

## Chapter 7

---

# The Measurement of Youth Gambling Problems

## *Current Instruments, Methodological Issues, and Future Directions*

Jeffrey L. Derevensky, Ph.D. and  
Rina Gupta Ph.D.

Large-scale prevalence studies conducted in the United States, Canada, England, Europe, New Zealand and Australia all confirm the high prevalence rates of gambling participation among youth. Shaffer, Hall and Vander-Bilt (1997) in their meta-analysis reported that adolescent lifetime gambling rates ranged from 39 to 92%, the median being 85%. When examining pathological gambling among adolescents, Shaffer and Hall (1996) concluded that between 4.4 and 7.4% of adolescents exhibit seriously adverse patterns of compulsive or pathological gambling, with another 9.9 to 14.2% remaining at-risk for either developing or returning to a serious gambling problem. Based upon the current conceptualization, understanding and measurement of pathological gambling, and acknowledging difficulty in comparing data sets, the National Research Council (1999) reported that the level of adolescent pathological gambling ranged between 1.2 and 11.2%, with a median of 5.0%. Once again, acknowledging difficulties in interpretation of the data, the National Research Council concluded that the proportion of pathological gambling among adolescents in the United States could be more than three times that of adults.

Our basic conceptualization about the nature of pathological gambling has been continuously evolving (Volberg, 1994) with differences between diagnostic criteria established in the DSM-III (American Psychiatric Association, 1980), DSM-III-R (American Psychiatric Association, 1987), and DSM-IV (American Psychiatric Association, 1994) clearly denoting changes in our understanding and conceptualization of adult pathological gambling. Debates about the appropriate inclusion criteria and the concerns for validity and reliability of screens as measures of pathological gambling have been reiterated amongst researchers and clinicians since the establishment of the original criteria. Having established 10 diagnostic criteria for adult pathological gambling, each having an equal weighting, the DSM-IV (APA, 1994) became the gold standard for clinically assessing adult pathological gambling. Individuals exhibiting five or more of the criteria were thought to exhibit persistent and maladaptive gambling behaviors.

As the interest in pathological gambling grew in the 1980s and 1990s the number of instruments for assessing pathological gambling amongst adults also grew. While the original DSM-III classification and subsequent modifications were thought to be truly representative of maladaptive

**Table 1. DSM-IV Criteria for Pathological Gambling (APA, 1994)**

Behavior	Description
Preoccupation	Is preoccupied with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)
Tolerance	Needs to gamble with increasing amounts of money in order to achieve the desired excitement
Withdrawal	Is restless or irritable when attempting to cut down or stop gambling
Escape	Gambles as a way of escaping from problems or relieving dysphoric mood (e.g., feelings of helplessness, guilt, anxiety or depression)
Chasing	After losing money gambling, often returns another day in order to get even ("chasing one's losses")
Lying	Lies to family members, therapists or others to conceal the extent of involvement with gambling
Loss of control	Has made repeated unsuccessful efforts to control, cut back or stop gambling
Illegal acts	Has committed illegal acts (e.g., forgery, fraud, theft or embezzlement) in order to finance gambling
Risked significant relationship	Has jeopardized or lost a significant relationship, job or educational or career opportunity because of gambling
Bailout	Has relied on others to provide money to relieve a desperate financial situation caused by gambling

gambling behavior, it did not lend itself well to screening surveys. As a result, a number of screening surveys were developed as a quick tool to assess severity of gambling problems. Shaffer, LaBrie, LaPlante, Nelson and Stanton (2004) have identified over 30 instruments for identifying disordered problem gambling with more in development; the vast majority of the instruments being aimed at adults.

Survey instruments, in general, have received serious criticism (see Ferris, Wynne & Single, 1999; Volberg, 1994; Volberg & Steadman, 1992). Nevertheless, the commonality within existing instruments and measures has focused upon behavioral indicators of problem playing, the emotional and psychological correlates associated with pathological gambling, the adverse consequences of excessive playing, and the economic and sociological aspects directly associated with excessive gambling (see Ferris et al., 1999 and Volberg, 2001 for a review of adult instruments).

The issue of nomenclature concerning disordered gambling (i.e., compulsive, pathological, problem, disordered) and instrumentation has recently received considerable attention. Independent of perspective, there remains considerable concern and interest amongst researchers, clinicians and policy makers toward developing some uniformity in the nomenclature, definition of disordered/pathological gambling, and the development of a new *gold standard*; a standardized instrument with acceptable reliability and validity that would be accepted as the instrument to be used in psychiatric, psychological, and sociological gambling research and treatment with adolescents. An important assumption predicating this discussion is that an acceptable *screening inventory* may not be appropriate as a *diagnostic instrument* and/or may require different scoring criteria. While these instruments may share similar items, their purpose is significantly different.

### **Instruments Used To Assess Youth Problem Gambling**

Despite progress in gambling research and treatment approaches in the last decade, new screening instruments for adolescent problem gambling are still lacking (It should be noted that the Canadian Centre for Substance Abuse and the Ontario Problem Gambling Research Centre are currently working on developing a new adolescent instrument). Due to the growing awareness of gambling problems amongst adolescents, a number of instruments have been adapted for this age group. More specifically, the SOGS-RA (Winters, Stinchfield & Fulkerson, 1993), DSM-IV-J (Fisher, 1992) and its revision the DSM-IV-MR-J (Fisher, 2000), and the MAGS (Shaffer, LaBrie, Scanlan & Cummings, 1994) have been used in a large number

of adolescent prevalence studies. Similar to adult instruments (e.g., SOGS, DSM-IV, NODS, GA-20, CPGI), there exist common constructs underlying all the instruments. The notion of deception (lying), stealing money to support gambling, preoccupation, and chasing losses are common amongst these instruments. Similarly, while the number of items and constructs differ, each criterion item has equal weighting, and a cut score is provided identifying pathological gambling for each respective instrument.

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

A revised version of the South Oaks Gambling Screen (SOGS) (Lesieur & Blume, 1987), the SOGS-RA (Winters et al., 1993) was developed as a screening instrument to more accurately assess severity of adolescent gambling problems. This 16-item scale (four items are omitted for scoring) assesses past year gambling behavior and gambling related problems while maintaining a single dimension of problem gambling. Items from the original SOGS were reworded to make it more age appropriate and the scoring scheme was adjusted. The screen emphasizes the frequency of gambling behavior and the behavioral indices often accompanied by problem gambling in contrast to emphasizing money expended. Winters et al. (1993) report satisfactory reliability (.80) and validity measures (adequate construct validity as well as discriminating between regular and non-regular gamblers). However, Ferris et al. (1999) has noted that the instrument has not been adequately tested with adolescent females given the low prevalence rate of female problem gamblers in the original sample (a problem common to many adolescent instruments).

A number of studies based on the SOGS and SOGS-RA have been carried out in high schools in Alberta, Connecticut, Louisiana, New Jersey, New York and Quebec (Ladouceur & Mireault, 1988; Lesieur & Klein, 1987; Steinberg, 1997; Volberg, 1998; Westphal, Rush & Stevens, 1997; Wynne, Smith & Jacobs, 1996). More recently, Ladouceur, Bouchard, Rhéaume, Jacques, Ferland, Leblond, and Walker (2000) questioned the validity of the SOGS-RA as they contend that the high rates of prevalence by youth are a result of individuals misunderstanding the intent of the items.

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

A revised version of the DSM-IV criteria, and the DSM-IV-J (Fisher, 1992), the DSM-IV-MR-J (Fisher, 2000) consists of 12 items. The DSM-IV-J and the

**Table 2. South Oaks Gambling Screen-Revised for Adolescents**

---

SOGS-RA Items

---

What is the largest amount of money you have ever gambled in the past 12 months?

\$50–\$99  
\$100–\$199  
\$200 and more

Do you think that either of your parents gamble too much?

mother  
father  
both mother and father

In the past 12 months, how often have you gone back another day to win back the money you lost? (Every time)

In the past 12 months when you were betting, have you ever told others you were winning money when you really weren't winning?

Has your betting, in the past 12 months, ever caused any problems for you such as arguments with family and friends, or problems at school or work?

In the past 12 months, have you ever gambled more than you had planned to?

In the past 12 months, has anyone criticized your betting or told you that you had a gambling problem, regardless of whether you thought it was true or not?

In the past 12 months, have you ever felt bad about the amount you bet, or about what happens when you bet money?

Have you ever felt, in the past 12 months, that you would like to stop betting money but didn't think you could?

In the past 12 months, have you ever hidden from your family or friends any betting slips, I.O.U.'s, lottery tickets, money that you've won, or other signs of gambling?

In the past 12 months, have you had money arguments with family or friends that centered on gambling?

In the past 12 months, have you borrowed money to bet and not paid it back?

In the past 12 months, have you ever skipped or been absent from school or work due to betting activities?

Have you ever borrowed or stolen money in order to bet or cover gambling debts in the past 12 months?

---

revised DSM-IV-MR-J was modeled very closely on the adult version DSM-IV criteria for pathological gambling), with several significant adaptations. One major difference pertains to where individuals acquire their money. For example, it refers to supporting their gambling from money allocated for "school lunch" and "bus transportation." With respect to committing crimes, it specifies theft from home, theft from outside the family, and shoplifting rather than the adult examples of forgery, fraud, and embezzlement. The DSM-IV-J comprised nine dimensions of pathological gambling: progression

and preoccupation, tolerance, withdrawal and loss of control, escape, chasing, lies and deception, illegal acts, and family and academic disruptions. The revised scale, DSM-IV-MR-J, questions the appropriateness of using yes/no responses in non-clinical situations while retaining the original 9 dimensions (12 items). Rather than merely having a yes/no format, the revised version incorporates a qualitative range on several questions (e.g., never, once or twice, sometimes, often; or never, less than half the time, more than half the time, every time), with only the more frequent responses being scored as an endorsement. Identification of four out of nine dimensions is suggestive of probable pathological gambling. Internal consistency reliability was acceptable (Cronbach's  $\alpha = .075$ ), with one principal factor being found.

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

The Massachusetts Adolescent Gambling Screen (MAGS) (Shaffer et al., 1994) assesses the prevalence of problem and pathological gambling amongst a general population of adolescents. It is described as a brief clinical screening instrument that yields indices of pathological and non-pathological gambling. Incorporated within the MAGS are the DSM-IV criteria for pathological gambling in a set of survey questions. The MAGS in conjunction with the DSM-IV criteria is a 26-item scale, including two subscales, designed to provide clinicians and researchers with a method of identifying individuals with gambling difficulties. The scale includes a DSM-IV subscale which yielded a Chronbach alpha of .87 while the MAGS subscale yielded an alpha of .83. Validity data and discriminant analyses were found to be effective predictors of pathological gambling. The scale assesses the biological, psychological, and social problems found amongst youth with excessive gambling problems. Once identified as a probable pathological gambler on the MAGS, Shaffer et al. suggest further diagnostic in-treatment clinical assessments to provide more detailed information about specific gambling behaviors.

### ***Gamblers Anonymous Twenty Questions (GA-20)***

A widely utilized screen for pathological gambling with adults, the Gamblers Anonymous Twenty Questions (GA-20) has also been used with adolescents and young adults. This instrument was based upon the difficulties experienced by Gamblers Anonymous members. It was designed to be a self-administered tool for problem gamblers to assess the severity of their gambling problems and to decide whether help would be required. The twenty items identify particular situations and behaviors that are typical of pathological gamblers. Questions address the financial correlates of continued gambling, the personal consequences of excessive gambling (e.g.,

**Table 3. Diagnostic Statistical Manual-IV-MR-J**

---

DSM-IV-MR-J items<sup>1</sup>

---

- Think about gambling all the time
  - Spend more and more money on gambling
  - Become tense, restless, when trying to cut down
  - Gamble as a way of escaping from problems
  - Chase losses
  - Lie to family and friends about gambling behavior
  - Use other money (e.g. lunch money) for gambling
  - Taken money from family to gamble without telling them
  - Stolen money from outside family to gamble
  - Fallen out with family because of gambling behavior
  - Skip school more than 5 times to gamble in past year
  - Sought help for serious money worry caused by gambling
- 

<sup>1</sup> Scoring of bolded responses on the DSM-IV-MR-J: Item 1—never/ once or twice/sometimes/often; Items 2 & 12—yes/ no; Items 3 & 4—never/once or twice/sometimes/often; Item 5—never/less than half the time/more than half the time/every time; Items 6–11—never/once or twice/sometimes/often.

**Table 4. Massachusetts Gambling Screen (MAGS)**

---

Subscale Items<sup>1</sup>

---

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

<sup>1</sup> All items require dichotomous answers (i.e., yes or no) except question two which has a 3 point response scale: less, about the same or more.

**Table 5. Gamblers Anonymous Twenty Questions (GA-20)**

## GA-20 Items

---

Do you ever gamble longer than you planned?
After a win, do you have a strong urge to return and win more?
After losing do you feel you must return as soon as possible and win back your losses?
Do you ever feel remorse after gambling?
Do you often gamble until your last dollar is gone?
Do you have an urge to celebrate good fortune by a few hours of gambling?
Do you ever borrow to finance your gambling?
Do you ever gamble to escape worry or trouble?
Do arguments, disappointments, or frustrations create within you an urge to gamble?
Are you reluctant to use "gambling money" for normal expenditures?
Does gambling affect your reputation?
Do you lose time from school or work due to gambling?
Does gambling cause a decrease in your ambition (motivation) or efficiency?
Does gambling cause you to have difficulty sleeping?
Do you ever consider self-destruction as a result of your gambling?
Does gambling make your home life unhappy?
Do you ever commit or consider committing illegal acts to finance your gambling?
Does gambling make you careless about the welfare of your family?
Do you ever sell anything to finance gambling?
Do you ever gamble to get money with which to pay debts or to otherwise solve financial problems?

---

difficulty sleeping, remorse for excessive gambling, decreased ambition), and social correlates associated with excessive behavior (difficult home life, arguments associated with gambling). Individuals endorsing seven of the twenty items are considered to have a pathological gambling problem (Custer & Custer, 1978). While developed by compulsive gamblers, a number of items are significantly different from the DSM-IV diagnostic criteria.

### **Perspectives on the Prevalence Data**

While the current screening instruments have been widely used, the discrepant variability of reported prevalence rates of youth problem gambling within the scientific literature is troubling (see Derevensky, Gupta & Winters, 2003 for a comprehensive discussion). The reported variability amongst studies of adolescents is in general considerably greater compared to the



variability reported for adult prevalence rates of problem gambling (see the findings of the National Research Council, 1999). As well, questions regarding the comparability of findings using different instruments have been raised and the validity of reported prevalence rates has been seriously questioned (Ladouceur, 2001; Ladouceur et al., 2000), with Ladouceur and his colleagues suggesting that the reported rates of serious gambling problems among adolescents being over-estimated and inflated.

Derevensky et al. (2003) have argued that differences in prevalence rates are likely affected by a number of situational and measurement variables. Such variables might include sampling procedures (e.g., telephone surveys vs. school-based screens, community vs. convenience samples), use of different instruments and measures, varying cut-point scores associated with different instruments, the use of abridged and/or modified instruments, the inconsistency of availability and accessibility of gambling venues, gender distributions within each of the studies, the age of the population being assessed, cultural differences, as well as the distinct possibility that adolescent reports may be more variable than their adult counterparts (for a more thorough explanation see the reviews by Derevensky & Gupta, 2000a, 2000b; Stinchfield, 2002; Volberg, 2001; and Winters, 2001).

Compounding the issue of variability amongst adolescent studies is the wide variety of terms used to identify adolescents who have serious gambling and gambling-related problems (e.g., pathological gamblers, probable pathological gamblers, compulsive gamblers, problem gamblers, Level 3, disordered gamblers). This has prompted a number of researchers to call for standardization of nomenclature, terminology and definitions (Cunningham-Williams, 2000; Shaffer & Hall, 1996; Shaffer et al., 2004). Volberg (2001) has argued that while some standardization may be desirable, there is considerable value in our continued discussions and debate over the definition of problem and pathological gambling. Such discussions will ultimately help stimulate the development of new criteria and refinements of instruments. Volberg (2001) has also highlighted the need for research to examine the clustering of symptoms of problem and pathological gambling within particular timeframes. Still further, others have argued that pathological gamblers are not a homogenous group (see Nower & Blaszczynski, in this volume) which might necessitate the development of different criteria and/or assessment tools.

### **Estimation of Adolescence Prevalence Rates**

The assumption that the prevalence rates of adolescent gambling problems are not accurate has serious social policy and public health policy

implications. Those questioning the validity of the reported rates generally suggest that the current reported rates are over-estimated. As such, a brief examination of arguments made to support their contention is important. Derevensky et al. (2003) identified five arguments proposed for the inflated rate perspective: (a) given the reported prevalence rates of gambling problems among adolescents with gambling problems, more adolescents would present themselves for treatment, (b) youth misunderstand and fail to adequately comprehend many of the questions on problem gambling screens and have a preset bias toward false-positive responses, (c) the discrepancy between prevalence rates of pathological gambling for adults and youth makes little sense given that adults have in general more financial resources and greater availability and easier accessibility of high-stakes gambling, (d) there are common scoring errors in certain instruments, in particular the DSM-IV-J, which have resulted in over-estimates, and (e) current screening instruments for youth lack sufficient construct validity. A brief discussion of each of these arguments follows (see Derevensky et al., 2003 for a more comprehensive discussion).

***I. The lack of adolescents seeking treatment is inconsistent with reported prevalence rates.***

The assumption underlying this argument is that more adolescents should be presenting themselves for treatment given the high rates of pathological gambling. While it is accurate that few clinicians see adolescents for problem gambling (Gupta & Derevensky, 2000), Derevensky et al. (2003) suggested that the process by which any individual seeks professional help is a complex one, and is affected by a large number of individual and health service delivery factors. The following plausible reasons have been proposed to account for the failure of youth with serious gambling problems to seek treatment: (a) adolescents generally have a perceived sense of invulnerability and invincibility, (b) in the absence of significant financial difficulties adolescents either believe they do not have a problem or firmly believe that they have the ability to stop gambling whenever they want, (c) few readily available and easily accessible treatment centers for adolescent gambling problems exist, (d) adolescents, in general, have a distrust for treatment providers and are more likely to seek peer support or from others whom they believe are more trustworthy, (e) there is a general failure by clinicians/treatment providers to ask pertinent questions about gambling behaviors when youth are seen for other addictive or mental health problems), (f) some, or many, youth may experience natural recovery, (g) youth committing delinquent acts, especially those stealing from home, are often not brought through the court system as they are frequently bailed

out of financial trouble by friends and family members, (h) the negative consequences associated with gambling problems may be attributed to other problems or normal adolescent risk-taking tendencies, (i) denial concerning having a gambling problem, and (j) adolescence is a developmental period marked by high-risk taking behaviors with few seeking professional help for a wide range of problems (Derevensky et al., 2003; Griffiths, 2001; Gupta & Derevensky, 2000; Hardoon, Derevensky & Gupta, 2000; Hardoon, Derevensky, & Gupta, 2002; Hodgins, Makarachuk, el-Guebaly & Peden, in press; Jessor, 1998; Stinchfield, 1999).

Derevensky et al. (2003) further contend that this should not be misinterpreted that adolescent problem gambling is unique as an under-referred behavioral problem. Adolescents, as a group, similarly don't readily seek treatment for other behavioral problems, including alcohol and drug abuse and dependence despite their appreciable rates (Johnston, O'Malley & Bachman, 2001; SAMSHA, 2001). While many of the barriers to seeking treatment are also relevant to adults, adolescents generally have fewer external influences and pressures such as a spouse or peer requiring or strongly encouraging them to seek treatment; accessibility and travel to treatment programs can be more difficult for a young person; and adolescents generally have less self-insight resulting from their egocentricity and developmental immaturity. As such, Derevensky et al. (2003) contend that youth problem gamblers may have to overcome more service delivery barriers compared to adult problem gamblers.

## ***II. Youth misinterpret items on gambling screens and have a preset bias toward positive responses.***

Ladouceur et al. (2000) have suggested that youth fail to understand the meaning of several questions on a number of adolescent gambling screens and as such over-estimate the prevalence rates of pathological gambling. These assertions emanate from a series of empirical studies. In one study, Ladouceur and his colleagues administered the SOGS-RA to children age 9–12 (grades 4, 5, & 6). They reported that on average 27% of the SOGS-RA items were misunderstood by the children and that after clarification fewer children (a 73% reduction) met criteria for problem/ pathological gambling. While there is a consensus and evidence that children as young as age 9 are gambling for money (Derevensky, Gupta, & Della-Cioppa, 1996; Wynne, Smith & Jacobs, 1996), Derevensky et al. (2003) argued that from a clinical perspective it is difficult to conceive of elementary school age children as having pathological gambling problems given that the severity of the negative behaviors associated with gambling problems are atypical at this developmental level. In a second study, using older high school age adolescents,

Ladouceur and his colleagues noted a significant decrease on total SOGS-RA scores between the first ( $M = 2.14$ ;  $SD = 2.32$ ) and second administration ( $M = 1.51$ ;  $SD = 2.29$ ) (after clarification of items on the SOGS-RA). A careful examination of these findings reveals that this decrease actually represents a decrease of less than one item (.63). While this *may* have decreased the overall scores by 29% (no data is presented by to support this claim) and possibly reaches statistical significance, this finding is not clinically significant given the small decrease overall. Of significant concern is that this study was likely done using a French translation of the SOGS-RA. A third study using the SOGS with adults also reported confusion over the meaning of several items. However, in two separate studies by Thompson, Walker, Milton and Djukic (2001), using adults in Australia, they failed to replicate and substantiate Ladouceur et al.'s findings. It may well be that vocabulary and cultural variability issues are not easily addressed. Replications of such findings are essential.

It is important to note that measurement errors may also be under-estimating prevalence rates given most adolescent school-based studies use a convenience sample of students, failing to account for school dropouts. The acquiescence bias that Ladouceur et al. (2000) cite as a primary reason respondents initially over-endorsed certain items is questionable. Derevensky et al. (2003) contend that there is no psychological *a priori* reason suggesting why respondents are inclined to bias responses in a positive direction when faced with an ambiguous item, although Ladouceur and his colleagues contend that when uncertain of the exact meaning of a question gamblers may be more motivated to exaggerate their gambling exploits. However, it is equally plausible that adolescent pathological gamblers under-report their gambling involvement given the evidence that gamblers in treatment frequently deny the extent of their gambling problems (Dickerson & Hinchey, 1988).

### ***III. Since adult prevalence rates of pathological gambling are considerably lower, youth prevalence rates must be over-estimated.***

The assumption underlying this argument is that typical youth behaviors include participating in multiple risk-taking behaviors and with maturity most ultimately mature out of their adolescent risky behaviors (see Jessor, 1998 for a comprehensive examination of adolescent risky behaviors). As such, youth pathological gambling may be only a transient state and adolescents with gambling problems would experience natural recovery as they mature into adulthood (Derevensky et al., 2003). This is an interesting argument, however, there is a paucity of prospective studies to assess the validity of this argument. While Winters, Stinchfield, Botzet and Ander-

son (2002) have published a prospective study, their sample of problem gamblers is too small to draw meaningful conclusions. Gupta and Derevensky (2000) have argued that this may also be the result of a cohort effect such that this is the first generation of youth that will spend their entire lives in an environment in which gambling is widely accepted, endorsed, promoted, and often owned at least partially by the government (e.g., government controlled lottery). Derevensky et al. (2003) suggest that this extensive exposure may result in less “maturing-out” as can be expected with other adolescent high-risk behaviors. Inevitably, only longitudinal research and prospective studies with adequate sample sizes will determine whether rates of problem gambling change over time (Volberg, 2001).

#### ***IV. There are common scoring errors made on certain instruments.***

Such scoring errors have been reported by a number of researchers using the DSM-IV-J as there was some confusion as to whether or not the scoring criteria was originally 4 of the 12 items or 4 of the 9 domains. Fisher (personal communication) confirmed that her intention was that an adolescent was required to score 4/9 categories rather than 4/12 items on the DSM-IV-J in order to meet the criteria for probable pathological gambling. The establishment of 4/9 categories was recommended and developed to both parallel the DSM-IV criteria for pathological gambling and to distinguish between gambling-related delinquent behaviors and non-gambling-related delinquent antisocial behaviors. Derevensky et al. (2003) recalculated the prevalence rates of four data sets in which scoring on the DSM-IV-J were inaccurate, representing over 5,000 adolescents. These recalculations yielded no meaningful, appreciable or statistically significant differences in prevalence rates. Item analyses revealed that endorsed items focusing upon preoccupation, spending increasing amounts of money on gambling, becoming tense and/or restless when gambling, using gambling as a way of escaping problems, and chasing losses were the predominant responses of problem gamblers. The items that lead to more positive cases (probable pathological gamblers) are more behavioral indices and important indicators of problematic gambling related behaviors. Most of the probable pathological gamblers far exceeded the minimum criteria (four items) to be classified. Nevertheless, it is important for researchers to report the item endorsement rates independent of instrument used.

#### ***V. Our nomenclature is confusing and current instruments lack good reliability and construct validity.***

The issue of nomenclature, reliability estimates and construct validity of youth problem gambling measures are both significant and important and

should be carefully addressed in the development of new screening measures. While nomenclature issues are important and scientific standards are essential, the existing screening instruments represent our current state of knowledge and best estimates of adolescent pathological and problem gambling. Nevertheless, the reliability and validity evidence for the measures most often used by researchers in the field are consistent with acceptable psychometric standards, with one importune exception—the lack of adequate criterion validity (Derevensky et al., 2003). If the field had a *gold standard* criterion measure, then a criterion validity study would be warranted. However, in the absence of such a standard we must use a “best estimate” procedure. Within this procedure, diagnostic (or criterion) decisions are finalized on the basis of findings from either a well-established structured or semi-structured interview, or in the absence of such interviews, from a detailed clinical interview conducted by at least one diagnostic expert (Leckman, Scholomskas, Thompson, Belanger, & Weisman, 1982; Kosten & Rounsaville, 1992). Given that none of the youth problem gambling prevalence studies have used instruments that have achieved this standard of establishing criterion validity (Winters, 2001), and given the proclivity of screening tools to over-identify positive cases, the current body of prevalence data merits further investigation.

### **Are screening instruments comparable?**

As previously discussed, different instruments examine somewhat different constructs and criterion. The National Research Council (1999), when examining the issue of adolescent prevalence rates interpreted comparability data with extreme caution. Derevensky and Gupta (2000a) sought to address this issue in a study using a school-based sample of 980 youth, age 16–20 (mean age = 18.5 years, s.d. = 1.69), in a direct comparison of three measures (DSM-IV-J, SOGS-RA and the GA-20 Questions). Derevensky and Gupta (2000a) reported a fairly high degree of agreement between, with a relatively small classification error. Using the recommended criteria, the DSM-IV-J identified 3.4%, the SOGS-RA identified 5.3%, and the GA-20 identified 6.0% of this age group of youth as probable pathological gamblers. Their data suggested much greater agreement amongst the instruments for identifying male problem gamblers. The inter-correlation matrix for the three instruments revealed correlation coefficients in the moderate range (.61—.68), with correlations being much higher for males (range between .75—.84) than females (range between .31—.50), an expected finding given the lower variability of severity of female gambling problems. Derevensky and Gupta reported a high concordance rate for the identification of problem

gamblers amongst these instruments. Equally important was the relatively small false negative and false positive rates between instruments. Youth identified as probable pathological gamblers were found to have endorsed *all* items more frequently. While the MAGS was not included in their comparative study, results by Volberg (1998) examining adolescent prevalence rates of problem gambling in New York State found the MAGS to be a more conservative measure than the SOGS-RA and approximating what one would expect using the DSM-IV-J.

A closer examination of all the four most commonly used scales reveals considerable overlap. Yet, differences, which are fundamental to the perceived behavioral characteristics and negative outcomes associated with pathological gambling also exist. Shaffer et al. (2004) contend that most screening instruments use uni-dimensional scaling criteria (merely summing the total number of endorsed responses) to represent a multidimensional state, a totally inadequate procedure. They argue that the summing of endorsed items on screening instruments assumes that all dimensions exist on the same continuum and that each of these dimensions is equally predicative of gambling disorders. Our clinical and research experience would disagree with the supposition that all items are of equal weighting.

When examining item differences for adolescents reaching the criteria for pathological gambling, significant differences were found. For example, the two most endorsed questions on the DSM-IV-J among adolescent pathological gamblers refer to a preoccupation with gambling (constantly thinking about gambling) and lying about gambling activities (Derevensky & Gupta, 2000a). Only the DSM-IV-MR-J *directly* measures preoccupation and both the DSM-IV-MR-J and the SOGS-RA assess lying and deceptive behavior associated with gambling. All scales assess loss of control, illegal acts and/or borrowing money to gamble, familial problems resulting from excessive gambling, and occupational/school problems. While some scales are concerned with the level of financial loss, other scales do not view this as particularly important.

The development of items appears dependent upon one's perspective of the importance of specific negative behavioral consequences associated with excessive gambling. While the DSM-IV-MR-J, in contrast to the DSM-IV-J, now includes differential multiple response options on several questions (e.g., never, once or twice, sometimes, and often; or never, less than half the time, more than half the time, every time) with only certain responses being scored positively, only the MAGS has two questions with a similar multiple level response-format. On all scales, equal weighting is placed on all questions yet there is ample evidence that differential responses differentiate problem and pathological gamblers (see Derevensky & Gupta, 2000a). The most highly endorsed items on the DSM-IV-J by

**Table 6. Comparison Between Instruments**

Assessment Items	DSM-IV-J	SOGS-RA	MAGS	GA 20
Preoccupation	x			
Tolerance	x			
Withdrawal	x			
Escape	x			x
Chasing Losses	x	x		x
Lying/Secretiveness	x	x		
Loss of Control	x	x	x	x
Illegal Acts/Borrowing Money	x	x	x	x
Risked Significant Relationships	x		x	x
Bailout		x		x
Family Problems	x	x	x	x
Guilt /Remorse		x	x	
Occupational/School Problems	x	x	x	x
Pressure to Gamble			x	
Help-Seeking	x		x	
Frequency of Gambling Compared to Others			x	
Self-perception of Gambling			x	
Difficulty Sleeping				x
Celebratory Gambling				x
Reputation				x
Financial concerns				x
Concern and Criticism from Others		x	x	
Parents' Gambling		x		
Amount of Money Gambled		x		
Self-destructive Thoughts				x
Dissociative Reaction				x

pathological gamblers related to preoccupation (90.9%), chasing losses (84.8%), lying to family members and friends (69.7%), withdrawal (becoming tense and irritable when trying to reduce gambling) (60.6%), using other money (e.g., school lunch money) (60.6%), tolerance (wagering increasing amounts of money) (57.6%), escape (51.5%), skipping school (27.3%), stealing from family (24.2%), sought help for money issues (24.2%), risked job, education relationships (21.2%), and stolen money from outside the home (12.1%); all of which are related to their gambling behavior.



### **Our Current Conceptualization of Pathological Gambling**

Pathological gambling is currently conceptualized as a preoccupation with gambling, a lack of adequate control over one's behavior, and an inability to stop playing in spite of one's desire to do so (American Psychiatric Association, 1994). It is accompanied by guilt associated with the gambling behavior, withdrawal symptoms are frequently present, and difficulties in social relations and occupational/educational difficulties often ensue. Rosenthal (1992) has suggested that pathological gambling is in fact a progressive disorder (not single trial learning) accompanied by continuous and/or periodic episodes of loss of control over gambling, preoccupation, irrational thinking, and a continuation of the behavior in spite of repeated losses and negative adverse consequences. These characteristics are generally represented in most adolescent screening instruments and are present in youth problem gamblers who seek treatment (see Gupta & Derevensky, in this volume).

There is concern that our current instruments are inadequate. Shaffer et al. (2004) have suggested three fundamental limitations associated with assessing severity of gambling problems: (a) the dimensions within each of the screens are arbitrary, (b) the utility of different self-report time-frames causes confusion (i.e., past six months, past year, lifetime), and (c) general problems associated with self-report measures. The lack of weighting of importance of items represents a serious shortcoming. As Nower and Blaszczynski (in this volume) and Gupta and Deverensky (in this volume) have argued, there may be multiple pathways for adolescent problems gamblers with different aetiologies and behavioral characteristics. By extension, this may necessitate alternative assessment strategies and treatments paradigms.

While self-report scales for adolescents generally incorporate a past year time framework, some have argued that this may be confusing (i.e., past 12 months vs. calendar year). Clearly, the scope and intent of the instrument needs to be addressed. Most adolescent instruments provide a snapshot in time. And, while it is readily agreed upon that individuals can move between pathological gambling and non pathological gambling states, one should not under-estimate the long-term negative impact resulting from excessive gambling, including delinquency, school dropout, academic failure, and disrupted peer and familial relations (see Gupta & Derevensky, 2000; Ladouceur & Mireault, 1988).

Any self-report measure is subject to the individual reporting accurate information. While there is evidence that individuals scoring within the pathological gambling range on screening instruments fail to view themselves as having a significant gambling problem (Hardoon, Derevensky

& Gupta, 2003), this problem is not unique to gambling screens but to many psychometric measures. Epidemiological studies of problem and pathological gamblers among both adults and adolescents have been plagued with serious methodological limitations and biases including problems specific to survey instruments, non-responses and refusal biases, the exclusion of institutionalized populations, exclusion of specific groups, and difficulties associated with telephone surveys (Lesieur, 1994).

Of critical importance in the measurement of adolescent pathological gambling are the constructs used to assess gambling problems and severity. Derevensky and Gupta (2002) recently suggested that that youth gambling problems may not be a unitary construct or trait but rather represent a constellation of disorders (Figure 1). This perceived constellation of constructs may also be a contributing factor as to why youth with gambling problems are not presenting for gambling-related treatment. Other disorders may be more evident and have become the focus of intervention and treatment. Nevertheless, the issue remains as to which construct represents the primary disorder.

### **Future Directions**

Clearly, discrepancies in prevalence research results can stem from a multitude of parameters—theoretical, conceptual, methodological, environmental, structural, cultural, linguistic, and economic (Derevensky et al., 2003). There is no doubt that our current screening instruments need refinement and that psychometrically sound, comprehensive instruments need to be developed that better approach a gold standard for defining youth problem gambling. The field remains plagued by nomenclature issues and multiple terminologies used to identify adolescents who have serious gambling and gambling-related problems (e.g., pathological gamblers, probable pathological gamblers, compulsive gamblers, problem gamblers, sub-clinical, Level 3, disordered gamblers). However, there is a consensus amongst gambling researchers, clinicians, and educators that there is a need for continued awareness of this potential source of health risk among youth, and continued attention toward developing relevant and effective prevention and treatment programs. As well, additional research designed to identify the underlying risk and protective factors that can help prevent youth gambling and mental health problems is needed. In several recent papers we argued for a better understanding of youth gambling problems within the context of adolescent high-risk behaviors (e.g., Derevensky, Gupta, Dickson & Deguire, 2001; Dickson, Derevensky & Gupta, 2002; 2004). The development of new instruments needs to be sensitive to these factors.

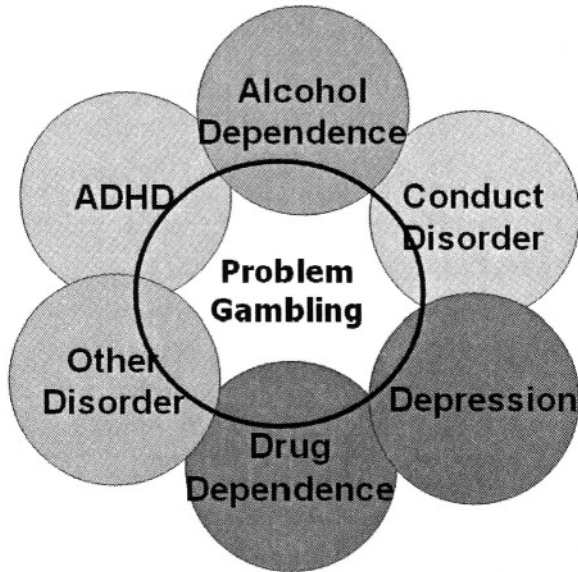


Figure 1. Youth gambling represented as a constellation of disorders.

While there is a clear danger in becoming an alarmist and over-exaggerating the prevalence rate of youth gambling problems, there is an equal danger in minimizing these problems. If gambling venues continue to increase, and the gambling activities become more interesting and entertaining for youth (e.g., the use of video-game technology on electronic gaming machines, and Internet gambling), and accessibility by underage youth remains widespread, there is little doubt that more youth will be engaging in these behaviors quite early. Given that a substantial amount of time is necessary between initial onset of gambling behavior and pathological gambling to occur (Australian Productivity Commission, 1999; Tavares, Zilberman, Beites & Gentil, 2001), it is conceivable that the issue of youth problem gambling may continue to present even more serious concerns over time.

Despite the fact that refinement of instrumentation and nomenclature issues still require resolving, the reported rates of problem gambling among youth are quite provocative and are cause for concern. There is ample evidence that gambling related problems amongst youth result in numerous psychological, social, economic, health and interpersonal difficulties that can be long lasting.

Researchers and clinicians need to establish whether to strive to develop an instrument either for the purpose of identification of prevalence rates of problematic gambling in a general population or whether it should also

have clinical utility. While the two purposes may not be mutually exclusive there may be some fundamental differences. It is important to note that our current screening tools are designed to be simple, quick and efficient and are not expected to measure the subtleties and complexities associated with a multi-dimensional behavioral disorder. Effective screening measures, in some settings, should err on the side of caution by way of encouraging item endorsements minimizing the number of false-negatives (Anastasi, 1976).

The range of money spent gambling by youth varies considerably and should not be the overriding determinant of a gambling problem. Nevertheless, an analysis of the available data clearly points to the issues of preoccupation, chasing losses, lying to family members and peers, and the need to escalate wagers as symptomatic of a significant problem. The underlying reasons which prompt their gambling behavior (see Gupta & Derevensky 1998a, 1998b) and their treatment implications (see Gupta & Derevensky, 2000, in this issue) have only begun to be addressed.

There is little doubt that an effective screening tool designed to measure the prevalence of youth problem gambling and to help identify individuals at-risk for developing a problem must include behavioral items describing not only the frequency and severity of the problem but their natural psychological, sociological, and financial consequences. Such a measure must be age-appropriate and incorporate the contextual environment within which the identified population resides. Gambling researchers and treatment providers need to work together to help develop a psychometrically and clinically sound instrument for the identification of youth problem gambling. Shaffer et al. (2004) have suggested that the epidemiological study of gambling has reached a crossroads. While prevalence studies are numerous, incidence studies, which can provide valuable information concerning the nature and progression of gambling related problems, are extremely scarce and necessary. Ultimately, Shaffer and his colleagues contend that movement toward understanding the determinants of disordered gambling will result in the development of better psychometric tools. Until such time as new instruments are developed our current measures should suffice.

## References

- American Psychiatric Association (1980). *DSM-III: Diagnostic and statistical manual* (3rd Edition). Washington, DC: American Psychiatric Association.
- American Psychiatric Association (1987). *DSM-III-R: Diagnostic and statistical manual* (3rd Edition-Revised). Washington, DC: American Psychiatric Association.
- American Psychiatric Association (1994). *DSM-IV: Diagnostic and statistical manual* (4th Edition). Washington, DC: American Psychiatric Association.

- Anastasi, A. (1976). *Psychological testing* (4th edition). New York: MacMillan Publishing.
- Australian Productivity Commission (1999). *Australia's gambling industries, Vol. I*. Commonwealth of Australia.
- Cunningham-Williams, R. (2000, Dec.). *Assessments of pathological gambling: Apples and oranges?* Paper presented at the First Annual Research Synthesis Conference on Pathological Gambling, Las Vegas, NV.
- Custer, R. L., & Custer, L. F. (1978, December). *Characteristics of the recovering compulsive gambler*. Paper presented at the Fourth Annual Conference on Problem Gambling, Reno, Nevada.
- Derevensky, J., & Gupta, R. (2000a). Prevalence estimates of adolescent gambling: A comparison of the SOGS-RA, DSM-IV-J, and the G.A. 20 Questions. *Journal of Gambling Studies, 16*, 227–251.
- Derevensky, J., & Gupta, R. (2000b). Youth gambling: A clinical and research perspective. *e-Gambling: The Electronic Journal of Gambling Issue, 2*, 1–10.
- Derevensky, J., & Gupta, R. (2002, June). Youth gambling and problem gambling: Interpreting the numbers. Paper presented at the annual meeting of the National Council on Problem Gambling, Dallas.
- Derevensky, J., Gupta, R., & Della-Cioppa, G. (1996). A developmental perspective on gambling behavior in children and adolescents. *Journal of Gambling Studies, 12*, 49–66.
- Derevensky, J., Gupta, R., Dickson, L., & Deguire, A-E. (2001). *Prevention efforts toward minimizing gambling problems*. Report prepared for the National Council on Problem Gambling and SAMHSA.
- Derevensky, J., Gupta, R., & Winters, K. (2003). Prevalence rates of youth gambling problems: Are the current rates inflated? *Journal of Gambling Studies, 19*, 405–425.
- Dickerson, M. G., & Hinchy, J. (1988). The prevalence of excessive and pathological gambling in Australia. *Journal of Gambling Behavior, 4*, 135–151.
- Dickson, L., Derevensky, J., & Gupta, R. (2002). The prevention of gambling problems in youth: A new conceptual framework. *Journal of Gambling Studies, 18*, 97–160.
- Dickson, L., Derevensky, J., & Gupta, R. (2004). Harm reduction for the prevention of youth gambling problems: Lessons learned from adolescent high-risk prevention programs. *Journal of Adolescent Research, 19*, 233–263.
- Ferris, J., Wynne, H., & Single, E. (1999). *Measuring problem gambling in Canada: Final Report-Phase I*. The Inter-Provincial Task Force on Problem Gambling, CCSA, Ottawa.
- Fisher, S. E. (1992). Measuring pathological gambling in children: The case of fruit machines in the U.K. *Journal of Gambling Studies, 8*, 263–285.
- Fisher, S. E. (2000). Developing the DSM-IV-MR-J criteria to identify adolescent problem gambling in non clinical populations. *Journal of Gambling Studies, 16*, 253–273.
- Griffiths, M. (2001). Why don't adolescent gamblers seek treatment? *e-Gambling: The Electronic Journal of Gambling Issues, 5*.
- Gupta, R., & Derevensky, J. L. (1998a). Adolescent gambling behavior: A prevalence study and examination of the correlates associated with problem gambling. *Journal of Gambling Studies, 14*, 319–345.
- Gupta, R., & Derevensky, J. L. (1998b). An empirical examination of Jacobs' General Theory of Addictions: Do adolescent gamblers fit the theory? *Journal of Gambling Studies, 14*, 17–49.
- Gupta, R., & Derevensky, J. L. (2000). Adolescents with gambling problems: From research to treatment. *Journal of Gambling Studies, 16*, 315–342.
- Hardoon, K., Derevensky, J., & Gupta, R. (2000, June). *Social influences operant in children's gambling behavior*. Poster presented at the annual meeting of the Canadian Psychological Association, Ottawa.

- Hardoon, K., Derevensky, J., & Gupta, R. (2002). An examination of the influence of familial, emotional, conduct and cognitive problems, and hyperactivity upon youth risk-taking and adolescent gambling problems. Report prepared for the Ontario Problem Gambling Research Centre, Ontario.
- Hardoon, K., Derevensky, J., & Gupta, R. (2003). Empirical vs. perceived measures of gambling severity: Why adolescents don't present themselves for treatment. *Addictive Behaviors*, *28*, 933–946.
- Hodgins, D., Makarchuk, K., el-Guebaly, N., & Peden, N. (in press). Why problem gamblers quit gambling: A comparison of methods and samples. *Addiction Theory and Research*.
- Jessor, R. (1998). New perspectives on adolescent risk behavior. In R. Jessor (Ed.), *New perspectives on adolescent risk behavior*. Cambridge, UK: Cambridge University Press.
- Johnston, L. D., O'Malley P. M., & Bachman, J. G. (2001). *Monitoring the future: National results on adolescent drug use, overview of key findings, 2000*. Washington: National Institute on Drug Abuse.
- Kosten, T.A., & Rounsaville, B.J. (1992). Sensitivity of psychiatric diagnosis based on the best estimate procedure. *American Journal of Psychiatry*, *149*, 1225–1227.
- Ladouceur, R. (2001, December). *Conceptual issues in screening and diagnostic instruments: Implications for treatment and prevention of gambling disorders*. Paper presented at the Toward Meaningful Diagnosis of Gambling Disorders: From Theory to Practice Conference, Las Vegas.
- Ladouceur, R., Bouchard, C., Rhéaume, N., Jacques, C., Ferland, F., Leblond, J., et al. (2000). Is the SOGS an accurate measure of pathological gambling among children, adolescents and adults? *Journal of Gambling Studies*, *16*, 1–21.
- Ladouceur, R. & Mireault, C. (1988). Gambling behaviors amongst high school students in the Quebec area. *Journal of Gambling Studies*, *4*, 3–12.
- Leckman, J.F., Scholomskas, D., Thompson, W. D., Belanger, A., & Weisman, M. M. (1982). Best estimate of lifetime psychiatric diagnosis: A methodological study. *Archives of General Psychiatry*, *39*, 879–883.
- Lesieur, H. R. (1994). Epidemiological surveys of pathological gambling: Critique and suggestions for modification. *Journal of Gambling Studies*, *10*, 385–398.
- Lesieur, H. R., & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry*, *144*, 1184–1188.
- Lesieur, H. R., & Klein, R. (1987). Pathological gambling among high school students. *Addictive Behaviors*, *12*, 129–135.
- National Research Council (1999). *Pathological gambling: A critical review*. Washington, DC: National Academy Press.
- Rosenthal, R. J. (1992). Pathological gambling. *Psychiatric Annals*, *22*, 72–78.
- SAMHSA (2001). *Uniform facility data set (UFDS): 1999. Data on substance abuse treatment facilities*. Washington, DC: Department of Health and Human Services, Substance Abuse and Mental Health Services Administration.
- Shaffer, H. J., & Hall, M. N. (1996). Estimating prevalence of adolescent gambling disorders. A quantitative synthesis and guide toward standard gambling nomenclature. *Journal of Gambling Studies*, *12*, 193–214.
- Shaffer, H. J., Hall, M. N., & Vander Bilt, J. (1997). *Estimating the prevalence of disordered gambling behavior in the United States and Canada: A meta-analysis*. Boston: Harvard Medical School.
- Shaffer, H. J., LaBrie, R., LaPlante, D., Nelson, S., & Stanton, M. (2004). The road less travelled: Moving from distribution to determinants in the study of gambling epidemiology. *Canadian Journal of Psychiatry*, *49*, 159–171.

- Shaffer, H. J., LaBrie, R., Scanlan, K. & Cummings, T. (1994). Pathological gambling among adolescents: Massachusetts Gambling Screen. *Journal of Gambling Studies*, 10, 339–362.
- Steinberg, M. A. (1997). *Connecticut High School Problem Gambling Surveys 1989 & 1996*. Guilford, Conn.: Connecticut Council on Problem Gambling.
- Stinchfield, R. (1999). *Relevance of resilience to adolescent gambling: Implications for intervention*. Proceedings of the International Think Tank on Youth and Gambling, Winnipeg, Manitoba.
- Stinchfield, R. (2002). Youth gambling: How big a problem? *Psychiatry Annals*, 32, 197–202.
- Tavares, H., Zilberman, M., Beites, F., & Gentil, V. (2001). Gender differences in gambling progression. *Journal of Gambling Studies*, 17, 151–160.
- Thompson, A., Walker, M., Milton, S. & Djukic, E. (2001). *Explaining the high false positive rates of the South Oaks Gambling Screen*. Unpublished manuscript.
- Volberg, R. (1994). The prevalence and demographics of pathological gamblers: Implications for public health. *American Journal of Public Health*, 84, 237–241.
- Volberg, R. (1998). *Gambling and problem gambling among adolescents in New York*. Report to the New York Council on Problem Gambling. Albany, NY.
- Volberg, R. A. (2001). *Measures to track gambling rates, behaviors and related factors*. Report prepared for the National Council on Problem Gambling and SAMSHA, Washington DC.
- Volberg, R., & Steadman, H. J. (1992). Accurately depicting pathological gamblers: Policy and treatment implications. *Journal of Gambling Studies*, 8, 402–412.
- Westphal, J. R., Rush, J. A., & Stevens, L. (1997). *Statewide baseline survey for pathological gambling and substance abuse among Louisiana adolescents*. Baton Rouge: Louisiana department of Health and Hospitals, Office of Alcohol and Drug Abuse.
- Winters, K.C. (2001, December). *Screening, assessment and diagnosis of gambling disorders: Are adolescents different?* Paper presented at the Toward Meaningful Diagnosis of Gambling Disorders: From Theory to Practice Conference, Las Vegas.
- Winters, K. C., Stinchfield, R. D., Botzet, A., & Anderson, N. (2002). A prospective study of youth gambling behaviors. *Psychology of Addictive Behaviors*, 16, 3–9.
- Winters, K.C., Stinchfield, R.D., & Fulkerson, J. (1993). Toward the development of an adolescent gambling problem severity scale. *Journal of Gambling Studies*, 9, 371–386.
- Wynne, H. J., Smith, G. J., & Jacobs, D. F. (1996). Adolescent gambling and problem gambling in Alberta. Prepared for the Alberta Alcohol and Drug Abuse Commission. Edmonton, AB: Wynne Resources Ltd.