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Science and Gambling: Psychological Perspectives

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Gambling occurs in every culture and is recorded throughout history. However despite its widespread occurrence the motivation to gamble is not well understood. The purpose of this paper is to explore some of the theories proposed to account for and explain heavy gambling. It can be seen that the core explanation for heavy gambling will be psychological rather than economic in character. All legal and institutionalised forms of gambling in Australia are so constructed that the gambler should expect to lose money in the long run. On a purely chance basis the more frequently a gambler bets the more likely it is that loss of money will result. In Table 1 the percentages of investment returned in prize money are shown for the major types of legal gambling in Australia.

TABLE 1

The percentage of invested moneys returned to the public by the major forms of legal institutionalised gambling in Australia.

Form of Gambling	% Return
Poker Machines	85
T.A.B.	84
Lotteries	64
Instant Lotteries	64
Lotto	60
Soccer Pools	35

Since each dollar invested in gambling has an economic value of less than a dollar, the heavy involvement of people in one gambling form or another is difficult to understand in purely economic terms. Furthermore, it is not the case that people in general have a mistaken impression that they are likely to win money through gambling. In a large scale survey of gambling in Australia involving interviews with nearly 2000 persons, MacMillan (1985) found that 79% of those who gambled expected to lose money while only 17% expected to break even or make money. On the basis of figures such as these it would be reasonable to speculate that for

most people gambling has some other value than purely the expectation of winning money. Interviews gamblers suggest that for many, gambling is fun entertainment or an exciting time (Kallick-Kaufmann, 1979; MacMillan, 1985). However, nearly all the persons interviewed in each case gambled less often than once a week and might properly be called low-frequency or social gamblers. In the MacMillan survey only 3% of the sample gambled two or more times a week on the TAB and only 2% reported gambling that frequently on Bingo. The implication of these figures is that only a small percentage of gamblers can be regarded as heavy gamblers. In a survey of 400 families sampled from two suburbs in Sydney it was found that only 10% of the sample spent 10% or more of their leisure time gambling while less than 1% of the sample spent more than 20% of their leisure time gambling. Thus estimates of the incidence of compulsive gambling setting the figure at 1% of the population (Blaszczynski, 1983) appear excessively high. Nevertheless, there exists a minority of gamblers who spend most of their leisure time in gambling activities. The losses incurred by these gamblers can be very heavy and for some the outcome of gambling is financial ruin. Furthermore, the losses suffered are not only financial but also social. Heavy gambling places excessive stresses on the family unit and may lead to the breakup of the home. Since Australians are reputed to be the heaviest gamblers in the world (Haig, 1985; Caldwell, 1974) and given the increasing proliferation of legalised gambling activities in Australia, it becomes especially important to provide therapy and rehabilitation for those who have been ruined by gambling. However, effective therapy presupposes an understanding of the causes of heavy gambling. At this time there are several competing explanations for heavy gambling. The main forms that these explanations take can be set out and examined with respect to the available data concerning the phenomenon. Although the evidence is not conclusive, it will be seen that these explanations are not equally tenable or satisfying. Historically, the psychoanalytic perspective occurs first and will be dealt with first. Then will follow the gambling addiction perspective, the instrumental learning account, and the cognitive account.

THE PSYCHOANALYTIC EXPLANATION

It is perhaps fair to say that there is no single psychoanalytic account of heavy gambling. According to which writer is followed the problem may centre on regression to the oral, anal, or genital phases of development (Halliday & Fuller, 1974). Nevertheless, one particular theme underlies much of the psychoanalytic reasoning: the heavy gambler unconsciously wishes to lose (Bergler, 1958; Fuller, 1974). Losing is a self inflicted punishment brought about by guilt over incidents going back to early childhood. During the Oedipal phase the boy competes with his father for the affection of the mother. This rivalry may become extreme for some children who come to hate their father bitterly and wish to destroy him. The Oedipal conflict is typically resolved by the boy identifying with the father but, depending on the severity of the conflict, the boy may be left with residual guilt for having harboured such destructive impulses toward the father. The gambling venue becomes a father figure who punishes the child and thereby relieves the feelings of guilt. A similar explanation can be advanced for girls based on their rivalry with the mother for the father's affections.

The psychoanalytic assumption that the gambler unconsciously wishes to lose is difficult to refute since unconscious wishes are not accessible to the gambler. Nevertheless, the extreme elation expressed by many gamblers after winning is difficult to explain using this approach. Kusyszyn (1977), is an example of a writer who is not at all impressed by the unconscious desire to lose as an explanation: "This explanation is, of course, grossly inadequate and totally wrong for most gamblers." (Kusyszyn, 1977, p.23).

GAMBLING AS AN ADDICTION

Freud (1928) contributed the notion that gambling is an addiction. According to Freud gambling is a substitute for the primary addictive cycle involving masturbation. However, it has been argued elsewhere that the analogy between gambling and masturbation is incorrect and that cultural differences in the tolerance or repression of masturbatory practices are not paralleled by differences in the incidence of compulsive gambling (Walker, 1985). Nevertheless, the notion that gambling may be an addiction remains popular and has been revived by the advent of the opponent process model of acquired motivation (Solomon & Corbit, 1974). The parallel between alcoholism and heavy gambling is frequently alluded to as Rankin (1982) states: “Not surprisingly, those who are involved with this problem conceptualize excessive gambling as a form of addiction and have borrowed heavily from the alcoholism literature, in particular, to guide their thoughts and their practice.” (Rankin, 1982, p.185).

A drug addiction may be defined as the regular self-administration of a drug which activity is outside voluntary control. It is clear that, by definition, gambling is not a drug addiction. Nevertheless it is possible to compare the characteristics of heavy gambling with the characteristics of drug addiction in order to determine whether they match. A basis for examining this comparison can be found in the opponent process model advanced by Solomon (1980). According to Solomon, the action of opponent processes underlies all behaviour with associated positive or negative affect.

The opponent process model of affect assumes that affect is controlled by a negative feedback loop. When a stimulus causes an affective state (state A) which may be either positive or negative an opposing process is set in motion which acts to dampen the response to the stimulus and reduce the intensity of state A. When the stimulus is removed the opponent process remains for a while and causes affective state B which is opposite in affective tone to state A (affective contrast). The a process underlying state A is typically rapid in onset and offset but becomes less intense with use (habituation or tolerance). The b process underlying state B is assumed to be typically slow in onset and slow to extinguish. Initially it is weak but with repeated use it increases in strength. These two processes with the characteristics ascribed are sufficient to describe the basic affective phenomena of addiction.

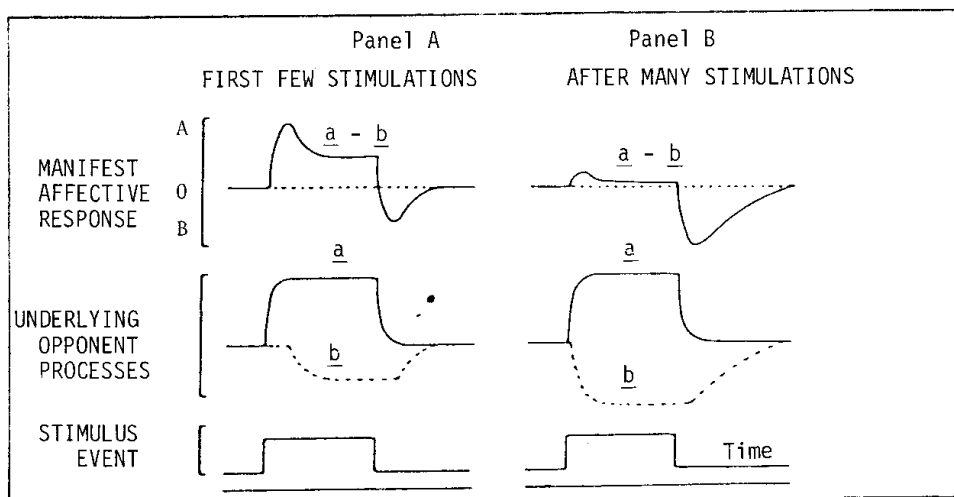


FIGURE 1. The comparison of the effects of b processes for relatively novel unconditioned stimuli and for unconditioned stimuli that are familiar and have frequently been repeated. (Note that the strengthening of the b process is assumed to shorten its latency, increase its asymptotic value, and lengthen its decay time.) (Solomon, 1980, p.700).

In Figure 1, the model is presented diagrammatically. In panel A the a process is strong while the b process is relatively weak. As a result state A is experienced intensely while state B is relatively mild. However, after repeated stimulation the state of affairs is as shown in panel B. The a process is now relatively weak while the b process is strong with early onset and a long period of extinction. State A is now weak and attenuated whereas state B is powerful and enduring.

The effect on the individual of these changes in the opponent processes is dependence. Initially the drug was selfadministered in order to obtain state A. However as state A decreases in strength with repeated dosage and state B gains in strength the motivation for continuing with the drug becomes avoidance of the B state (abstinence agony). The addiction is now complete. In order to break the addictive cycle it would appear that sufficient time must pass without use of the drug so that the b process can dissipate. Unfortunately, not only is this period of 'cold turkey' extraordinarily painful (withdrawal syndrome) for the addicted individual but also as the b process declines in strength the power of the drug to elicit the a process increases and use of the drug again becomes attractive.

If gambling is an addiction then the phenomena of affective contrast, tolerance, and a withdrawal syndrome should be observed in heavy gamblers. Unfortunately, there are few systematic studies and thus most of the evidence is provided by case analysis. Affective contrast has been reported many times (McGlothlin, 1954; Victor & Krug, 1967; Gooney, 1968; Bond, 1974; Livingston, 1974; and Dickerson, 1979). The feeling elation that precedes and accompanies the gambling behaviour is followed by a period of dejection and guilt.

Affective tolerance refers to a change from intense pleasure early on in the activity to mild or nonexistent pleasure after the activity has been repeated many times. Caster (1977) reports that, with reference to compulsive gamblers: 'When these people are gambling they're on as much of a high as if they were on a narcotic. Now in the late stage those highs aren't anywhere as high as they used to be.' (Reported by Shubin, 1977, p.2). Similar observations have been made by Barker and Miller (1968), Cohen (1972), Livingston (1974), Cromer (1978), Dickerson (1979), and Greene (1982).

Perhaps more than any other phenomena it is the occurrence of distressing withdrawal symptoms which characterises drug addiction and which makes an opponent process analysis of addiction so powerful. The withdrawal symptoms following cessation of ingestion of opiates include trembling and shaking, heart rate and blood pressure changes, sweating and temperature changes, and difficulty in sleeping. The existence of a withdrawal syndrome following the cessation of heavy gambling has been investigated in a more systematic way by Wray and Dickerson (1981) using a questionnaire survey of one third of regular members of Gamblers Anonymous in Britain. Half of the subjects responded to the open question, "Describe how you felt in the first few weeks after stopping." The other half of the subjects were given a checklist of possible symptoms and asked to indicate whether they felt any of them more than usual when they gave up gambling. The results from the two approaches were consistent. About one third of the sample reported withdrawal symptoms involving negative affect. These included 'miserable', 'very irritable and bad tempered', and 'sick in my stomach'. The remainder reported feeling happy at giving up. The thirty percent with a negative withdrawal syndrome compares well with approximately forty percent who suffer withdrawal symptoms when they give up alcohol (Wray & Dickerson, 1981).

Taken together the evidence suggests that the affective dynamics of heavy gambling are consistent with the description provided by the opponent process model. However, if the opponent process model is correct then more detailed predictions of physiological changes

follow. For example, if increased arousal is associated with the elation that accompanies gambling then systematic differences should be found in the arousal response to gambling between low frequency and high frequency gamblers. The action of the b process will cause a lower arousal response among high frequency gamblers relative to low frequency gamblers during the gambling activity (tolerance). After cessation of gambling the stronger b process in high frequency gamblers will cause a greater decrease in arousal below the baseline level than will occur for low frequency gamblers.

Leary and Dickinson (1983) examined arousal changes in two groups of subjects as a result of three minutes spent playing a poker machine. One group of subjects were high frequency players (played three or more times per week) while the second group were low frequency players (played only occasionally). Heart rate data was collected for both groups once every minute over four minutes preceding play, three minutes during play, and four minutes after play. The results are shown in Figure 2 and are clearly discrepant from the predictions derived from the opponent process model. The high frequency group were more aroused both during play and after cessation of play. Furthermore, the drop in heart rate as a result of stopping play is approximately the same for both groups.

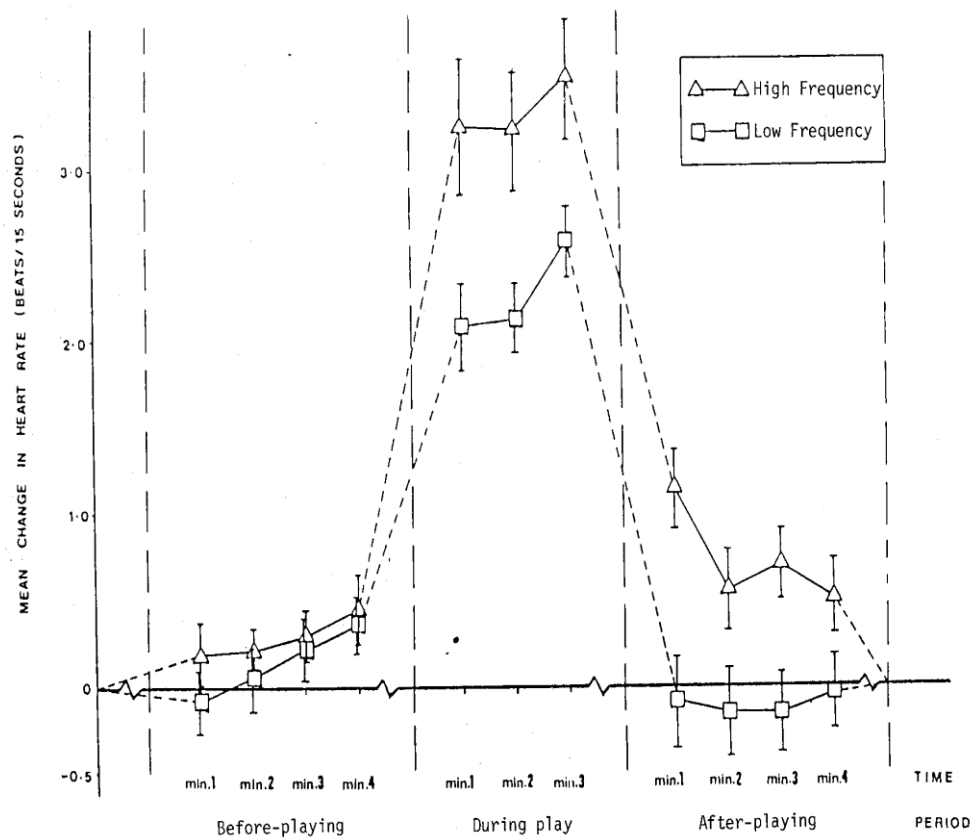


Figure 2. Change in heart rate (beats/15 seconds) for the low-[triangles] and high-[squares] frequency poker machine playing groups. Mean -S.E. (from Leary and Dickerson, 1983)

In summary, although case study data support the opponent process addiction model of gambling, the work of Leary and Dickerson (1983) involving the measurement of arousal before, during, and after gambling does not conform to predictions drawn from the model. It is possible that the discrepancies between the theory and the data can be explained by the operation of other processes such as Pavlovian conditioning of the initial state of arousal. However, until such

processes can be demonstrated the outlook for the addiction model of gambling is not promising.

AN INSTRUMENTAL LEARNING THEORY APPROACH

From a completely different theoretical perspective, Skinner (1953, 1974) has suggested a mechanism which would explain heavy gambling. According to Skinner, gambling is an excellent example of a human operant response conditioned by a variable ratio reinforcement schedule. Taking the poker machine as the paradigm case, the lever pulling behaviour of the gambler is reinforced every so often, depending on the completion of a variable number of pulls on the handle. Ferster and Skinner (1957) demonstrated with animals that variable ratio reinforcement schedules strongly maintain behaviour and that the conditioned response established by such a schedule is very difficult to extinguish. Thus an attractive analogy can be made to heavy involvement among humans with the poker machine and this analogy is often cited, as evidence for the explanatory power of learning theory, in elementary psychology textbooks. For example, Buss (1978) asserts, "The best example of variable ratio schedules may be found in places like Las Vegas. Slot machines are programmed to pay off on a variable ratio schedule. Predictably, gamblers respond by maintaining extremely high rates of responding ... Compulsive gamblers, seen in this perspective, are merely victims of a variable ratio schedule of reward." (Buss, 1978, p.181).

While the analogy to pigeons pecking discs or rats pulling levers may be attractive when considering people in clubs and casinos operating poker machines, there appear to be good reasons for remaining sceptical about this explanation of gambling behaviour. First of all, although the analogy may be close for gambling on poker machines, it is less obvious for other forms of gambling. In a recent survey of a small sample of Sydney residents conducted by my students, several people responded by saying that they had been buying lottery tickets regularly for some time (in one case, more than two years) and had yet to win a prize. In general, the ratio of reinforcement is far too large in the case of lotteries to explain the popularity and persistence of people in this form of gambling. Secondly, the analogy of poker machines to Skinner boxes is not as close as Skinner and Buss have suggested. Pigeons and rats condition very strongly on variable ratio schedules, but they do not have the continuous schedule of punishments suffered by poker machine players. And it is not simply that the poker machine player pays money for the chance to be reinforced, but at the end of the session nearly all such players will have lost more than they have won. The whole activity is punished repeatedly. Skinner is aware of this argument and asserts that nevertheless, "The ultimate loss (the 'negative utility') does not offset the effect of the schedule." (Skinner, 1974, p.56). However, this is far from satisfactory, since the heavy gambler loses more than money. The long gambling sessions cost time and inevitably lead to the gambler being less effective in his or her other roles in life. Frequently the heavy gambler is punished by family and friends (Kusyszyn, 1978), receives complaints about his or her work (Greene, 1982), and inevitably faces serious financial difficulties. Yet the gambling persists. If the variable ratio reinforcement schedule is so powerful that no other reinforcement contingencies can disrupt the activity, then one would expect nearly every person who makes a bet to become entrapped. Yet the large majority of gamblers are occasional gamblers who spend relatively little time in the activity (Downes et al., 1976; Kallick-Kaufman, 1979). Finally, Cohen (1972) has demonstrated that the actual behaviour of roulette players fails to be consistent with the expectations of the operant conditioning model. In Cohen's study the subjects were asked to bet only on black or red. The important comparison is that between the effect of a correct choice (a win) on the next choice and the effect of an incorrect choice (a loss) on the next choice. Simple operant conditioning principles would lead to the expectation that a win (on red, for example) would increase the likelihood that the same colour (red) would be chosen for the next bet,

whereas a loss (on red, for example) would decrease the likelihood that the same colour (red) would be chosen for the next bet. In fact, the likelihood of choosing the same colour after a win (0.46) was less than the likelihood of choosing the same colour again after a loss (0.76). Of course, what Cohen was demonstrating was the well known gambler's fallacy that a loss this time makes the same choice a better bet next time. Such gambling behaviour is difficult to explain using operant conditioning principles.

While these objections make it plain that conditioning and reinforcement explanations are likely to be inadequate for some aspects of gambling, there is yet another reason why we should dispense with these behaviouristic analyses as a core explanatory mechanism. Such analyses deny a role for the gambler's plans, hopes, goals and motives. Also, as with the psychoanalytic notions, they deny a central role for the gambler's rational and conscious processes. Yet it is known that at least for some gamblers, actions are calculated and reasons can be given in advance (see, for example, with respect to Poker: Yardley, 1959; or Hayano, 1978). Thus, it may prove more effective, in deriving an explanation for heavy gambling, to analyse the interaction of the gambler's actions and explanations taken together in the context of the gambling situations as perceived by the gambler.

A COGNITIVE PERSPECTIVE

According to the cognitive view, heavy gambling is not driven by unconscious masochistic urges nor is the behaviour out of control in the sense of an addiction. The gambler is not a pawn of a vicious reinforcement cycle. The core of the explanation for heavy gambling lies in the irrational beliefs held by the gambler and the support those beliefs derive from a biased evaluation of gambling outcomes made by the gambler. Walker (1985) has documented two central beliefs held by heavy gamblers: (1) That through effort and skill a person can make money through gambling; and (2) That the heavy gambler himself or herself has the ability to win in the gambling situation.

It is true that the skilled Bridge player or Poker player can consistently make money over time and in the United States the lives and details of professional players have been documented (Hayano, 1977). However, the proportional influence of skill decreases as one moves from Bridge and Poker to the TAB and Poker Machines. Nevertheless, the heavy punter at the racecourse believes that he or she has the knowledge and skill to get an "edge" on the bookmaker. Heavy gamblers believe that they are better than the average "mug" punter. If it was true that everyone who bets with the bookmakers or the TAB loses in the long run then it would be more difficult for a gambler to believe in the possibility of an edge. However, there are successful professional punters at Australian racecourses (Scott, 1978). Similarly, there are professional gamblers in Casino games (Thorp, 1966; Hayano, 1977), there are claims of professional success (Leigh, 1977), and there are fictional works supporting the notion of the successful professional (Jessup, 1963). It is not surprising therefore that some gamblers may believe that they, too, have the means of winning.

It is not clear how the heavy gambler acquires the belief that he or she has the knowledge and skill to "beat the system". However, one important factor may be the occurrence of substantial wins early in their gambling careers. The early success factor has been noted by several writers (Livingston, 1974; Lesieur, 1979; Custer, 1982). Presumably, the gambler at this early stage is trying out various approaches to choosing their bets. Some large wins would confirm that a successful technique had been found and might implant the idea that they will be among the few who can beat the system. No matter what the cause of this belief in personal skill, the belief itself is very important to the gambler. Hence, a succession of losses will be a very threatening event.

In order to preserve the belief in their own abilities these gamblers must now bet successfully in order to recoup what has been lost. Lesieur (1979) has called this phase in the development of heavy gambling “the chase”. Cohen (1972) has suggested that chasing losses is the major difference between the occasional punter and the heavy gambler: the occasional punter may regret losses but soon forgets them whereas for the heavy gambler losses are unacceptable since they invalidate the gambler’s self-concept.

The occasional wins that come to the heavy gambler are taken as signs that ultimate success is near. The more frequently occurring losses drive the gambler to greater and greater investment of time and money and ultimately to financial ruin. Perhaps the surprising aspect of this vicious circle of events is the fact that the evidence that the gambler is not being successful is discounted. The gambler preserves the belief that their system or approach is successful, despite the loss of money, by forming biased evaluations of gambling outcomes (Walker, 1985). The belief that skill is being used in the placement of bets has been demonstrated by Langer (1975) while the belief that the outcomes of bets evidence that skill has been demonstrated by Gilovich (1983). Langer sold raffle tickets and compared those who chose their own ticket with those who were simply given the next ticket available. Those who chose their own ticket valued the ticket more highly and would only part with the ticket for several times its original value. Langer has called this phenomenon “illusion of control” and suggests that gamblers believe they have more control in obtaining desirable outcomes than is in fact the case. Gilovich examined the evaluations made by gamblers betting on the outcomes of basketball and baseball games in the United States. Particularly where the result of the game was close, those who bet on the winning team evaluated the outcome as showing their skill in team selection while those who bet on the losing team blamed bad luck and other external and unforeseeable features of the environment for their error. Thus, even support for the losing team could be construed as evidence of skill in selection which was thwarted by bad luck. The reason why the heavy gambler does not quit when it is evident that his or her gambling strategy is failing can be summarised by saying that successes confirm the gambling strategy while failures are attributed to external features (for example, bad luck) and thus do not disconfirm the gambling strategy. Using such biased evaluations the gambler can maintain the illusion of eminent success while losing large sums of money.

COMPULSIVE GAMBLING: IMPLICATIONS FOR THERAPY

Gamblers Anonymous is an organisation which seeks to help those whose lives have been ruined by excessive gambling. It is run on similar lines to Alcoholics Anonymous. According to Gamblers Anonymous, compulsive gambling is an illness, progressive in its nature, which can never be cured, but can be arrested. This view of compulsive gambling, which is often called the disease model, provides a baseline for comparison with the four perspectives described earlier. The disease model suggests that excessive gambling derives from a personality defect which continues throughout life. It is similar therefore to the psychoanalytic view. Successful therapy must be based on total abstinence from gambling as is urged by Gamblers Anonymous. However, the psychoanalytic perspective suggests pessimism about the successfulness of any therapy. If the heavy gambler has an unconscious wish for punishment that is fulfilled by heavy gambling then cessation of gambling must lead to some other punishing activity such as petty crime or drug addiction.

According to the addictive model of gambling the compulsive gambler is not sick so much as entrapped by the desire to avoid the negative feelings associated with not gambling (the B state resulting from the b process). It would seem that the only way to break the addiction would involve a period of abstinence sufficient for the b-process to diminish and disappear.

Unfortunately, in losing the B state the individual regains the potential for an intense A state and must remain vigilant against resuming the addictive cycle. Nevertheless, the full A state can be experienced provided that sufficient time is allowed to elapse before the A state is again invoked. What this suggests is that total abstinence may not be necessary but rather a controlled involvement in gambling may equally prevent the spiral into excessive gambling. Certainly, case studies in which controlled gambling established through contractual agreements has been the therapy have been reported and the successful control of gambling has been achieved over a two year follow up period (Dickerson & Weekes, 1979; Rankin, 1982). Unfortunately, despite these two successful case studies, the outlook for controlled gambling must remain bleak according to Solomon's theory. If controlled gambling is to remain effective the frequency and extent of gambling must be sufficiently spaced so that any b-processes initiated are extinguished. If for any reason the control over the gambling is lost and the gambling becomes heavier then the b-processes will gain in strength and the spiral into addiction be initiated. Perhaps on grounds such as these the ethic of Gamblers Anonymous that complete abstinence must be combined with day-by-day vigilance is to be preferred.

According to the learning theory approach, it is the incentive value of the occasional win which maintains the gambling behaviour. Thus, in principle, any person might become a compulsive gambler. What prevents most occasional gamblers from progressing to heavy gambling and ultimately financial ruin is presumably the other reinforcement contingencies operating in each person's life. Thus, similar to the addiction model, the learning theory approach does not imply that the compulsive gambler is sick but merely unfortunate. The therapy appropriate to the behaviour problem will be one that extinguishes the stimulus to gamble. Little can be done to alter the relationship that exists between the gambling response and its reinforcement. However, the stimulus to begin gambling may be the environment in which the gambling takes place. This conditioned stimulus-response connection could be extinguished by having the gambler avoid gambling while in the stimulus environment. Alternatively, a more convenient therapy would involve the compulsive gambler imagining being in the gambling environment but feeling bored and uninterested in gambling. Such a procedure is called imaginal desensitization and has been used successfully in the treatment of compulsive gambling by McConaghy, Armstrong, Blaszczynski and Allcock (1983). However, such therapies are not effective for all compulsive gamblers and at this time no adequate follow-up data is available to determine whether these therapies are effective in the long term.

The cognitive perspective, similar to the learning theory approach, does not view compulsive gambling as an illness but rather as a tragedy. Each person engages in a variety of life projects. These projects become the arena in which beliefs about oneself and one's capacities are tested. For one person, the central project in life will be the garden, for another the family, and for yet another work. Each project provides the opportunity to validate the core beliefs about self that each person holds. The tragedy of the compulsive gambler is that he or she has chosen an arena in which failure is overwhelmingly likely and consequently the core beliefs invalidated. Therapy will consist of persuasion to abandon the irrational beliefs held about self in relation to gambling and to replace these beliefs by factual information. Since the loss of what is for many compulsive gamblers a life consuming project will leave a void, therapy must also attempt to rekindle interest in abandoned projects or to stimulate involvement in new projects. At this time there is no available evidence concerning the effectiveness of such therapies.

REFERENCES

- Barker, J.C., and Miller, M., 1968. Aversion Therapy for compulsive gambling. *Journal of Nervous & Mental Disease*, 146, 285-302.

- Bergler, E., 1958. THE PSYCHOLOGY OF GAMBLING. New York: Hill & Wang.
- Blaszczynski, A., 1983. Imagination beats aversion in treating gamblers. *Uniken*, May 6.
- Bond, N.A., 1974. Basic strategy and expectation in Casino Blackjack. *Organizational Behavior & Human Performance*, 12, 413-428.
- Buss, A.H., 1978. PSYCHOLOGY: BEHAVIOR IN PERSPECTIVE. New York: John Wiley & Sons.
- Caldwell, G.J., 1974. The gambling Australian. *In SOCIAL CHANGE IN AUSTRALIA*, Ch. 1. D.E. Edgar (Ed.). Melbourne: Cheshire.
- Cohen, J., 1972. PSYCHOLOGICAL PROBABILITY, Ch. 5., 65-85. London: Allen & Unwin.
- Cromer, G., 1978. Gamblers Anonymous in Israel: A participant observation study of a self-help group. *International Journal of the Addictions*, 13, 1069-1077.
- Custer, R.L., 1982. Pathological gambling. *In PATIENTS WITH ALCOHOLISM AND OTHER DRUG PROBLEMS*. A. Whitfield (Ed.). New York Book Publishers.
- Dickerson, M.G., 1979. FI schedules and persistence at gambling in the U.K. betting office. *Journal of Applied Behaviour Analysis*, 12, 315-323.
- Dickerson, M.G. and Weekes, D., 1979. Controlled gambling as a therapeutic technique for compulsive gamblers: a case study. *Journal of Experimental Psychiatry & Behaviour Therapy*, 10, 139-141.
- Downes, D.M., Davies, B.P., David, M.E. and Stone, P., 1976. GAMBLING, WORK AND LEISURE: A STUDY ACROSS THREE AREAS. London: Routledge & Kegan Paul.
- Ferster, C.B. and Skinner, B.F., 1957. SCHEDULES OF REINFORCEMENT. New York: Appleton-CenturyCrofts.
- Freud, S., 1928. Dostoevsky and parricide. *In COLLECTED PAPERS*, 5. J. Strachey (Ed.). New York: Basic Books.
- Fuller, P., 1974. Gambling: a secular 'religion' for the obsessional neurotic. *In THE PSYCHOLOGY OF GAMBLING*. J. Halliday & P. Fuller (Eds.). New York: Harper & Row.
- Gilovich, J., 1983. Biased evaluation and persistence in gambling. *J. Personality & Social Psychology*, 44, 1110-1126.
- Gorney, A.B., 1968. Treatment of a compulsive horse race gambler by aversion therapy. *British Journal of Psychiatry*, 114, 329-333.
- Greene, J., 1982. The gambling trap. *Psychology Today*, 16(Sept), 50-55.
- Haig, B., 1985. Expenditure on legal gambling. *In GAMBLING IN AUSTRALIA*, Ch. 6. G. Caldwell et al. (Eds.). Sydney: Croom Helm.

- Halliday, J. and Fuller, P., 1974. THE PSYCHOLOGY OF GAMBLING. New York: Harper & Row.
- Hayano, D.M., 1977. The professional poker player: career identification and the problem of respectability. *Social Problems*, 24, 556-564.
- Hayano, D.M., 1978. Strategies for the management of luck and action in an urban poker parlor. *Urban Life*, 6, 475-488.
- Jessup, R., 1963. THE CINCINNATI KID. Boston: Little, Brown & Co.
- Kallick-Kaufmann, M., 1979. The micro and macro dimensions of gambling in the United States. *J. Social Issues*, 35, 7-26.
- Kusyszyn, J., 1977. How gambling saved me from a misspent sabbatical. *J. Humanistic Psychology*, 17, 19-34.
- Kusyszyn, J., 1978. "Compulsive" gambling: the problem of definition. *International Journal of the Addictions*, 13, 1095-1101.
- Langer, E.J., 1975. The illusion of control. *J. Personality & Social Psychology*, 32, 311-328.
- Leary, K. and Dickerson, M.G., 1983. Arousal correlates of poker-machine playing for low and high-frequency players. Paper delivered at a One-day conference on gambling, Rozelle Hosp.
- Leigh, N. 1977. THIRTEEN AGAINST THE BANK. New York: Penguin.
- Lesieur, H.R. 1979. The compulsive gambler's spiral of options and involvement. *Psychiatry*, 42, 79-87.
- Livingston, J., 1979. A culture of losers. *Psychology Today*, 7 (March), 51-55.
- McConaghy, N., Armstrong, M.S. Blaszynski, A., & Allcock, C., 1983. Controlled comparison of aversive therapy and imaginal desensitization in compulsive gambling. *British Journal of Psychiatry*, 142, 366-372.
- McGlothlin, W.H., 1954. A psychometric study of gambling. *Journal of Consulting Psychology*, 18, 145-149.
- MacMillan, G.E., 1985. People and gambling. In GAMBLING IN AUSTRALIA, Ch. 22. G. Caldwell et al. (Eds.). Sydney: Groom Helm.
- Rankin, H., 1982. Control rather than abstinence as a goal in the treatment of excessive gambling. *Behaviour Research & Therapy*, 20, 185-187.
- Scott, D., 1978. WINNING: AN OBJECTIVE GUIDE TO SUCCESSFUL PUNTING. Sydney: Puntwin.
- Shubin, S., 1977. The compulsive gambler. *Today in Psychiatry*, 3, 1-3.
- Skinner, B.F., 1953. SCIENCE AND HUMAN BEHAVIOUR. New York: Free Press.

Skinner, B.F., 1974. ABOUT BEHAVIOURISM. London: Jonathan Cape.

Solomon, R.L., 1980. The opponent-process theory of acquired motivation. *Amer. Psychologist*, 35, 691-712.

Solomon, R.L. and Corbit, J.D., 1974. An opponent-process theory of motivation. *Psychological Review*, 81, 119-145.

Thorp, E., 1966. BEAT THE DEALER. New York: Random Press.

Victor, R.G., and Krug, C.M., 1967. "Paradoxical Intention" in the treatment of compulsive gambling. *Amer. J. Psychotherapy*, 21, 808-814.

Walker, M.B., 1985. Explanations for gambling. In GAMBLING IN AUSTRALIA, Ch. 13. G. Caldwell et al (Eds.). Sydney: Groom Helm.

Wray, I. and Dickerson, M.G., 1981. Cessation of high frequency gambling. *British Journal of Addiction*, 76, 401-405.

Yardley, H.O., 1959. THE EDUCATION OF A POKER PLAYER. Great Britain. Jonathan Cape.

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