  - a) Yes

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<sup>8</sup> For the lifetime item, response categories are 'never' and 'at least once'. Each activity with a positive response to the lifetime item, is followed up with a frequency scale for the previous 12 months: 'never', 'less than monthly', 'monthly' and 'daily'.

- b) No
  - c) I don't know
- If yes, which one?
- a) Mother only
  - b) Father only
  - c) Both mother and father
5. In the past 12 months how often have you gone back another day to win back the money you lost?
- a) Every time
  - b) Most of the time
  - c) Some of the time
  - d) Never
6. In the past 12 months when you were betting, have you ever told others you were winning money when you really weren't winning?
- a) Yes
  - b) No
7. Has your betting money, in the past 12 months, ever caused any problems for you such as arguments with family and friends, or problems at school or work?
- a) Yes
  - b) No
8. In the past 12 months, have you ever gambled more than you planned to?
- a) Yes
  - b) No
9. In the past 12 months, has anyone criticised your betting or told you that you had a gambling problem, regardless of whether you thought it was true or not?
- a) Yes
  - b) No
10. In the past 12 months, have you ever felt bad about the amount you bet, or about what happens when you bet money?
- a) Yes
  - b) No
11. Have you ever felt, in the past 12 months, that you would like to stop betting money but didn't think you could?
- a) Yes
  - b) No
12. In the past 12 months, have you ever hidden from family or friends any betting slips, IOU's, lottery tickets, money that you've won or other signs of gambling?

- a) Yes
  - b) No
13. In the past 12 months, have you had money arguments with family or friends that centered on gambling?
- a) Yes
  - b) No
14. In the past 12 months, have you ever borrowed money to bet and not paid it back?
- a) Yes
  - b) No
15. In the past 12 months, have you ever skipped or been absent from school or work due to betting activities?
- a) Yes
  - b) No
16. Have you borrowed money or stolen something in order to bet or to cover gambling debts in the past 12 months?
- a) Yes
  - b) No
- If yes, mark from whom or where you got the money or goods (mark all that apply)
- a) Parents
  - b) Brother(s) or sister(s)
  - c) Other relatives
  - d) Friends
  - e) Loan sharks
  - f) You sold personal or family property
  - g) You passed a bad cheque on your cheque account
  - h) You stole from someone

Scoring System:

Questions 1, 2, 3, 4 and 16a-16h are not counted in the score. Responses 'a' and 'b' on question five count as a 'yes' response. All 'yes' responses count as one point. A final score of one to four points indicates 'some gambling problems', a score of five or more suggests 'probable pathological gambling'.

## 12. APPENDIX B

### *Diagnostic Statistical Manual – IV – Multiple Response – Adapted for Juveniles (DSM-IV-MR-J)*

1. In the past year how often have you found yourself thinking about gambling or planning to gamble?  
never  once or twice  sometimes  often
2. During the course of the past year have you needed to gamble with more and more money to get the amount of excitement you want?  
yes  no
3. In the past year have you ever spent *much* more than you planned to on gambling?  
never  once or twice  sometimes  often
4. In the past year have you felt bad or fed up when trying to cut down or stop gambling?  
never  once or twice  sometimes  often  never tried to cut down
5. In the past year how often have you gambled to help you to escape from problems or when you are feeling bad?  
never  once or twice  sometimes  often
6. In the past year, after losing money gambling, have you returned another day to try and win back money you lost?  
never  less than half the time  more than half the time  every time
7. In the past year has your gambling ever led to: lies to your family? (multi-question format – can include friends etc)  
never  once or twice  sometimes  often
8. In the past year have you ever taken money from the following *without permission* to spend on gambling:
  - a) School dinner money or fare money?  
never  once or twice  sometimes  often
  - b) Money from your family?  
never  once or twice  sometimes  often
  - c) Money from outside the family?  
never  once or twice  sometimes  often
9. In the past year has your gambling ever led to:
  - a) Arguments with family/friends or others?  
never  once or twice  sometimes  often
  - b) Missing school?  
never  once or twice  sometimes  often

Scoring System:

'Yes' answers are represented by the following responses:

- Questions 1 & 3: 'often'
- Question 2: 'yes'
- Questions 4 & 5: 'sometimes' or 'often'
- Question 6: 'more than half the time' or 'every time'
- Questions 7, 8 & 9: 'once or twice', 'sometimes', or 'often'

A respondent with four 'Yes' answers can be classified as a 'problem gambler'.

## 13. APPENDIX C

### ***Massachusetts Gambling Screen (MAGS)***

#### *Massachusetts Gambling Screen (MAGS) Subscale Items*

1. Have you ever experienced social, psychological or financial pressure to start gambling or increase how much you gamble?
2. How much do you usually gamble compared with most other people?
3. Do you feel that the amount of frequency of your gambling is “normal”?
4. Do friends or relatives think of you as a “normal” gambler?
5. Do you ever feel pressure to gamble when you do not gamble?
6. Do you ever feel guilty about your gambling?
7. Does any member of your family ever worry or complain about your gambling?
8. Have you ever thought that you should reduce or stop gambling?
9. Are you always able to stop gambling when you want?
10. Has your gambling ever created problems between you and any member of your family or friends?
11. Have you ever gotten into trouble at work or school because of your gambling?
12. Have you ever neglected your obligations (e.g., family, work, or school) for two or more days in a row because you were gambling?
13. Have you ever gone to anyone for help about your gambling?
14. Have you ever been arrested for gambling?

#### Scoring System:

All items require dichotomous ('yes' or 'no') responses, except question 2 which has 3 response options: less, about the same, or more. A respondent with five 'Yes' answers can be classified as a 'pathological gambler'.

#### *DSM-IV Subscale Items*

1. Have you been preoccupied with thinking of ways to get money for gambling or reliving past gambling experiences during the past 12 months?
2. During the past 12 months, have you gambled increasingly larger amounts of money to experience the desired level of gambling excitement?
3. Did you find during the past 12 months that the same amount of gambling had less effect on you than before?
4. Has stopping gambling or cutting down how much you gambled made you feel restless or irritable during the past 12 months?
5. Have you gambled during the past 12 months to make the uncomfortable feelings that come from stopping gambling (e.g. restlessness or irritability) go away or keep from having them?
6. Have you gambled as a way of escaping from problems or relieving feelings of helplessness, guilt, anxiety, or depression during the past 12 months?

7. After losing money gambling, have you returned to gambling on another day to win back your lost money?
8. Have you lied to family members or others to conceal the extent to which you have been gambling during the past 12 months?
9. Have you committed any illegal acts (e.g. forgery, fraud, theft, embezzlement, etc.) during the past 12 months to finance your gambling?
10. During the past 12 months, have you jeopardized or lost a significant relationship, job, educational or career opportunity because of your gambling?
11. Have you relied on others (e.g. family, friends or work) to provide you with money to resolve a desperate financial situation caused by your gambling?
12. During the past 12 months, have you made efforts unsuccessfully to limit, reduce or stop gambling?

Scoring System:

All items require dichotomous ('yes' or 'no') responses. Each positive response receives one point, except for items 2, 3, 4 and 5, each of which receive .5 for a positive response. A respondent with a total score of five can be classified as a 'pathological gambler'.

