

Chapter 2: Gambling Concepts And Nomenclature

Terms used to describe behaviors in similar contexts or venues have an influence on how those behaviors are defined and viewed. Understanding the extent and nature of pathological gambling, as well as its social and economic impact, requires as clear a definition as possible. A discrete, acceptable, and useful definition of pathological gambling would be based on a nomenclature applicable in a wide diversity of contexts (American Psychiatric Association, 1994). Nomenclature refers to a system of names used in an art or science and is critical in conceptualizing, discussing, and making judgments about pathological gambling and related behaviors. A nomenclature inclusive of pathological gambling must be suitable for use in scholarly research, clinical diagnosis and treatment, and community and other social contexts. The nomenclature must also reflect a variety of perspectives because research scientists, psychiatrists, other treatment care clinicians, and public policy makers tend to frame questions about gambling differently, depending on their disciplinary training, experience, and special interests. In the absence of an agreed-upon nomenclature, these and other groups interested in gambling and gambling problems have developed different paradigms or world views from which to consider these matters. Consequently, the act of gambling has been considered by various observers to provide evidence of recreational interest, diminished mathematical skills, poor judgment, cognitive distortions, mental illness, and moral turpitude. These varied views have stimulated debate and controversy.

Historically, the word “gambling” referred to playing unfairly or cheating at play. A gambler was defined as a fraudulent gamester, sharper, or rook who habitually plays for money, especially extravagantly high stakes (*Oxford English Dictionary*, second edition, 1989). In modern times, gambling has come to mean wagering money or other belongings on chance activities or events with random or uncertain outcomes (Devereux, 1979). Gambling in this sense implies an act whereby the participant pursues a monetary gain without using his or her skills (Brenner and Brenner, 1990). This is the dictionary definition of gambling as well (*Oxford English Dictionary*, second edition, 1989). Throughout history, however, gambling also has involved activities requiring skill. For example, a bettor’s knowledge of playing strategies can improve his or her chances of winning in certain card games; knowledge of horses and jockeys may improve predictions of probable outcomes in a horse race (Bruce and Johnson, 1996). The use of such skills may reduce the randomness of the outcome but, because of other factors that cannot be predicted or analyzed, the outcome remains uncertain. As used in this report, the term “gambling” refers both to games of chance that are truly random and involve little or no skill that can improve the odds of winning, and to activities that require the use of skills that can improve the chance of winning. By its very nature, gambling involves a voluntary, deliberate assumption of risk with a negative expectable value. In other words, given that the odds are against the gambler because the house takes its cut, the more people gamble, the more likely they are to lose.

ROLE OF RISK-TAKING IN THE GAMBLING EXPERIENCE

Throughout history, scholars and writers have theorized about why human beings gamble. These explanations have encompassed evolutionary, cultural, religious, financial, recreational, psychological, and sociological perspectives (Wildman, 1997). A current and widely disseminated theory is that people engage in gambling because it has the capacity to create excitement (Boyd, 1976; Steiner, 1970). People seek stimulation and try to optimize their

subjective experience by shifting sensations. Sensation-seeking and shifting these experiences, as a basic and enduring human drive, can be compared to a child's exploration of his or her environment to develop fundamental mastery of skills and satisfy curiosity. The experiences that humans regularly seek include novelty, recreation, and adventure (Zuckerman, 1979; Ebstein et al., 1996; Benjamin, 1996). To paraphrase William Arthur Ward, a 20th century American philosopher, the person who risks nothing, has nothing. Indeed, it is common for individuals to take risks in life. Risk-taking underlies many human traits that have high significance for evolutionary survival, such as wanting and seeking food (Neese and Berridge, 1997). Moreover, risk-taking is reinforced by the emotional experiences that follow, such as relief from boredom, feelings of accomplishment, and the "rush" associated with seeking excitement. Individuals vary considerably in the extent to which they take risks. Some limit their risk-taking to driving a few miles over the posted speed limit, whereas others actively pursue mountain climbing, skydiving, or other exciting sports with a high risk of harm.

Gambling is neither a financially nor a psychologically risk-free experience. In addition to the possibility that gamblers will lose their money, they also risk experiencing a variety of adverse biological, psychological, and social consequences from gambling (American Psychiatric Association, 1994). Personal aspirations and the social setting, however, can affect the likelihood of an individual's engaging in risky behavior, since aspirations will influence the perceived benefits and constraints of the risky situation. The potential payoff of betting stimulates innate risk-taking tendencies. Although exceptions exist, games with the highest "action," such as high-stakes poker and dice games, serve as more powerful stimuli to accelerate a player's risk-taking by increasing the payoff if the bet is won. Even those not normally inclined to buy a lottery ticket, for example, often may do so when several million dollars in winnings are at stake (Clotfelter and Cook 1989). The simple association between gambling and action, including the prospects of "winning big," which characterizes all popular gambling activities, can maintain stable gambling behaviors despite incredible odds against winning (Lopes, 1987).

MEDICALIZATION OF PATHOLOGICAL GAMBLING

Understanding of the adverse consequences of excessive gambling has undergone profound change. For most of history, individuals who experienced adverse consequences from gambling were viewed as gamblers with problems; today, we consider them to have psychological problems. This change is analogous to the change in the understanding of alcoholics and alcoholism, and it has been reflected in, or stimulated by, the evolving clinical classification and description of pathological gambling in the various editions, between 1980 and 1994, of the *Diagnostic and Statistical Manual of Mental Disorders* (called DSM) published by the American Psychiatric Association. Changes over time in the DSM reflect a desire to be more scientific in determining appropriate criteria for pathological gambling by accounting for its similarities to other addictions, especially substance dependence (American Psychiatric Association, 1980, 1987, 1994; Lesieur, 1988; Rosenthal, 1989; Lesieur and Rosenthal, 1991). Today pathological gambling is understood to be a disorder characterized by a continuous or periodic loss of control over gambling, a preoccupation with gambling and with obtaining money with which to gamble, irrational thinking, and a continuation of the behavior despite adverse consequences.

The official medicalization of excessive gambling is marked by its inclusion in the DSM (American Psychiatric Association, 1980, 1987, 1994). It is not surprising, however, that some scholars (e.g., Szasz, 1970, 1987, 1991) have objected to medicalizing certain socially or culturally offensive behaviors in general, and gambling intemperance in particular (Rosecrance, 1985).¹ Nevertheless, in the United States and elsewhere, although not in all nations or cultures, those with serious gambling problems are now described as suffering from a disorder that reflects a psychiatric illness or disease state. And despite significant gaps in research and a generally deficient state of scholarly literature, pathological gambling is known to be a robust phenomenon (Shaffer et al., 1997) that also is complex in its origins and accompanying disorders, and in its negative social and economic effects. Moreover, all these factors can be affected by traditional, contemporary, and constantly emerging gambling-related technologies.

Conceptualizing gambling behavior on a simple continuum ranging from no gambling to pathological gambling may provide a useful model for developing a public health system of treatment, but it is insufficiently detailed to provide a scientific explanation of the emergence of pathological gambling. The list of important terms used in this report for gambling behaviors suggests that they cover a wide range (see Box 2-1). These terms are important to the discussion of prevalence in Chapter 3.

Box 2-1: Important Gambling Terms Used by the Committee

Compulsive gambling: The original lay term for pathological gambling, it is still used by Gamblers Anonymous and throughout much of the self-help treatment community.

Disordered gambling: Inspired by language in DSM pertaining to Disorders of Impulse Control and used by Shaffer et al. (1997) in their meta-analysis to serve as a conceptual container for the panoply of terms associated with gambling-related problems and pathology. The term is used occasionally in this report to describe the combination of problem and pathological gambling.

Excessive gambling: Reference to an amount of time or money spent gambling that exceeds an arbitrarily defined acceptable level.

Intemperate gambling: Synonymous with excessive gambling.

Level 0 gambling: No gambling at all.

Level 1 gambling: Social and/or recreational gambling (see below) with no appreciable harmful effects.

Level 2 gambling: Synonymous with problem gambling.

Level 3 gambling: Synonymous with pathological gambling as defined in DSM-IV in which 5 or more criteria out of 10 are present.

¹ For a discussion of nonmedical models for understanding excessive gambling, see the section on other theories and conceptualizations of pathological gambling later in this chapter.

Pathological gambling: A mental disorder characterized by a continuous or periodic loss of control over gambling, a preoccupation with gambling and with obtaining money with which to gamble, irrational thinking, and a continuation of the behavior despite adverse consequences.

Probable pathological gambler: A common reference in prevalence research studies and other gambling literature to a person who is suspected of being a pathological gambler on the basis of some criteria, but who has not been clinically evaluated as such.

Problematic gambling: Synonymous with either disordered gambling or excessive gambling.

Problem gambling: Gambling behavior that results in any harmful effects to the gambler, their family, significant others, friends, coworkers, etc. Some problem gamblers would not necessarily meet criteria for pathological gambling.

Recreational gambling: Gambling for entertainment or social purposes, with no harmful effects.

Social gambling: Synonymous with recreational gambling.

When considering the range of gambling involvement, it is important to note that today about 20 percent of Americans do not gamble at all; that most gamblers do so for social or recreational reasons without experiencing any negative consequences; and that cooccurrences with other types of problems, as well as negative social and economic effects experienced by individual gamblers and their families, theoretically increase with the level, chronicity, and severity of gambling problems. In other words, once gamblers cross the threshold and enter into the range of problem gambling (described as Level 2 in Box 2-1) they begin to manifest adverse effects; since there are far more problem gamblers than pathological gamblers, most adverse affects are believed to be experienced or caused by problem gamblers. Although this increasing relationship is often asserted or implied in the literature, neither an increasing association nor a progressive gambling behavior continuum is supported by available research. Moreover, the range of different gambling behaviors is believed to be dynamic: for example, social or recreational gamblers can become problem gamblers; problem gamblers can become pathological gamblers, return to a level of social or recreational gambling, or even discontinue gambling.² In addition, the time involved in shifting from one level to another is commonly believed to be subject to extreme variance, although this has not been empirically demonstrated.

CONTEMPORARY PATHOLOGICAL GAMBLING

The assumption underlying the existing research is that gambling problems exist and can be measured (Volberg, 1998). Despite agreement among researchers at this fundamental level

² There is no direct empirical evidence supporting either the possibility that pathological gamblers can or cannot return to and remain in a state of social or recreational gambling. This pattern has been observed, however, among people with alcohol, heroin, cocaine, and other addictions (e.g., Shaffer and Jones, 1989). Nevertheless, the percentage of those who seek treatment and do return successfully to social or recreational gambling is likely to be so small that clinicians generally and accurately believe that it is not likely. Therefore, they are reluctant to consider this possibility as part of treatment efforts. In practice, pathological gamblers attending Gamblers Anonymous or undergoing forms of treatment other than self-help usually consider themselves as “recovering” from, but not ever cured of, their gambling disorder.

and a widely recognized and accepted definition of Level 3 (pathological gambling) as described in Box 2-1, there is widespread disagreement about the conceptualization, definition, and measurement of Level 2 (problem gambling). Conceptual and methodological confusion is common in emerging scientific fields (Shaffer, 1986a, 1997b), but debate about problem gambling creates public confusion and uncertainty about gambling problems and their effects on society (Volberg, 1998).

For example, in considering excessive gambling behavior, clinicians and the majority of researchers in the United States and abroad rely on well-established psychiatric classifications (nosologies) and descriptions (nosographies) of pathological gambling that have evolved over the past 20 years (American Psychiatric Association, 1980, 1987, 1994). However, debate is ongoing as to their validity, as well as about broader conceptualizations of excessive gambling ranging from problem to pathological (Rosenthal, [.....]; Shaffer et al., 1997; Rosecrance, 1985). A number of competing conceptual models and definitions have arisen to explain the origins of these behaviors. Compounding this classification difficulty is the wide variety of labels or terms found in the literature to describe people with gambling problems. For these reasons it can be useful to conceptualize progressively harmful gambling behaviors on a continuum similar to the progressive stages and harmful effects of alcoholism, including: abstinence, social or controlled drinking, problem drinking with loss of control (disruption of work and social functions but minimal organ damage), and severe problem drinking with organ damage. To ensure clarity and consistency in our use of such labels and terms in this report, they are defined in Box 2-1. The following section focuses on the medical conceptualization of pathological gambling, beginning with a discussion of how it differs from problem gambling.

Pathological Gambling Versus Problem Gambling

Although clinicians and researchers concur that understanding the nature, scope, and severity of gambling-related problems is important, there is much variation in the language used to designate various levels of gambling involvement and their consequences. For example, investigators often use the terms “problem gambling,” “at-risk gambling,” “potential pathological gambling,” “probable pathological gambling,” “disordered gambling,” and “pathological gambling.” Some authors have used terms for adolescents that are different from the terms generally used for adults (e.g., Volberg, 1993a; Winters et al., 1993). The labeling difficulty arises in part because epidemiologists and clinical researchers do not use the same terminology. Also, various terms arise when investigators characterize broadly defined samples of extreme gamblers. Nevertheless, the frequency and intensity of problems associated with gambling can range from none to a lot. Thus, in the absence of rigorously achieved and convincing validity data, any classification label is inherently arbitrary to some degree and may be too simple to describe such a complex and multidimensional concept as gambling severity (Walker and Dickerson, 1996). This issue, however, is encountered in all psychiatric classifications, not just pathological gambling. The challenge is to establish agreed-on terminology so that researchers, clinicians, and others in the field can communicate precisely.

Imprecise terms, such as “potential pathological gamblers” or “probable pathological gamblers,” among other terms, have been promulgated by research relying on a variety of instruments. Use of various terms has contributed substantially to confusion about what constitutes Level 2 problem gambling. Some people have criticized the fact that the American Psychiatric Association’s DSM-IV designates only one term to connote a gambling disorder

(pathological gambling), because it does not adequately serve investigations that need to describe individuals who are experiencing less extreme difficulties. Since people who meet at least one but less than five of the DSM-IV criteria suggested for a diagnosis of pathological gambling have experienced some level of difficulty, they also warrant attention. However, their problems are extremely variable and range from trivial to serious. Furthermore, these individuals may be progressing toward a pathological state, or they may be pathological gamblers in remission who are recovering (i.e., they met DSM-IV criteria for having been a pathological gambler sometime during their lifetime, but they do not currently meet the criteria suggested for such a diagnosis).

The term “pathological” is defined in the *Oxford English Dictionary* as “caused by or evidencing a mentally disturbed condition.” In 1980, the American Psychiatric Association adopted the term “pathological gambling” as the official nomenclature in the DSM-III to describe excessive gambling as an impulse disorder (the DSM criteria are discussed in the next section). Sometimes the terms “pathological” and “compulsive” are used interchangeably; however, “compulsive” is the historical and lay term and the one used by Gamblers Anonymous (1983). But for most researchers and many clinicians, the notion of compulsive gambling as a description of pathological gamblers is a technical misnomer (Lesieur and Rosenthal, 1991). In the psychiatric lexicon, a compulsive behavior is involuntary and “ego-dystonic”—that is, external or foreign to the self. The DSM-IV defines compulsions as “repetitive behaviors or mental acts, the goal of which is to prevent or reduce anxiety or stress, not to provide pleasure or gratification” (American Psychiatric Association, 1994:418). It is an “unwilling” attempt to rid oneself of discomfort and pain. In some cases, individuals perform rigid, stereotyped acts according to idiosyncratically elaborated rules without being able to indicate why they are doing them. Examples of a compulsion would include repetitive hand washing or the irresistible urge to pull out one’s hair or shout an obscenity (see American Psychiatric Association, 1980, 1987, 1994). Pathological gamblers, in contrast, typically experience gambling as ego-syntonic and pleasurable before their problems began.

The DSM-IV provides a widely accepted definition of and diagnostic criteria for pathological gambling, but the term “problem gambling” is somewhat more difficult to conceptualize and define. In much of the research literature, problem gambling is used as an overlay to include pathological gambling (Shaffer et al., 1997). In fact, the concepts are inextricable, because on the continuum of gambling behaviors pathological gambling encompasses problem gambling (i.e., all pathological gamblers have been problem gamblers). Moreover, pathological and problem gamblers can experience varying levels of problem chronicity over time. However, problem gambling is most commonly characterized as describing those individuals who do not meet five or more DSM-IV criteria for a diagnosis of pathological gambling (Lesieur and Rosenthal, 1998). Shaffer and his colleagues considered these as cases that could be “in transition” and described in-transition gamblers as moving either toward or away from pathological states; however, they also noted that in-transition gamblers may not necessarily be in an earlier stage of the disorder. It is important to note that these authors observed that in-transition gamblers may never develop the attributes of pathological gambling; in-transition gamblers may languish in this state or begin to move toward recovery.

The concept of a continuum of problem severity implies that people can be located at a point on a continuum. They can move from that point, developing more or less serious difficulties. This analysis suggests that gambling problems reflect an underlying unidimensional construct. Although individuals can theoretically move across a continuum of problem severity and some scholars believe that gambling problems may best be conceptualized as a

developmental continuum of gambling behaviors with respect to frequency and intensity, there is no empirical evidence that actual progression of the illness is linear (Shaffer et al., 1997). Moreover, clinicians and the self-help treatment community believe that pathological gamblers cannot successfully return to a level of social or recreational gambling.

Development of the DSM Criteria

Largely through the efforts of Robert Custer, pathological gambling was first included in the DSM in 1980 (see DSM-III in Appendix B). Custer had treated pathological gamblers and written about their illness for several years (Custer 1980; Custer and Custer, 1978). For the first inclusion in DSM-III, there was no testing of criteria beforehand. Instead, inclusion was based on his clinical experience and those of other treatment professionals. The original DSM-III criteria started with a statement about progressive loss of control and then listed seven items. Three or more had to be met for a diagnosis of pathological gambling. The emphasis was on damage and disruption to the individual's family, personal, or vocational pursuits and issues that had to do with money (five of the seven original criteria fell into this latter category). There also was added an exclusion criterion: "not caused by antisocial personality disorder."

The DSM-III criteria were criticized for their unidimensionality, emphasis on external consequences, and middle-class bias (Lesieur, 1984). With the revision of the diagnostic manual in 1987 (DSM-III-R), it was decided to emphasize the similarity to substance dependence, literally by copying the criteria, substituting "gambling" for "use of a substance." This can be clearly seen from an earlier published draft of DSM-III-R when the two sets of criteria are placed side by side (Rosenthal, 1989:103). The only item that appears different, item 5 in the finalized version, seems less so if one considers the symptom of "chasing" one's losses as an attempt to negate or reverse the progressive dysphoria--the shame and guilt--consequent to the gambling (see Appendix B). Thus it resembles the taking of a substance to relieve or avoid painful symptoms (e.g., Rado, 1933; Weider and Kaplan, 1969; Khantzian, 1975, 1985).

A year after the publication of the new criteria, a group of treatment professionals found considerable dissatisfaction with them, with some preference expressed for a compromise between the old DSM-III and the newer DSM-III-R criteria (Rosenthal, 1989). On the basis of these complaints, a questionnaire was constructed and administered to 222 self-identified compulsive gamblers and 104 substance-abusing controls who gambled at least socially (Lesieur and Rosenthal, 1991; Bradford et al., 1996). The results were analyzed to determine which items best discriminated between the two groups. A new set of nine criteria emerged that combined DSM-III and DSM-III-R, with the addition of one new item: "gambles as way of escaping from problems or intolerable feeling states." With the exception of "illegal acts," all items were selected by at least 85 percent of the compulsive gamblers. For example, the item pertaining to being preoccupied with gambling was selected by 97 percent of the compulsive gamblers and just 3 percent of the social gamblers (Bradford et al., 1996).

Following a presentation of these findings to gambling research and treatment professionals at several national and international conferences, it was decided that one additional item--"repeated unsuccessful attempts to control, cut back or stop gambling"--should be added. The final phase was a field trial using 453 subjects (Lesieur and Rosenthal, 1998 [HJS2]) to test this additional item (representing loss of control). The analysis found that adding or deleting it did not affect the threshold for diagnosis, and that it was highly correlated with other criteria. Based on these findings and the preference of clinicians in the United States and abroad that it be

included, “loss of control” was reinstated as a diagnostic criterion, but with the wording improved from DSM-III-R.

The resulting definition of pathological gambling was published in 1994 in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV). This is the latest in an evolving effort by the American Psychiatric Association to operationally define the disorder. The definition includes 10 criteria, which describe both the individual attributes of sufferers and the social consequences that result from their behavior. Also described are associated features and disorders, specific culture and gender features, prevalence, course, familial pattern, differential diagnosis, and exclusion criteria. As such, the criteria are intended to provide guidance for clinically diagnosing pathological gambling as a disorder of impulse control. To be diagnosed as a pathological gambler, an individual must meet at least five criteria (Bradford et al., 1996; Lesieur and Rosenthal, 1998). For the criteria and full text of the DSM-IV definition, see Appendix B.

The 10 criteria that resulted from this process represent three clusters or dimensions: damage or disruption, loss of control, and dependence. In the category of dependence are tolerance (needs to gamble with increasing amounts of money in order to achieve desired excitement), withdrawal (restless or irritable when attempting to cut down or stop), preoccupation with gambling, and gambling as a way to escape from problems. The wording and selection of items and the diagnostic cut-off point of five or more were based on clinical data; a partial exclusion criterion was then added: “The gambling behavior is not better accounted for by a Manic Episode.” Although somewhat controversial, this exclusion was added because excessive gambling may result when a patient is experiencing acute mania, without the disorder itself being present (American Psychiatric Association, 1994).

The current description of pathological gambling in DSM-IV has been found to characterize pathological gambling in relatively precise operational terms; to provide the basis for measures that are reliable, replicable, and sensitive to regional and local variation; to distinguish gambling behavior from other impulse disorders; and to suggest the utility of applying specific types of clinical treatments (Shaffer et al., 1994). Moreover, the DSM-IV criteria appear to have worked well for clinicians for the past five years. However, because it is a clinical description with little empirical support beyond treatment populations, there still are problems with its use to define the nature and origins of pathological gambling, and when trying to estimate prevalence.

The Clinical Picture

Descriptions of the clinical course of pathological gambling date back to 1892 (Quinn, 1892). The traditional description of the disorder has included four phases: the reaction to winning, losing, desperation, and hopelessness (Custer, 1982; Custer and Milt, 1985; Lesieur and Rosenthal, 1991). Recent research has suggested an alternative model, with as many as six phases of development into and out of a gambling addiction: initiation, positive consequences, negative consequences, turning points, active quitting, and relapse prevention (Shaffer and Jones, 1989; Shaffer, 1997; Prochaska et al., 1992; Marlatt et al., 1988). Clinical studies suggest that, as gambling progresses toward a pathological state, there is frequently an increase in the amounts wagered and the time devoted to gambling and a corresponding increase in depression, shame, and guilt (Rosenthal, [.....]). Studies primarily of gamblers seeking help suggest that as many as 20 percent will attempt suicide (Moran, 1969; Livingston, 1974; Custer and Custer,

1978; McCormick et al., 1984; Lesieur and Blume, 1991; Thompson et al., 1996), and two out of three help seekers have turned to criminal activities to support their gambling (Lesieur et al., 1986; Brown, 1987; Lesieur, 1987). Pathological gambling can exacerbate other mental disorders, and stress-related physical illnesses are common (Lorenz and Yaffee, 1986). Chapters 4 and 5 discuss these issues in more detail.

Pathological gambling differs from the social and recreational gambling of most adults. Social or recreational gamblers are those who gamble for entertainment and typically do not risk more than they can afford (Custer and Milt, 1985; Shaffer et al., 1997). If they should chase their losses, they do so only briefly and have little preoccupation with gambling. In pathological gambling, however, players generate adverse consequences for themselves and others involved in their life. Clinicians report that, although money is important, male pathological gamblers often say they are seeking action, an aroused euphoric state that may be similar to the high from cocaine or other stimulating drugs. Pathological gamblers report a “rush” characterized by sweaty palms, rapid heartbeat, and nausea or queasiness. This can be experienced while gambling, in anticipation of gambling, or in response to any situation or feeling that reminds them of gambling (Rosenthal and Lesieur, 1992). Pathological gamblers may go for days without sleep, and for extended periods without eating or taking care of other bodily needs. Clinicians have described the presence of cravings, tolerance--the need to make increasingly larger bets or take greater risks to produce the desired level of excitement (Lesieur, 1994)--and withdrawal symptoms (Wray and Dickerson, 1981; Meyer, 1989; Rosenthal and Lesieur, 1992).

Although there are other kinds of intense physiological reactions, clinicians also report that some pathological gamblers are less interested in the excitement or action and more interested in escape. They are seeking to numb themselves and report a quest for oblivion. This motivation for escape may be understood as a quest to reduce psychological discomfort and as an attempt to attain a more normal state--a self-medication (Khantzian, 1975, 1977). These reactions are reported by many women gamblers (Lesieur and Blume, 1991), as well as many slot and video poker machine players. Many pathological gamblers, both male and female, report experiencing amnesic episodes, trances, and dissociative states (Jacobs, 1988; Kuley and Jacobs, 1988; Lesieur and Rosenthal, 1994; Brown, 1996; O'Donnell and Rugle, 1996).

Pathological gamblers also evidence distortions in their thinking (Gaboury and Ladouceur, 1989; Walker, 1992). These cognitive distortions include denial, fixed beliefs, superstition and other kinds of magical thinking, and notably omnipotence. Pathological gamblers experiencing cognitive distortions deny the reality of their gambling situation, including their odds of winning or losing (e.g., Langer, 1975; Langer and Roth, 1975; Ladouceur and Mayrand, 1984; Coulombe et al., 1992; Ladouceur et al., 1995). They may fixate on particular numbers, days of the week, colors of clothing, or a particular slot machine or may possess other magical objects that for them signify or enhance luck (Toneatto, personal communication to the committee, June 2, 1998). Rosenthal (1986) contends that such feelings of omnipotence are born out of desperation: the more helpless the situation, the greater their sense of certainty that they know what will happen next, and that they will achieve a positive outcome.

Bad luck, greed, or poor money management are not sufficient for someone to be a pathological gambler--although these factors do exert influence on the mental state of a gambler. For example, some individuals seek help during the early phase of their gambling career, even while they are still winning. They are astute enough to become concerned about their intense physical or psychological reactions, or about the effect their preoccupation with gambling is having on other aspects of their lives (REFERENCES). One need not lose everything to be a

pathological gambler, nor is it necessary to think about gambling every day. Some sufferers are binge gamblers, who sporadically experience consequences or cause damage in their lives or the lives of others. And some pathological gamblers may gamble excessively only at one type of game and are not interested in other types of gambling, whereas other pathological gamblers may play other games in order to support their game of choice (Lesieur, 1984).

Pathological Gambling as an Exculpatory Condition

As noted by Rachlin et al. (1984), the DSM-III created a new category of impulse control disorders, and this class of mental disorders was continued in the DSM-IV (American Psychiatric Association, 1980, 1994). With this new class of disorders came the opportunity for lawyers to use this kind of disorder as the foundation for the application of the insanity defense for criminal offenses. The insanity defense, however, rests in part on the distinction between an overwhelming uncontrollable impulse and the inability or unwillingness to control an impulse. The National Council on Compulsive Gambling has stated that the "APA diagnostic criteria [have] taken compulsive gambling out of the criminal, antisocial department and redefined this behavior as a neurosis, as are all compulsions" (cited in Rachlin et al., 1984:145). Rachlin et al. suggest that, despite their support for efforts to secure help for troubled people, the inclusion of pathological gambling in the DSM-IV should not encourage exculpation or exoneration for criminal offenses that are gambling related (p. 145). They observe that impulse disorders consist of the failure to resist impulses rather than an overwhelming uncontrollable impulse. In a cautionary note, the DSM-IV states that "[I]nclusion here, for clinical and research purposes, of a diagnostic category such as Pathological Gambling or Pedophilia does not imply that the condition meets legal or other non-medical criteria for what constitutes mental disease, mental disorder, or mental disability. The clinical and scientific considerations involved in categorization of these conditions as mental disorders may not be wholly relevant to legal judgments, for example, that take into account such issues as individual responsibility, disability determination, and competency" (American Psychiatric Association, 1994:xxvii).³

Apparently the criminal justice system agrees with Rachlin and colleagues. For example, although more a matter of opinion than of science, a consensus seems to be emerging in the psychiatric literature that the use of pathological gambling as a basis for an insanity defense for property crimes committed in furtherance of one's gambling habit is inappropriate (Faigman et al., 1997: 285). Similarly, although expert testimony has been permitted, such testimony regarding the distorted thinking and denial that often accompany pathological gambling was ruled inadmissible. Similarly, courts have ruled that pathological gambling could not serve as a basis for the insanity defense for a nongambling crime of theft; expert testimony on pathological gambling as a mental defect or disease was not permissible since it was not generally accepted in the scientific community; and sentencing could not be diminished or mitigated by a defendant's pathological gambling.

It is likely that the debate about exculpatory conditions will continue unabated, since the distinction between reasons and causes for intemperate behavior (Davies, 1996), including pathological gambling, is currently unavailable. "The habit is called an addiction because it is

³ For additional information and examples of legal case rulings, see Morse (1994, 1998); U.S. v. Scholl, 959 F. Supp. 1189 (D. Ariz. 1997); People v. Lowitzki, 674 N.E.2d 859 (111.App. 1996); People v. Kindlon, 629 N.Y.S.2d 827 (App. Div. 1995); and Venezia v. U.S., 884 F. Supp. 919 (D.N.J. 1995).

not under control but there is no way to distinguish a habit that is uncontrollable from one that is simply not controlled” (Akers, 1991, cited in Davies, 1996:S41).

CLASSIFICATIONS AND CONTROVERSIES

The American Psychiatric Association (1994) classifies pathological gambling as one of five different impulse disorders under a category called “Impulse-Control Disorders Not Elsewhere Classified.” The other impulse disorders in this classification are intermittent explosive disorder (discrete episodes of aggressive behavior), kleptomania (stealing objects not needed or of value), pyromania (fire setting), and trichotillomania (hair pulling with noticeable loss). There are many other psychiatric disorders that involve problems of impulse control (e.g., substance use disorders, antisocial personality disorders, conduct disorders, schizophrenia). However, these other disorders have other features, beyond difficulty regulating impulses, that better classify them.

This cluster of impulse disorders suggests that there may be an important relationship between pathological gambling and the other impulse control disorders (e.g., pyromania, kleptomania). For example, these phenotypically different conditions could represent alternative manifestations of a shared predisposition toward impulsivity. Since there is no agreement in the field on the precise meaning of mental disorder, Wakefield (1992) suggests that a disorder is better thought of as a “harmful dysfunction,” an idea that integrates social values (harmful) and scientific concepts (dysfunction): “dysfunction is a scientific term referring to the failure of a mental mechanism to perform a natural function for which it was designed by evolution” (Wakefield, 1992:373). The class of impulse disorders in which pathological gambling has been placed represents a set of behaviors that are violations of social mores and customs and therefore considered harmful. The dysfunctional nature of these disorders in general and pathological gambling in particular, however, remains to be determined. As we have previously indicated, mental disorders with impulsive features often have failed to satisfy the legal system’s need for exculpatory conditions. These disorders have not been considered as “causal” in the scientific sense and have therefore not withstood courtroom challenges.

This matter becomes even more complicated when considering the matter of comorbidity from the perspective of DSM-IV classification. Comorbidity is the medical term used to describe the cooccurrence of two or more disorders in a single individual; comorbidity is extremely common among pathological gamblers (Crockford and el-Guebaly, 1998). The problem of conceptually distinct multiple diagnoses can be taken to suggest that pathological gamblers suffer from a variety of interactive disorders. However, there is an alternative possibility that has gained considerable support among clinicians: multiple diagnoses reflect an underlying problem with the constructs of mental disorders. The frequency of cooccurring disorders as described in the DSM suggests that these categorical distinctions exhibit “extraordinary and obstinate heterogeneity” (Carson, 1991, cited in Blatt and Levy, 19XX: 83-84). Given this conceptual difficulty, although we describe comorbidity issues and pathological gambling more in Chapter 4, we do not emphasize this aspect of the disorder in the report. Nevertheless the reader is encouraged to keep comorbidity issues in mind when reading the discussions that follow of pathological gambling as an impulse disorder, as an addiction, and as considered by other theories and conceptualizations.

Pathological Gambling as an Impulse Disorder

An impulse refers to incitement to action arising from a state of mind or some external stimulus; or a sudden inclination to act, without conscious thought; or a motive or tendency coming from within (*Oxford English Dictionary*, 2nd edition, 1989). The essential feature of an impulse control disorder, as defined by DSM-IV, is “the failure to resist an impulse, drive, or temptation to perform an act that is harmful to the person or to others” (American Psychiatric Association, 1994:609). This implies a loss of control over behavior. There may be a sense of tension prior to committing the act, in which case committing it brings relief. The act is often pleasurable, though it may be followed by guilt and regret.

Existing literature on pathological and problem gambling uses many terms to describe impulsive behaviors from a variety of important perspectives, including “sensation-seeking,” “behavioral disinhibition,” and “risk-taking” (Lopes, 1987; Monroe, 1970; Zuckerman, 1979, 1990; Zuckerman et al., 1972). There is substantial literature suggesting that the descriptions are correct and contribute both to the origins and the maintenance of gambling involvement and problem gambling (Davis and Brisset, 1995). For example, indicators of behavioral disinhibition--the inability or unwillingness to inhibit behavioral impulses--have been associated with gambling involvement (Ciarrochi et al., 1991; Condas, 1990; Graham and Lowenfeld, 1986; Moravec and Munley, 1983; Templer et al., 1993; Castellani and Rugle, 1995).

In a study of cocaine treatment-seekers (Steinberg et al., 1992), the only measure that differentiated those with gambling problems from those without problems was a measure of disinhibition. In a study comparing a group of pathological gamblers in treatment to controls from the community, Specker and colleagues (1996) found that a significantly higher proportion of pathological gamblers had at least one other impulse control disorder (35 versus 3 percent). Similarly, the findings of increased antisocial behaviors and a history of criminal offenses among pathological gamblers also suggest disinhibitory tendencies (Cunningham-Williams et al., 1998; Blaszczynski and McConaghy, 1989; Busch, 1983; Hickey et al., 1986; Roy et al., 1989). Also, elevated rates of childhood attention-deficit hyperactivity disorder (ADHD) (Carlton et al., 1987; Carlton and Manowitz, 1994) and adult ADHD (Rugle, 1995, 1998) have been observed among pathological and problem gamblers.

Despite this evidence, this body of research may be misleading. The very few prospective studies of these addictions (e.g., Vaillant, 1983) require us to consider an alternative hypothesis: that involvement with gambling or other addictive behavior patterns can change the personality (Zinberg, 1975). The experience of alcoholism or pathological gambling may shift personality attributes so that, when researchers examine subjects who already have experienced alcoholism or pathological gambling patterns, they seem to have personality traits that are different from nondrinkers or nonpathological gamblers. Thus, it is possible that pathological gambling causes the development of these abnormal personality attributes, rather than that these attributes lead to pathological gambling.

Research suggests that the construct of behavioral disinhibition also relates to the risk for alcoholism (McGue et al., 1997). The presence of this trait may contribute to the high rate of alcoholism, estimated to be 33 percent, among pathological gamblers (Stinchfield and Winters, 1996). Moreover, relatively high levels of behavioral disinhibition differentiate the offspring of alcoholics from the offspring of nonalcoholics (Sher, 1991), suggesting that deviations in behavioral disinhibition are familial and may be a contributing cause, rather than merely a

consequence of the development of alcoholism. By inference, the development of pathological gambling may be similarly affected by this behavioral trait.

Other dimensions of impulse control that have been examined in the gambling literature are sensation-seeking, novelty-seeking, and arousal. Zuckerman's theory of sensation-seeking as applied to gambling suggests that "individuals entertain the risk of monetary loss for the positive reinforcement produced by states of high arousal during periods of uncertainty, as well as the positive arousal produced by winning" (Zuckerman, 1979:[.....]). Cloninger (1987) suggests a relationship between a desire for diverse sensations and alcohol consumption. Both Zuckerman and Cloninger's theories are relevant to gambling, in that they imply that gambling behaviors reflect tendencies to take risks and enjoy complex or varied stimulation.

The empirical literature in this area of gambling is inconclusive. Some investigations have found that pathological gamblers score higher on sensation-seeking scales than controls (Kuley and Jacobs, 1988; Stoltz, 1989); others have not found strong associations (Blaszczynski et al., 1990; Dickerson et al., 1990); and still others have found that gamblers scored within the average range on a measure of excitement-seeking (Castellani and Rugle, 1995). Similarly, researchers have not found elevated heart rates among gamblers in the laboratory setting (Anderson and Brown, 1984; Rule and Fischer, 1970; Rule et al., 1971), yet they have found elevated rates during play at various casino and video terminal games (Anderson and Brown, 1984; Leary and Dickerson, 1985). The lack of elevated heart rate in the laboratory may reflect a real difference in reaction--that simulated action is different from the real action of gambling. It also could mean a poor simulation, other characteristics of the laboratory setting, or a variety of other influences that remain difficult to identify.

Coventry and Norman (1997) summarized several problems specifically with studies of arousal and gambling. One example is heart rate fluctuation as a function of relaxation, frequent movement, or being in a simulated environment. The inherent unreliability of averaging heart rate measures, since gambling activity for certain games like slot machines is intermittent, is also a problem with such studies. Coventry and Norman also attempted to account for some of these methodological problems in their study of offtrack horse bettors and found significant increases in heart rate compared to baseline nongambling conditions, as bettors placed their bets. Unfortunately, as the authors point out, that in order to be unobtrusive, this study used a less than ideal measure of heart rate (photo-plethysmography) and measured bettors' heart rate for only one race.

Gambling problems also may originate from attempts to relieve or change subjective states (e.g., Jacobs, 1989; Rosenthal, 1989; Shaffer, 1996, 1997). It is therefore not surprising that negative emotionality, that is, the tendency to experience psychological distress and a negative mood state, is a personality construct frequently associated with gambling severity. Supporting evidence includes high rates of depressive-like thinking patterns among frequent gamblers (McCormick et al., 1987) and significantly elevated rates of lifetime and current affective disorders among pathological gamblers (Specker et al., 1996). Whereas gambling involvement may serve to manage or attenuate highly uncomfortable emotions, alternatively, gambling may also reflect attempts to regulate or shift emotions from one state to another to satisfy a need for novel experiences or entertainment. The experience of altered emotional states may not predate the onset of gambling problems. It is possible that people shift their emotional states using gambling, and then fall into a gambling pattern that stimulates problems.

There is considerable consensus that gambling involves impulsiveness. In some studies, data do not systematically address the extent to which risk-taking and other dimensions of

impulse control (i.e., sensation- and novelty-seeking, arousal, negative emotionality) are interrelated, or how they interact to affect initiation into and progression of gambling behavior. The established relationship between behavioral disinhibition and gambling may be the result of the correlation of each variable with sensation-seeking. Increased heart rates may be more attributable to other causes, like the anticipated outcome of a future event, not the response to an immediate event, such as the excitement of a race (Coventry and Norman, 1997), or verbalizations made by the gambler during gambling (Coulombe et al., 1992; Gaboury and Ladouceur, 1989; Gaboury et al., 1988; Griffiths, 1994; Ladouceur et al., 1988). And although Rugle's (1995) retrospective study suggests that, at least in a subgroup of pathological gamblers with high impulsivity, the impulsivity preceded the onset of gambling problems, longitudinal studies have not been conducted to establish that differences in impulse control characteristics predate the onset of gambling disorders, a necessary condition to establish a causal relationship. Interestingly, however, prospective studies are beginning to emerge suggesting that these traits may be transmitted genetically (Comings, 1998).

Pathological Gambling as an Addiction

Preoccupation, tolerance, and other DSM-IV criteria for pathological gambling, such as repeated unsuccessful efforts to stop gambling and becoming restless or irritable when attempting to stop, are indicative of physiological dependence (Wray and Dickerson, 1981; Meyer, 1989; Rosenthal and Lesieur, 1992). In addition, the self-help community has thought of what it terms compulsive gambling as an uncontrollable emotional illness (Gamblers Anonymous, 1997). As such, many researchers have turned their attention to the extensive body of literature on addictions to explain pathological and problem gambling behavior. For example, research has begun to explore the possible biochemical basis of excessive gambling and its effects on the brains of pathological gamblers (Hickey et al., 1986; Koeppe et al., 1998; Comings, 1998; Lukas, 1998). Although intriguing, these studies are primarily of persons in treatment with no control groups. Moreover, the basis for believing that pathological gambling should be classified as an addiction is almost entirely theoretical. As indicated above, DSM nomenclature has highlighted the similarity of pathological gambling to substance abuse since its third edition in 1987 (American Psychiatric Association, 1980, 1987, 1994), but it uses only the terms "abuse" or "dependence," not addiction.

To test the hypothesis that pathological gambling is a dependent state, studies such as those recently reviewed by Comings (1998) (e.g., Comings et al., 1996) must further address associated genetic, molecular, and environmental factors taking into account other cooccurring conditions and an array of risk factors--all among a diverse population (i.e., men and women, old and young, ethnically representative, rural and urban) of gamblers and nongamblers, problem gamblers and those without problems and treated and untreated gamblers.⁴ Research also should explore the possibility that pathological gambling is a spectrum disorder, which means it shares the underlying genes and observable behavior with other psychiatric disorders. Finally, research in this area should also consider the possibility of gambling as an addiction with respect to: (1) behavioral signs, (2) psychophysiological signs (e.g., tolerance, withdrawal), and (3) consequences to the person and his or her social functioning or surroundings.

⁴ Under a grant from the National Institute for Responsible Gaming, Peter Goyer and William Semple of the Cleveland Medical Center in Brecksville, Ohio, are using positron-emission tomography brain imaging (i.e., PET scanning technology) to study regional cerebral blood flow, and Dopamine-2 receptor indices in pathological gamblers. Preliminary findings were presented to the committee on June 2, 1998, in Irvine, California.

Other Theories and Conceptualizations of Pathological Gambling

The committee was charged to review excessive gambling as “pathological” as determined by the American Psychiatric Association. We were not charged with the task of determining the impact of excessive gambling caused by poor judgment untainted by illness. The distinction between gamblers who are overwhelmed by irresistible impulses to gamble and gamblers who are unwilling to regulate their impulse to gamble echoes throughout this volume. (The ability to make this distinction with some modicum of precision is at the heart of construct validity problems, discussed later in this chapter.) Although this report focuses on a medical model of gambling problems, readers should note that other models can also illuminate gambling-related excesses. For example, gambling can be understood as one aspect of a much larger problem, namely that a large and increasing number of households have trouble living within their means. For some households, the array of temptations to spend more than they can afford and the pressures to do so from advertising and a culture of conspicuous consumption may overwhelm self-control and skill in managing money. Those who cannot resist the temptation to spend beyond their means tend to be constantly in debt and constantly dealing with the consequences of their improvidence through legal and even illegal means. For some, the problem is credit cards and the Home Shopping Channel. For others, it’s gambling or speculating in investments. At-risk people may differ with respect to which type of temptation is most alluring, but the consequences and the social costs to themselves and their friends, family, employers, and creditors are the same regardless. The primary strategy for dealing with the problem of temptation has usually been to limit the availability of stimulants and opportunities. Excessive gamblers may be intemperate because they fail to resist temptation or fail to regulate impulses to act.

Besides the medical model, several other conceptual models and theories have been advanced to explain pathological gambling. These include a general theory of addictions, the reward deficiency syndrome, behavioral-environmental reasons, the biopsychosocial model, and the moral model, among others. Although these models are not directly comparable, according to Rugle (1998:[.....]), “the importance of such models is their potential for determining intervention and research strategies, public opinion and policy decisions, and the self-perceptions of pathological gamblers themselves.” The discussion below briefly describes three models for which there is some empirical support in the literature: behavioral-environmental reasons, a general theory of addictions, and the reward deficiency syndrome. (For detailed discussion of biogenetic and medical explanations of pathological gambling, see Chapter 4).

Behavioral-Environmental Reasons

Gambling may be viewed as a behavior that has been shaped in part by the environment, that is, pathological gamblers are people who have been susceptible to conditioning. The sequence of outcomes in some forms of gambling (e.g., slot machines) is quite similar to a partial reinforcement schedule (Knapp, 1976; Skinner, 1953, 1969). Winning, for example, represents a positive reinforcement. With partial reinforcement, rewards occur with some wagers, but not all. Gamblers are uncertain about which bets will produce rewards. In some forms of partial reinforcement, rewards come only after a certain number of responses (bets), but the number of responses is always changing. This is called a variable ratio schedule of reinforcement (Skinner,

1969). Variable ratio schedules of reinforcement do not produce learning as quickly as fixed ratio schedules of positive reinforcement (e.g., winning every bet), but after learning has occurred, extinction of behaviors acquired via variable ratio schedules of reinforcement is more difficult than with any other type of reinforcement schedule. This phenomena may explain people's persistence in gambling despite large losses (Skinner, 1969).

Furthermore, the greater the size of the rewards, the more resistant the behavior is to extinction, a result that suggests gamblers who experience large wins early in their gambling careers may be most susceptible to addiction. Some theorists have pointed out that gambling can provide reinforcement even in the absence of a win. Reid (1986) noted that near misses or losses that were "close" to being wins also encouraged gambling. For example, when two same-type fruits appear in a slot machine, there is a brief period of excitement and thrill as one hopes for the third needed to win the jackpot. Even if the third fruit does not quite line up with the other two, there is still some thrill from the thought of nearly winning. Not surprisingly, some slot machines are designed to ensure a higher than chance frequency of near misses. Such reinforcement can occur at no expense to the casino.

Finally, the casino environment itself provides reinforcing effects, such as flashing lights, ringing bells, bright lighting and color schemes, and the clanging of coins as they fall into the winning collection bins of slot machines (Knapp, 1976). People are often "primed" when casinos give away rolls of free coins, or allow people to gamble without charge for limited periods of time. For all of these reasons, excessive gambling may be viewed as a conditioned response to powerful reinforcers.

General Theory of Addictions

In response to the conceptual confusion affecting understanding of addictive and impulse disorders generally, Jacobs and others have emphasized the need for an overriding conceptual framework--a credible and testable theory, supported by an empirically derived database--that could clearly address the causes and the course of addictive behaviors (Jacobs 1987, 1989; Shaffer et al., 1989). Jacobs has proposed an interactive model of addiction, defining it as a dependent state that is acquired over time by a predisposed person in an attempt to relieve a chronic stress condition. Using pathological gambling as the prototype addiction, he posited that two interacting sets of factors (an abnormal physiological arousal state and childhood experiences resulting in a deep sense of personal inadequacy and rejection) in a conducive environment may produce addiction to any activity or substance that possesses three attributes: (1) it blurs reality by temporarily diverting the person's attention from the chronic aversive arousal state, (2) it lowers self-criticism and self-consciousness through an internal cognitive shift that deflects preoccupation from one's perceived inadequacies, and (3) it permits complimentary daydreams about oneself through a self-induced dissociative process.

The general theory holds that a given individual's addictive pattern of behavior represents that person's deliberately chosen means for entering and maintaining a dissociative-like state while indulging. Jacobs also characterizes this feature as a type of self-management or self-medicating strategy (Khantzian, 1985); that is, the person's addictive behavior represents the best solution to the stresses generated by longstanding underlying problems. Testing this theory on pathological gamblers, persons with other kinds of addictions, and normal control subjects, Jacobs and others have found principally through self-report research, that similar dissociative states are reported by pathological gamblers, alcoholics, and compulsive overeaters (Jacobs,

1982, 1989; Kuley and Jacobs, 1988; Gupta and Derevensky, [199?]). However, others have found that, although his work represents an important step toward the development of multidimensional models, Jacobs has largely ignored the importance of the social setting factors (Lesieur and Klien, 1987; Rosecrance, 1988; Zinberg, 1984) that influence the development, maintenance, and recovery from addictive behaviors (Shaffer et al., 1989).

Reward Deficiency Syndrome

Kenneth Blum and his colleagues adopted the concept of a reward deficiency syndrome to refer to alterations in brain chemistry that can interfere with the brain's reward process. This theory holds that genetic commonalties in a spectrum of behavioral disorders (including alcoholism, substance abuse, smoking, compulsive overeating and obesity, attention-deficit disorder, and pathological gambling) may be the underlying cause of a chemical imbalance that alters the signaling in the brain's reward process. The chemical imbalance appears to supplant normal feelings of well-being with negative feelings. A recent study found that the genetic anomaly that interferes with the brain's reward process was present in more than 50 percent of a sample of white pathological gamblers (Comings et al., 1996). This research and related issues are discussed in Chapter 4 in the section on biology-based studies of pathological gambling.

MEASURING PATHOLOGICAL GAMBLING⁵

As interest in pathological gambling increased during the 1990s, researchers have conducted an increasing number of epidemiological surveys and, to a lesser extent, clinical investigations. Accordingly, scientists developed several screening and diagnostic instruments for this research. The committee identified 25 different such assessment instruments that have been used to measure pathological and problem gambling (Shaffer et al., 1997). Of these, 12 were primarily used with adults and 3 were primarily used as adolescent measures. These instruments were used principally as screening tools. As part of the Survey of American Gambling Attitudes and Behavior commissioned by the U.S. Commission on a National Policy Toward Gambling, Kallick and her colleagues at the University of Michigan Survey Research Center developed the first instrument reported in the literature in 1975: the ISR (Institute for Social Research) Test (Kallick et al., 1979). Many of the recently developed tests are based on the DSM-III or subsequent DSM-based definitions to assess and measure pathological gambling.

Table 2-1 lists the primary gambling screening and diagnostic tools used in survey or clinical research cited in the literature. As indicated in the table, many of the measures have not been evaluated and the others have received minimal psychometric evaluation. The exception is the South Oaks Gambling Screen (SOGS), which has been widely used in numerous epidemiological studies (see Shaffer et al., 1997) and has been applied to samples derived from treatment, Gambler's Anonymous, help-line, and several general population settings (e.g., Lesieur and Blume, 1987; Stinchfield, 1998). The widespread use of the SOGS in population surveys did not occur without criticism. The concern is that the use of screening instruments that were developed principally for use in clinical settings requires caution in studies of the general population. In contrast to diagnostic interviews, the aim of screening tools is to identify the *possible* presence of the target problem. Clinical screening measures typically yield conservative

⁵ The committee acknowledges Rachel Volberg's written contribution pertaining to the history and development of diagnostic and screening instruments.

scoring decisions (such as the SOGS designation of “probable pathological gambler”) that are designed to guard against false negatives--the mistake of claiming that there is no problem when in fact one exists.⁶

A screening tool is most valuable when it is used to determine the need for conducting a more definitive assessment. When screening measures are used in population surveys, they necessarily yield liberal estimates of the disorder. Culleton (1989) has raised the question of the appropriateness of applying a screening test, such as the SOGS, to establish a prevalence rate in a general population. He criticizes this method on the basis of the low predictive value of a test that screens for a disorder with a low base rate among the general population. These concerns remind us that, even when an instrument has high sensitivity and specificity, “the actual predictive value of the instrument could be much more limited, depending on the prevalence of the disorder of interest” (Goldstein and Simpson, 1995:236). This argument suggests that the use of any measure will result in an overestimation of the prevalence of pathological gambling in the general population, given the likelihood that the disorder is a relatively infrequent phenomenon (Volberg and Boles, 1995).

However, future research cannot address whether the SOGS, or any other instrument, provides an overestimate or an underestimate of pathological gambling until the instrument’s statistical association with independent and valid standards of the disorder is determined. In this view, the use of screening instruments to estimate a “true” prevalence of a disorder is one of several important methods in the process of acquiring prevalence estimates. Of course, all efforts to establish a prevalence estimate of pathological gambling rest on the assumption that a valid standard of the disorder exists. However, it is not clear whether, in the field of psychiatry in general and for pathological gambling in particular, such standards exist (Shaffer et al., 1997). The process of establishing construct validity for disorders such as pathological gambling is complex and difficult; we take a brief but important digression into a more technical examination of this process in the next section.

The Process of Determining Construct Validity

Scientific research inevitably involves measuring things. The study of psychopathology involves measuring things that are not readily visible either to the naked eye or with contemporary technological instruments (such as microscopes or neuroimaging equipment). Even if we measure something consistently--that is, with reliability--scientists may remain uncertain of the thing that they are measuring. The concept of validity refers to “the veracity or accuracy of some measurement of a construct” (Malagady et al., 1992:61). Construct validity refers to the idea that scientific instruments are measuring precisely what they claim to be measuring.

It is traditional to establish the construct validity of a clinical disorder by integrating evidence from many different sources (e.g., clinical descriptive studies and etiological investigations) and establishing that the evidence is consistent with the theory that underlies the conceptualization of the disorder. “The problem of construct validation becomes especially acute in the clinical field since for many of the constructs dealt with, it is not a question of finding an imperfect criterion, but of finding any criterion at all” (*Psychological Bulletin Supplement*, 1954:4-15; as cited in Cronbach and Meehl, 1955:285). To establish the construct

⁶ In fact, screening instruments can be designed to guard against false positives too. The emphasis shifts depending on the objectives of the screen. Conservative screening implies that the true rate of the phenomenon being screened is known, which is often not the case.

validity of pathological gambling, scientists will have to work through a rigorous and systematic process.

Malgady and colleagues (1992) suggest a classic three-part framework for validating a psychiatric diagnosis such as pathological gambling. First, clinicians and scientists must establish content validity for the disorder, then conduct research on criterion-related validity, and finally arrive at construct validity. Malgady and colleagues note that, “The question of validity is whether or not the quantitative or qualitative values assigned to units under observation accurately depict the units’ variations in the construct or entity that is the intention of measurement” (Malgady et al., 1992:61). “Symbolically, validity of some measure (X) is estimated by its correlation, or concordance, with another measure (Y) of the criterion or of a criterion-related indicator that is external to X. When two X measurements are rendered by different interviewers at the same time or at different times or even by different interviewers at different times, the correlation between the measurements is an estimate of reliability. To qualify as a bona fide validity paradigm, the criterion-related indicator (Y) must be external to X, meaning that it was obtained by a different assessment technique, and must have relevance to the construct that is the target of measurement” (p. 61). To date, this paradigm has not been employed by any gambling researchers.

Thus, the scientific work plan to develop measures of pathological gambling would begin with identifying measurable behaviors and attitudes that theoretically reflect the underlying construct of pathological gambling. For example, is pathological gambling best understood as an addictive disorder, an impulse disorder, or one of many problems associated with a more fundamental disorder, such as depression? Individual and environmental factors that influence gambling onset and the development of an excessive gambling pattern would be identified. These factors could include player attributes (e.g., poor judgment and decision making, heightened motivation to seek stimulating sensations), social setting, some special characteristic of the games, or combinations of these elements. The measure would reflect the views of the onset, escalation, and maintenance of pathological gambling and be subjected to the rigors of validity testing so that, as evidence accumulates regarding the measure’s validity, the underlying construct--that it is actually measuring pathological gambling--is affirmed.

Ultimately, establishing construct validity is an unending process. Given the problems inherent in any discussion of the construct validity of pathological gambling, Bland et al. (1993:60) have suggested: “In the absence of a validating criterion, or ‘gold standard,’ it could be argued that perhaps the most that can be hoped for, as with unstructured clinical assessment, is social consensus on diagnostic classification” (e.g., concordance among SOGS interviews or convergence of multiple methods of classification). “The standardization of the diagnostic process is a useful way of increasing to respectable levels low concordance coefficients” (p. 61). In other words, although scientists and clinicians now may be able to measure and assess gambling-related problems reliably, this does not mean, nor should it imply, that either group knows exactly what it is that they are evaluating.

Validity as a Theory-Driven Construct

Given the array of instruments that purport to identify gambling-related problems and pathology, and the potential pitfalls in their design and use among the general population in particular, it is essential to sort through the psychometric characteristics of these screening devices. The two most commonly examined psychometric attributes are reliability and validity.

Reliability refers to the capacity of an instrument to measure a relatively enduring trait with some level of consistency over time, across social settings, and between raters. If a given instrument consistently measures a phenomenon, it is said to be reliable. Validity pertains to actually measuring that which is sought to be measured, as opposed to something else. As Goldstein and Simpson (1995) suggest, “validity refers to the questions ‘for what purpose is the indicator being used?’ and ‘how accurate is it for that purpose?’” (pp. 229-230). If an instrument distinguishes between pathological or problem gambling and another cooccurring condition--alcoholism, for example--it is said to be valid in that regard. Validity also relates to sensitivity and specificity: if a net is thrown out, it must have mesh small enough to catch the cases of interest, but large enough to let escape those cases that do not have the attribute being sought. Sensitivity represents how small the openings are to catch cases and specificity represents how large the openings are to let noncases escape. Reliability and validity, although related concepts, are sometimes confused; reliability is often mistaken for a measure of validity.

Screening Instrument Validation

The problems associated with determining an instrument’s validity begin with its very definition. Validity is neither static nor an inherent characteristic of a screening instrument. As indicated in the previous section, determining the validity of an instrument or a construct is an unending and dynamic investigative process. For example, we cannot simply conclude that an instrument has been shown to be valid for all purposes and all settings. “An indicator (e.g., an instrument, such as a test, a rating, or an interview) can be valid for one purpose, but not for another” (Goldstein and Simpson, 1995:230). Directed by theoretical and ultimately practical purposes, validity is the dynamic consequence of applying an instrument to a specific measurement task. However, in the field of gambling studies, there is a paucity of theory-driven research in general and prevalence research in particular (Shaffer, 1997). When conventional wisdom and theory shift or change, the validity of a measurement instrument can be terminated abruptly. The history of the SOGS provides an instance of the relative nature of validity. Although for some time researchers considered that the SOGS lifetime measure had been found valid and reliable (Volberg, 1994:238), the same investigators now suggest that the SOGS lifetime measures “over-state the actual prevalence of pathological gambling” (Volberg, 1997:41) because it combines those with a history of a gambling problem and those who currently have a problem.

CONCLUSIONS

Gambling behavior inherently involves risk-taking, may involve limited skill, and may best be conceptualized on a continuum ranging from no gambling, to social and recreational gambling, to problem gambling, and to pathological gambling. Pathological gambling often cooccurs with other disorders, and its social and economic effects theoretically increase once the threshold of problem gambling is crossed, although this dynamic relationship has not yet been demonstrated empirically. In addition, little is known about the dynamics of gamblers as they move from one level of gambling behavior to another.

Clinical evidence suggests that pathological gamblers engage in destructive behaviors: they commit crime, they run up large debts, they damage relationships with family and friends, and some kill themselves. Since 1980, pathological gambling has been categorized as a

“Disorder of Impulse Control Not Elsewhere Classified” in three versions of the *Diagnostic and Statistical Manual of Mental Disorders* published by the American Psychiatric Association. The effort by the American Psychiatric Association to operationalize pathological gambling has been evolving and today DSM-IV provides a useful definition and diagnostic criteria that is relied on heavily by both clinicians and researchers. As a diagnostic guide, DSM-IV suggests that persons meeting 5 or more of the 10 criteria should be classified and treated as pathological gamblers. Even though the DSM-IV definition of pathological gambling is now widely accepted, there remains debate over the precise classification and construct validity of pathological gambling, and also over the conceptualization and definition of less severe problem gambling, which is not addressed in the DSM-IV. The debate includes the issue of whether or not pathological gambling should be viewed as a dependent state or an addiction rather than as a disorder of impulse control.

The history of pathological and problem gambling research reflects the developmental process of shifting scientific attempts to measure a singular phenomenon. The field is still relatively immature compared with many others and, as a result, does not demonstrate a coherent program of scientific inquiry.

The committee recognizes that, although the term pathological gambling and its accepted definition adequately represent severe cases of excessive gamblers, there is a need for more research to validly define other levels of gambling severity. Not all gamblers experience an excessive relationship with the games they play; not all excessive gamblers experience compulsive or pathological behaviors; not all pathological gamblers experience impairment in every aspect of their activities. A multilevel system with agreed-on terminology, such as that proposed by Shaffer and Hall (1996) should be considered by experts in the field. Such consideration could lead to integration of diverse research findings and to a more accurate reflection of the clinical picture.

Scholars of pathological and problem gambling are still struggling with how to demonstrate the validity of pathological gambling as a primary disorder independent of other mental illness, even as scholars in psychiatry in general continue to encounter many of these same validity problems across the full range of mental disorders (e.g., Cronbach and Meehl, 1955; Dohrenwend, 1995; Malagady et al., 1992). A high priority for future research is to further advance the validity of pathological gambling constructs. In order to establish coherent theories and models of pathological gambling, a rigorous scientific work plan is required. This effort will put the concept of pathological gambling to the test by generating the empirical evidence necessary to fully evaluate its construct validity. Simply entering the psychiatric nomenclature is not a proxy for validity. Many psychiatric diagnoses have come and gone over the years.⁷

Although various instruments are available to assess the prevalence of pathological and problem gambling, each instrument is best understood by viewing it through an evaluative lens that can focus on its origin, driving motivation, relationship to funding, and inherent strengths and weaknesses. Notwithstanding improved diagnostic criteria provided by DSM-IV, until the field develops standardized tools with demonstrated psychometric properties, the ability of an instrument to successfully determine whether an individual is a pathological gambler remains

⁷ For example, the symptom cluster called “post-traumatic stress disorder” first appeared in the DSM-III in 1980, replacing diagnoses such as “shell shock” and “combat fatigue” (Breslau and Davis, 1987). Conversely, in 1973, “homosexuality” was removed from the second edition of the DSM (American Psychiatric Association, 1973), reflecting the medical profession’s shift toward viewing sexual orientation as something other than a disorder that needed to be treated (Bayer, 1981).

dependent on the method of validation, interviewing technique, sampling design, and other methodological factors. Consequently, in the absence of a well-formulated model or theory and the subsequent construct validity that results from a program of empirical research, scientifically based knowledge and understanding cannot be advanced.

Contemporary scientists stand on the shoulders of those who came before. The efforts of pioneers who undertook the early research on pathological gambling, usually without institutional support, provide the platform on which current investigators stand. The current conceptualization, definition, and diagnostic criteria for pathological gambling must be carefully studied. The French biologist Jean Rostand reminds us that “Nothing leads the scientist so astray as a premature truth” (Rostand, 1939). The field of gambling studies is in its early days. It is therefore timely to encourage those who study gambling and its effects, as well as those in positions to support such research, to pursue empirical studies for further validation and understanding of this public health problem. Future research that measures the incidence of related psychiatric disorders along with pathological gambling, interactive processes, and genetic predispositions will provide important insight into these questions.

REFERENCES

- American Psychiatric Association
1994 DSM-IV: Diagnostic and statistical manual of mental disorders. (4th ed.).
Washington, D.C.: Author.
- American Psychiatric Association.
1987 DSM-III-R: Diagnostic and statistical manual of mental disorders. (3rd ed.,
revised). Washington, D.C.: Author.
- American Psychiatric Association
1980 DSM-III: Diagnostic and statistical manual of mental disorders. (3rd ed.).
Washington, D.C.: Author.
- American Psychiatric Association
1973 DSM-II: Diagnostic and statistical manual of mental disorders. (2nd ed.).
Washington, D.C.: Author.
- Anderson, G., and R. Brown
1984 Real and laboratory gambling, sensation-seeking and arousal. *British Journal of
Addiction* 75:401-410.
- Bayer, R.
1981 Homosexuality and American psychiatry: The politics of diagnosis. New York:
Basic Books, Inc.
- Benjamin, J., L. Lin, C. Patterson, B.D. Greenberg, D.L. Murphy, and D.H. Hamer
1996 Population and familial association between the D4 dopamine receptor gene and
measures of novelty seeking. *Nature Genetics* 12(January):81-83.
- Bland, R.C., S.C. Newman, H. Orn, and G. Stebelsky
1993 Epidemiology of pathological gambling in Edmonton. *Canadian Journal of
Psychiatry* 38:108-112.
- Blaszczynski, A.P., and N. McConaghy
1989 Anxiety and/or depression in the pathogenesis of addictive gambling.
International Journal of the Addictions 24:337-350.
- Blaszczynski, A., N. McConaghy, and A. Frankova
1990 Boredom proneness in pathological gambling. *Psychological Reports* 67:35-42.
- Blatt, S.J. and K.N. Levy
1998. A psychodynamic approach to the diagnosis of psychopathology. In J.W. Barron
, et al (Eds.) pp 73-109 *Making diagnosis meaningful: Enhancing evaluation and
treatment of psychological disorders*. Washington, D.C.: American Psychiatric
Association.
- Blum, K., J.G. Cull, E.R. Braverman, T.J.H. Chen, and D.E. Comings

1997 Reward deficiency syndrome: Neurobiological and genetic aspects. In K. Blum,
E.P. Noble (Ed.), et al pp 311-327 *Handbook of psychiatric genetics*. Boca
Raton, FL: Crc Press Inc.
- Boyd, W.H.
1976 Excitement: The gambler's drug. In *Gambling and Society*, W.R. Eadington, ed.,
Springfield, IL: Thomas.
- Bradford, J., J. Geller, H.R. Lesieur, R.J. Rosenthal and M. Wise

- 1996 Impulse control disorders. In *DSM-IV Sourcebook: Volume 2*. T.A. Widiger, A.J. Frances, H.A. Pincus et al., eds. Washington, D.C.: American Psychiatric Press, pp. 1007-1031.
- Brenner, R., and B.A. Brenner
1990 *Gambling and speculation: A theory, a history, and a future of some human decisions*. Cambridge: Cambridge University Press.
- Breslau, N. and G.C. Davis
1987 Posttraumatic stress disorder: The stress or criterion. *The Journal of Nervous and Mental Disease* 175(5):255-264.
- Brown, R.I.F.
1996 Role of dissociative experiences in problem gambling. Presented at the Second European Conference on Gambling and Policy Issues. Amsterdam, September 4-7.
- Brown, R.I.F.
1987 Pathological gambling and related patterns of crime: Comparisons with alcohol and other drug addictions. *Journal of Gambling Behavior* 3:98-114.
- Bruce, A.C. and J.E.V. Johnson

1996 Decision-making under risk: Effect of complexity on performance. *Psychological Reports* 79(1): 67-76.
- Busch, C.M.
1983 The theory and measurement of three independent personality dimensions: Impulsivity, self-control, and caution. *Dissertation Abstracts* 44:1219.
- Carlton, P.L., and P. Manowitz
1994 Factors determining the severity of pathological gambling in males. *Journal of Gambling Studies* 10:147-158.
- Carlton, P.L., P. Manowitz, H. McBride, R. Nora, M. Swartzburg, and L. Goldstein.
1987 Attention deficit disorder and pathological gambling. *Journal of Clinical Psychiatry* 48:487-488.
- Castellani, B., and L. Rugle
1995 A comparison of pathological gamblers to alcoholics and cocaine abusers on impulsivity, sensation seeking, and craving. *International Journal of the Addictions* 30:275-289.
- Ciarrocchi, J.W., N. Kirschner, and F. Fallik
1991 Personality dimensions of male pathological gamblers, alcoholics, and dually addicted gamblers. *Journal of Gambling Studies* 7:133-142.
- Cloninger, C.R.
1987 Neurogenetic adaptive mechanisms in alcoholism. *Science* 236:410-416.
- Clotfelter, C.T. and P.J. Cook
1989 *Selling hope: State lotteries in America*. Cambridge, MA: Harvard University Press.
- Comings, D.E.
1998 The molecular genetics of pathological gambling. *CNS Spectrums* 3(6): 20-37.
- Condas, G.P., Jr.

- 1990 Assessment of the difference in personality characteristics between pathological and nonpathological gamblers. *Dissertation Abstracts* 51:2044.
- Coulombe, A., R. Ladouceur, R. Desharnais, and J. Jobin
 1992 Erroneous perceptions and arousal among regular and occasional video poker players. *Journal of Gambling Studies* 8(3):235-244.
- Coventry, K.R. and A.C. Norman
 1997 Arousal, sensation-seeking and frequency of gambling in off-course horse racing bettors. *British Journal of Psychology* 88:671-681.
- Crockford, D.N., and N. el-Guebaly
 1998 Psychiatric comorbidity in pathological gambling: A critical review. *Canadian Journal of Psychiatry* 43:43-50.
- Cronbach, L.J., and P.E. Meehl
 1955 Construct validity in psychological tests. *Psychological Bulletin* 52(4): 281-302.
- Culleton, R.P.
 1989 The prevalence rates of pathological gambling: A look at methods. *Journal of Gambling Behavior* 5(1): 22-41.
- Cunningham-Williams, R.M., L.B. Cottler, W.M. Compton, and E.L. Spitznagel
 1998 Taking chances: Problem gamblers and mental health disorders - results from the St. Louis Epidemiological Catchment Area (ECA) Study. *American Journal of Public Health* 88(7): 1093-1096.
- Custer, R.L.
 1982 An overview of compulsive gambling. In *Addictive disorders update*, P.A. Carone, S.F. Yolles, S.N. Kieffer, and L.W. Krinsky, eds. (Vol. VII: 107-124). New York: Human Sciences Press, Inc.
- Custer, R.L.
 1980 The profile of pathological gamblers. Washington, D.C.: National Foundation for Study and Treatment of Pathological Gambling.
- Custer, R.L. and L.F. Custer
 1978 Characteristics of the recovering compulsive gambler: A survey of 150 members of Gamblers Anonymous. Presented at the Fourth Annual Conference on Gambling, Reno, Nevada. December.
- Custer, R.L. and H. Milt
 1985 *When Luck Runs Out*. New York: Facts on File Publications.
- Davies, J.B.
 1996 Reasons and causes: Understanding substance users' explanations for their behavior. *Human Psychopharmacology* 11: S39-S48.
- Davis and Brisset, 1995 2-23
- Devereux, E.C.
 1979 Gambling. In *The International Encyclopedia of the Social Sciences*, Vol. 17. New York, NY: MacMillan.
- Dickerson, M.G., M. Walker, S.L. England, and J. Hinchy
 1990 Demographic, personality, cognitive and behavioral correlates of off-course betting involvement. *Journal of Gambling Studies* 6:165-182.
- Dohrenwend, B.P.

- 1995 "The problem of validity in field studies of psychological disorders" revisited. In Textbook in psychiatric epidemiology, M. T. Tsuang, M. Tohen, and G.E. Zahner, eds., (pp. 3-20). New York: Wiley-Liss.
- Ebstein, R.P., O. Novick, R. Umansky, B. Priel, Y. Osher, D. Blaine, E.R. Bennett, L. Nemanov, M. Katz, and R.H. Belmaker
 1996 Dopamine D4 receptor (D4DR) exon III polymorphism associated with the human personality trait of novelty seeking. *Nature Genetics* 12(January):78-80.
- Faigman et al., 1997 2-19
- Gaboury, A. and R. Ladouceur
 1989 Erroneous perceptions and gambling. *Journal of Social Behavior and Personality* 4: 411-420.
- Gaboury, A., R. Ladouceur, G. Beauvais, L. marchand, et al
 1988 Cognitive dimensions and behaviors among regular and occasional blackjack players. *International Journal of Psychology* 23(3): 283-291.
- Gamblers Anonymous
 1997 Gamblers Anonymous: Sharing recovery through Gamblers Anonymous. Los Angeles: Gamblers Anonymous.
- Gamblers Anonymous, 1983 2-9
- Goldstein, J.M., and J.C. Simpson
 1995 Validity: Definitions and applications to psychiatric research. In Textbook in psychiatric epidemiology, M.T. Tsuang, M. Tohen, and G. E. Zahner, eds., (pp. 229-242). New York: Wiley-Liss.
- Graham, J.R., and B.H. Lowenfeld
 1986 Personality dimensions of the pathological gambler. *Journal of Gambling Behavior* 2:58-66.
- Griffiths, M.D.
 1994 The role of cognitive bias and skill in fruit machine gambling. *British Journal of Psychology* 85:351-369.
- Hickey, John E., C.A. Haertzen, and J.E. Henningfield
 1987 Simulation of gambling responses on the Addiction Research Center Inventory. *Addictive Behaviors* 11:345-349.
- Jacobs, D.F.
 1989a Illegal and undocumented: A review of teenage gambling and the plight of children of problem gamblers in America. In, H.J. Shaffer, S.A. Stein, B. Gambino, and T.N. Cummings (Eds.), *Compulsive Gambling: Theory, Research and Practice*. Lexington, MA: Lexington Books.
- Jacobs, D.F.
 1989b Special issue: Gambling and the family. *Journal of Gambling Behavior*, 5, No. 4.
- Jacobs, D.F.
 1988 A general theory of addictions: Rationale for and evidence supporting a new approach for understanding and treating addictive behaviors. In *Compulsive gambling: theory, research and practice*, H.J. Shaffer, S. Stein, B. Gambino, and T.N. Cummings, eds., (pp. 35-64). Lexington, MA: Lexington Books.
- Jacobs, D.F.

- 1987 Evidence for a common dissociative-like reaction among addicts. *Journal of Gambling Behavior* 4:27-37.
- Kallick, M., D. Suits, T. Dielman, and J. Hybels
1979 Ann Arbor, MI: Survey Research Center, Institute for Social Research, University of Michigan Press.
- Khantzian, E.J.
1985 The self-medication hypothesis of addictive disorders: Focus on heroin and cocaine dependence. *American Journal of Psychiatry* 142(11):1259-1264.
- Khantzian, E.J.
1977 The ego, the self, and opiate addiction: Theoretical and treatment considerations. *NIDA Research Monograph* 12: 1-1-117.
- Khantzian, E.J.
1975 Self-selection and progression in drug dependence. *Psychiatry Digest* 36:19-22.
- Knapp, T.J.
1976 A functional analysis of gambling behavior. In *Gambling and society: Interdisciplinary studies on the subject of gambling*, W.R. Eadington, ed. Springfield, Illinois: Charles C. Thomas.
- Koepp, M.J., R.N. Gunn, A.D. Lawrence, V.J. Cunningham, A. Dagher, T. Jones, D.J. Brooks, C.J. Bench, and P.M. Grasby
1998 Evidence for striatal dopamine release during a video game. *Nature* 393:266-268.
- Kuley, N., and D. Jacobs
1988 The relationship between dissociative-like experiences and sensation seeking among social and problem gamblers. *Journal of Gambling Behavior* 4:197-207.
- Ladouceur, R., and M. Mayrand
1984 Evaluation of the "illusion of control": Type of feedback, outcome sequence, and number of trials among regular and occasional gamblers. *Journal of Psychology* 117(1):37-46.
- Ladouceur, R., D. Dube, I. Giroux, N. Legendre, et al.
1996 Cognitive biases in gambling: American roulette and 6/49 lottery. *Journal of Social Behavior and Personality* 10(2):473-479.
- Ladouceur, R., A. Gaboury, M. Dumont, and P. Rochette
1988 Gambling: Relationship between the frequency of wins and irrational thinking. *Journal of Psychology* 122:409-412.
- Langer, E.J.
1975 The illusion of control. *Journal of Personality and Social Psychology* 32:311-328.
- Langer, E.J., and J. Roth
1975 Heads I win, tails it's chance: The illusion of control as a function of the sequence of outcomes in a purely chance task. *Journal of Personality and Social Psychology* 32:951-955.
- Leary, K., and M.G. Dickerson
1985 Levels of arousal in high and low frequency gamblers. *Behavioral Research and Therapy* 23:197-207.

- Lesieur, H.R.
1994 Epidemiological surveys of pathological gambling: Critique and suggestions for modification. *Journal-of-Gambling-Studies*. 1994 Win Vol 10(4):385-398.
- Lesieur, H.R.
1989 Gambling, pathological gambling and crime. In *The Handbook of Pathological Gambling*, T. Galski, ed. pp. 89-110. Springfield, IL: Charles C. Thomas.
- Lesieur, H.R.
1988 Altering the DSM-III criteria for pathological gambling. *Journal of Gambling Behavior* 4(1): 38-47.
- Lesieur, H.R.
1984 *The Chase: Career of the Compulsive Gambler*. Rochester, VT: Schenkman Books.
- Lesieur, H.R. and S.B. Blume
1991 When Lady Luck loses: Women and compulsive Gambling. In *Feminist Perspectives on Addictions*, N. van den Bergh, ed. pp. 181-197. New York: Springer.
- Lesieur, H.R., S.B. Blume, and R. Zoppa
1986 Alcoholism, drug abuse and gambling. *Alcoholism: Clinical and Experimental Research* 10:33-38.
- Lesieur, H.R., and R. Klein
1985 Pathological gambling among high school students. *Addictive Behaviors* 12:129-135.
- Lesieur, H.R., and R.J. Rosenthal
1998 Analysis of pathological gambling. In *DSM-IV Sourcebook: Volume 4*, T.A. Widiger, A.J. Frances, H.A. Pincus, R. Ross, M.B. First, W. Davis and M. Kline, eds. Washington, D.C.: American Psychiatric Association, pp. 393-401.
- Lesieur, H.R., and R.J. Rosenthal
1994 Self-reported physiological and dissociative experiences among pathological gamblers. Presented at the Conference on Gambling Behavior of the National Council on Problem Gambling. Seattle, July. Also at the First European Conference on Gambling and Policy Issues. Cambridge, UK. August, 1995.
- Lesieur, H.R., and R.J. Rosenthal
1991 Pathological gambling: A review of the literature (prepared for the American Psychiatric Association task force on DSM-IV committee on disorders of impulse control not elsewhere classified). *Journal of Gambling Studies* 7:5-39.
- Livingston, J.
1974 *Compulsive Gamblers: Observations on Action and Abstinence*. New York: Harper Torchbacks.
- Lopes, L.L.
1987 Between hope and fear: The psychology of risk. *Advances in Experimental Social Psychology* 20:255-295.
- Lorenz, V.C., and R.A. Yaffee
1988 Pathological gambling: Psychosomatic, emotional, and marital difficulties as reported by the gambler. *Journal of Gambling Behavior* 2:40-49.
- Lukas, S.E.

- 1998 Brain Imaging of Altered Mood States: Implications for Understanding the Neurobiological Bases of Gambling. Commissioned paper for the National Research Council, Committee on the Social and Economic Impact of Pathological Gambling.
- Malagady, R.G., L.H. Rogler, and W.W. Tryon
 1992 Issues of validity in the diagnostic interview schedule. *Journal of Psychiatric Research* 26(1): 59-67.
- McCormick, R.A., A.M. Russo, L.F. Ramirez, and J.I. Taber
 1984 Affective disorders among pathological gamblers seeking treatment. *American Journal of Psychiatry* 141:215-218.
- McCormick, R.A., J. Taber, N. Kruegelbach, and A. Russo
 1990 Personality profiles of hospitalized pathological gamblers: The California Personality Inventory. *Journal of Clinical Psychology* 43:521-527.
- McGue, M., W. Slutske, J. Taylor, and W.G. Iacono
 1997 Personality and substance use disorders: I. Effects of gender and alcoholism subtype. *Alcoholism: Clinical and Experimental Research* 21:513-520.
- Meyer, G.
 1989 *Glucksspieler in Selbsthilfegruppen: Erste Ergebnisse einer empirischen Untersuchung*. Hamburg: Neuland.
- Monroe, R.R.
 1970 *Episodic behavioral disorders: A psychodynamic and neurophysiologic analysis*. Cambridge, Massachusetts: Harvard University Press.
- Moran, E.
 1969 Taking the final risk. *Mental Health*, (London), 21-22.
- Moravec, J.D., and P.H. Munley
 1983 *The Moral Order: An Introduction to the Human Situation*. Beverley Hills: Sage Press.
- Morse, S.
 1998 Excusing and the new excuse defenses: A legal and conceptual review. In M. Tonry ed., pp-pp, *Crime and Justice: A Review of Research*, volume 23. Chicago: University of Chicago Press.
- Morse, S.
 1994 Culpability and control. *University of Pennsylvania Law Review* 142:1587-????.
- Neese, R.M., and K.C. Berridge
 1997 Psychoactive drug use in evolutionary perspective. *Science* 278:63-66.
- O'Donnell, R., and L.R. Rugle
 1996 Gambling severity and dissociation in a group of inpatient gamblers. Presented at the Tenth National Conference on Gambling Behavior, Chicago, September.
- Oxford (prepared by J.A. Simpson and E.S.C. Weiner)
 1989 *The Oxford English Dictionary* (2nd ed.). Oxford: Clarendon Press.
- Quinn, J.P.

- 1892 Fools of fortune or gambling and gamblers, comprehending a history of the vice in ancient and modern times, and in both hemispheres: An exposition of its alarming prevalence and destructive effects, with an unreserved and exhaustive disclosure of such frauds, tricks and devices as are practiced by "professional" gamblers, "confidence men" and "bunko steerers." Chicago, IL: Anti-Gambling Association.
- Rachlin, S., A.L. Halpern, and S.L. Porthow
 1984 The volitional rule, personality disorders and the insanity defense. *Psychiatric Annals* 14(2): 139-141, 145-147.
- Reid, R.L.
 1986 The psychology of the near miss. *Journal of Gambling Behavior* 2:32-39.
- Rosecrance, J.D.
 1988 Active gamblers as peer counselors. *International Journal of the Addictions* 23(7): 751-766.
- Rosecrance, J.
 1985 Compulsive gambling and the medicalization of deviance. *Social Problems* 32:275-284.
- Rosenthal, R.J.
 1989 Pathological gambling and problem gambling: Problems of definition and diagnosis. In H.J. Shaffer, S.A. Stein, et al (eds.) pp 101-125 *Compulsive gambling: Theory, research, and practice*. Lexington, MA: Lexington Books.
- Rosenthal, R.J.
 1986 The pathological gambler's system of self-deception. *Journal of Gambling Behavior* 2:108-120.
- Rosenthal, R.J., and H.R. Lesieur
 1991 Self-reported withdrawal symptoms and pathological gambling. *American Journal on Addictions* 1:150-154.
- Rostand, 1939 2-44
- Roy, A., R. Custer, V. Lorenz, and M. Linnoila
 1992 Personality factors and pathological gambling. *Acta-Psychiatrica-Scandinavica* 80:37-39.
- Rugle, L.
 1998 The Biopsychosocial Model of Pathological Gambling. Draft manuscript in *Gambling: Trivial Intensity*. pp. 18-38 .
- Rugle, 1995 2-23, 2-26
- Rule, B.G., and D.G. Fischer
 1970 Impulsivity, subjective probability, cardiac response and risk-taking. *Personality* 1:251-260.
- Rule, B.G., R.W. Nutler, and D.G. Fischer
 1971 The effect of arousal on risk-taking. *Personality* 2:239-247.
- Shaffer, H.J.
 1997a The most important unresolved issue in the addictions: Conceptual chaos. *Substance Use and Misuse* 32(11):1573-1580.
- Shaffer, H.J.

- 1997b The psychology of stage change. In Substance abuse: A comprehensive textbook, J. H. Lowinson, P. Ruiz, R. B. Millman, and J. G. Langrod, eds. (Third ed., pp. 100-106). Baltimore: Williams and Wilkins.
- Shaffer, H.J.
1996 Understanding the means and objects of addiction: Technology, the Internet, and gambling. *Journal of Gambling Studies* 12(4):461-469.
- Shaffer, H.J.
1985 Assessment of addictive disorders: The use of clinical reflection and hypotheses testing. *Psychiatric Clinics of North America* 9(3):385-398.
- Shaffer, H.J., S.A. Stein, et al. (eds.)
1989 *Compulsive gambling: Theory, research, and practice*. Lexington, MA: Lexington Books.
- Shaffer, H.J. and M.N. Hall
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., and S.B. Jones
1989 *Quitting cocaine: The struggle against impulse*. Lexington, MA.: Lexington Books.
- Shaffer, H.J., R. LaBrie, K.M. Scanlan, and T.N. Cummings
1994 Pathological gambling among adolescents: Massachusetts gambling screen MAGS). *Journal of Gambling Studies* 10(4):339-362.
- Sher, K.J.
1990 *Children of alcoholics: A critical appraisal of theory and research*. Chicago: University of Chicago Press.
- Skinner, B.F.
1969 *Contingencies of reinforcement: A theoretical analysis*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Skinner, B.F.,
1953 *Science and human behavior*. New York: Appleton-Century-Crofts.
- Specker, S.M., G.A. Carlson, K.M. Edmonson, P.E. Johnson, and M. Marcotte
1996 Psychopathology in pathological gamblers seeking treatment. *Journal of Gambling Studies* 12:67-81.
- Steinberg, M.A., T.A. Kosten, and B.J. Rounsaville
1992 Cocaine abuse and pathological gambling. *American-Journal-on-Addictions* 1(2):121-132.
- Steiner, J.

1970 An experimental study of risk-taking. *Proc R Soc Med* 63(12): 1271-###
- Stinchfield, R.
1997 Reliability, validity, and classification accuracy of the South Oaks Gambling Screen (SOGS). Manuscript submitted for publication.

- Stinchfield, R.D. and K.C. Winters
 1996 Treatment Effectiveness of six state-supported compulsive gambling treatment programs
 In Minnesota, April 1996. Minneapolis, MN: Department of Psychiatry, University of
 Minnesota.
- Stoltz, T.
 1989 Cognitive factors in pathological gambling. *Dissertation Abstracts* 51:1537.
- Szasz, T.
 1991 Diagnoses are not diseases. *Lancet* 338:1574-1576.
- Szasz, T.
 1987 *Insanity: The idea and its consequence*. New York: John Wiley and Sons, Inc.
- Szasz, T.S.
 1970 *The manufacture of madness: A comparative study of the inquisition and the
 mental health movement*. New York: Dell Publishing Company.
- Templer, D.I., G. Kaiser, and K. Siscoe
 1993 Correlates of pathological gambling in prison inmates. *Comprehensive
 Psychiatry* 34:347-351.
- Thompson, W.N., R. Gazel, and D. Rickman
 1998 *The Social Costs of Gambling in Wisconsin*. Report to the Wisconsin Policy
 Research Institute. Vol. 9, No.6.
- Vaillant, G.E.
 1983 Natural history of male alcoholism: Is alcoholism the cart or the horse to
 sociopathy? *British Journal of the Addictions* 78(3): 317-326.
- Volberg, R.A.
 1999 Methodological issues on research on problem gambling. Paper prepared for the
 National Research Council Committee on the Social and Economic Impact of
 Pathological Gambling.
- Volberg, R.A.
 1997 *Gambling and problem gambling in Mississippi: A report to the Mississippi
 Council on Compulsive Gambling (Social Research Report Series 97-1)*.
 Mississippi State: Mississippi State University, Social Science Research Center.
- Volberg, R.A., and J. Boles
 1995 *Gambling and problem gambling in Georgia (Report to the Georgia Department
 of Human Resources)*. Roaring Spring, PA: Gemini Research.
- Volberg, R.A.
 1994 The prevalence and demographics of pathological gamblers: Implications for
 public health. *American Journal of Public Health* 84:237-241.
- Volberg
 1993 *Gambling and Problem Gambling Among Adolescents in Washington State*.
 Albany, NY: Gemini Research.

- Wakefield, J.C.
 1992 The concept of mental disorder: On the boundary between biological facts and social values. *American Psychologist* (Vol. 47:373-388).
- Walker, M.B.
 1992 Irrational thinking among slot machine players. *Journal of Gambling Studies* 8:245-261.
- Walker, M.B., and M.G. Dickerson
 1996 The prevalence of problem and pathological gambling: A critical analysis. *Journal of Gambling Studies* 12(2): 233-249.
- Weider, H., and E. Kaplan
 1969 Drug use in adolescents. *Psychoanalytic Study of the Child* (Vol. 24:399-431).
- Wildman, R.W., II.
 1996 *Gambling: An Attempt at an Integration*. Edmonton, Alberta, Canada: Wynne Resources.
- WHICH WINTERS, ET AL., 1993
- Winters, K.C., R. Stinchfield, and J. Fulkerson
 1993 Patterns and characteristics of adolescent gambling. *Journal of Gambling Studies*, 9(4):371-386.
- Winters, K.C., R.D. Stinchfield, and J. Fulkerson
 1993 Toward the development of an adolescent gambling severity scale. *Journal of Gambling Studies* 9(1):63-84.
- Wray, I., and M. Dickerson
 1981 Cessation of high frequency gambling and “withdrawal” symptoms. *British Journal of Addiction* 76:401-405.
- Zinberg, N.E.
 1984 *Drug, set, and setting: The basis for controlled intoxicant use*. New Haven: Yale University Press.
- Zinberg, N.E.
 1975 Addiction and ego function. *Psychoanalytic Study of The Child* 30:567-588.
- Zuckerman, M.
 1979 *Sensation seeking: Beyond the optimal level of arousal*. Hillsdale, N.J.: L. Erlbaum Associates.
- Zuckerman, M., R.N. Bone, R. Neary, D. Mangelsdorff, and B. Brustman
 1972 What is the sensation seeker? Personality trait and experience correlates of the Sensation-Seeking Scales. *Journal of Consulting and Clinical Psychology* 39(2):308-321.

TABLE 2-1 Measures of Pathological and Problem Gambling				
Adult Tools	Type	Author or Study Using Instrument	Number of Items	Psychometrics
ISR (1974)	Screening	Kallick et al.	18	Not evaluated
CCSM (1984)	Screening	Culleton	28	Not evaluated
SOGS (1987)	Screening	Lesieur and Blume	20	Evaluated with clinic-referred, Gamblers Anonymous, help-line callers, general population
MOGS (1990)	Screening	Laundergan et al.	12	Not evaluated
SOGS-R (1991)	Screening	Abbott and Volberg	20	Evaluated with general population
DSM-IV screen (1996)	Screening	Fisher	10	Evaluated with general population
DIS (1995)	Diagnostic	Cunningham-Williams et al.	5	Not evaluated
SGC (1996)	Screening	Baron et al.	18	Evaluated with general population
PG-YBOCS (1998)	Screening	DeCaria et al.	10	Not evaluated
DIGS (1997)	Diagnostic interview	Winters et al.	20	Evaluated with clinic-referred, help-line, general population
EDJP (1997)	Distorted Cognitions	Ladouceur et al.	12 per game	Not evaluated
SIR (1998)	Treatment planning	McGuire et al.	135	Not evaluated
Adolescent Tools				
SOGS-RA (1990)	Screening	Winters et al.	11	Evaluated with general population

TABLE 2-1 Measures of Pathological and Problem Gambling

Adult Tools	Type	Author or Study Using Instrument	Number of Items	Psychometrics
DSM-IV-J (1992)	Screening	Fisher	10	Evaluated with general population
MAGS (1994)	Screening	Shaffer et al.	7 –12	Evaluated with general population