Sensation Seeking and Pathological Gambling

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Summary
Zuckerman's Sensation Seeking Scale, the Eysenck Personality Questionnaire and the Spielberger's State-Trait Anxiety Inventory were administered to 51 pathological gamblers seeking treatment to investigate the hypothesis that arousal associated with gambling was related to a general sensation seeking personality trait. Pathological gamblers as compared to the general population were found to have elevated Psychoticism, Neuroticism, State and Trait anxiety scores but contrary to expectation, significantly lower Sensation Seeking scores. It was argued that pathological gamblers were not necessarily sensation seekers but that avoidance or reduction of noxious physiological states or dysphoric mood, in conjunction with a behaviour completion mechanism, was a major factor in explaining persistence in gambling.

Introduction
Gambling is a risk-taking activity associated with subjective excitement,56 physiological arousal, as measured by increases in heart rate57 and withdrawal symptoms.5 The thrill component inherent in gambling is a major motivational factor readily identified by gamblers' responses to surveys67 and is considered as an important reinforcement agent in theoretical models that explain the pathogenesis of pathological gambling, particularly those that regard it as an addictive behaviour.56

Zuckerman57 developed the Sensation Seeking Scale based on the theory that individual differences existed in need for optimal levels of stimulation or arousal. He postulated sensation seeking to be a biologically based personality dimension with sensation seekers identified as those who seek varied, novel or complex sensations or experiences. High sensation seekers appraise risk as less and anticipate arousal as more positive than low sensation seekers.11 Studies have shown significant associations between Sensation Seeking scores and drug abuse, sex experience, involvement in risky sports and volunteering for sensory deprivation experiments, encounter groups and gambling instruction.11 Zuckerman16 suggested a relationship between gambling and the trait of sensation seeking in which the positive reinforcing factor of gambling was associated with high arousal present during the period of uncertainty as well as the arousal of winning. Individual differences in risk-taking preference as a personality trait, therefore, could act as an important determinant of continued participation in gambling in that it may be related to the need to maintain optimal levels of stimulation or arousal. Anderson & Brown1 extended this concept in offering a theoretical two-factor model based on Pavlovian concepts in which individual differences in autonomic arousal combined with irregular reinforcement schedules could produce repeated gambling behaviour.

The association between gambling behaviour, arousal and sensation seeking has not as yet been clearly identified. Kuhlman12 found only the disinhibition scale of the Sensation Seeking Scale to correlate with mean bet size in a hypothetical blackjack gambling situation. Anderson & Brown1 administered the Sensation Seeking Scale to 12 students and 12 gamblers and recorded heart rate response during a session of gambling under laboratory and real casino conditions. For ethical reasons, students were not exposed to the real
casino but to a simulated casino environment in the laboratory. Groups did not differ on the Sensation Seeking Scale scores but significant correlations were found between the Sensation Seeking Scale, mean bet size and heart rate increases in gamblers under the real condition.

If sensation seeking acts to predispose individuals to become susceptible by conditioning to the arousal associated with gambling, then one would expect that pathological gamblers should load highly on such a trait since these individuals gamble frequently and heavily despite severe adverse consequences. Zuckerman's argument that any relationship between gambling and sensation seeking would more likely emerge in actual rather than laboratory gambling conditions supports this expectation. No studies have investigated sensation seeking traits in groups of identified pathological gamblers.

The purpose of this study is to test the hypothesis that pathological gamblers seeking treatment have elevated scores on the Zuckerman's Sensation Seeking Scale and to investigate the relationship between their scores on that scale and the Eysenck Personality Questionnaire and Spielberger's State-Trait Anxiety Inventory.

Method
Subjects
Subjects were 51 consecutive male pathological gamblers seeking behaviour therapy to reduce their uncontrollable gambling urge and behaviour. All met Diagnostic and Statistical Manual III criteria for diagnosis as pathological gamblers. Their mean age was 34.55 years (SD = 9.22 years) ranging between 18 years and 61 years of age. Forty-five were treated on an inpatient basis and two as outpatients. Four failed to accept treatment.

Psychological measures were administered to the pathological gamblers prior to their first treatment session.

Measures
1. Zuckerman's Sensation Seeking Scale (SSS) Form V. This is a 40 item forced-choice questionnaire and produces four subscales in addition to the total score: Thrill and Adventure Seeking (TAS) associated with a propensity to engage in sports or physically dangerous pursuits; Experience Seeking (ES) involving changes in life-style and stimulation of the mind; Disinhibition (Dis.) manifested by outgoing social behaviours and gambling; and Boredom Susceptibility (BS) characterized by an inability to tolerate repetitive experiences and monotony.

2. Eysenck's Personality Questionnaire (EPQ). In addition to the Neuroticism (N) scale, Extraversion (E) scale and the Lie (L) scale, the questionnaire contains a Psychoticism (P) scale composed of items considered to reflect coldness of feeling, aggressiveness and unconventionality. The Questionnaire has been developed to an acceptable level of reliability and validity.

3. Spielberger's State-Trait Anxiety Inventory (STAI). This is a 40 item inventory measuring state anxiety, conceptualized as a transitory emotional condition characterized by subjective consciously perceived feelings of tension and apprehension, and heightened autonomic nervous system activity which varies in intensity and over time, and trait anxiety, referring to a stable and enduring individual difference in anxiety proneness. The trait scale has high stability and internal consistency.

Results
Mean scores and standard deviations for the group on the Sensation Seeking Scale, the EPQ and the STAI are given in Table 1.

Cross-cultural differences on sensation seeking traits exist amongst American, English and Australian populations. Ball et al. provided data for the Australian population based on a sample of 363 Australian males. T-test comparisons (two-tailed) revealed the pathological gamblers in the present study had significantly lower TAS (t = 4.90, p < .001), ES (t = 4.09, p < .001) and total (t = 2.712, p < .01) scores than Ball et al.'s sample.

As expected, there was a significant negative correlation between age and the SSS Total scores and all except the TAS subscales. The relationship was strongest for the Total scale score (r = - .45, p < .001) and the Dis. subscale (r = - .46, p < .001). Correlations for the ES and BS subscales were r = - .25, (p < .05) and r = - .31 (p < .05) respectively.

Socioeconomic status of the subjects was determined using Congalton's scale and its relationship with sensation investigated. A significant correlation was found such that high socioeconomic status was associated with high SSS total score (r = - .35, p < .05). Of the subscales, only the
ES showed a similar significant correlation. The distribution of subjects in social classes A, B, C, and D were 4.5%, 32%, 34% and 29.5% respectively.

Compared to Spielberger's data for neuropsychiatric patients, pathological gamblers were not high on either state or trait anxiety (state anxiety mean = 47.32, SD = 11.59; trait anxiety mean = 48.07, SD = 9.38), being at the 45th and 54th percentile rank respectively. Compared to data based on students, pathological gamblers were at the 84th and 87th percentile respectively. The only significant correlations between STAI and SSS scores was found between state and trait anxiety and the BS subscale.

Based on EPQ normative data, pathological gamblers had significantly elevated P (t = 4.91, p < .001) and N (t = 7.38, p < .001) scale scores. There was a trend not reaching significance for their E scores to be low.

Intercorrelation tables for EPQ and SSS scales are presented in Table 2.

Discussion

Preference for risk-taking activities may be the expression of a general sensation-seeking personality trait, the function of which is to maintain an optimal level of stimulation or arousal in the individual. The scant subjective and psychophysiological data available tend to support the central function of excitement in the motivation to gamble and a relationship between sensation seeking and mean bet size but results of the present study do not support the hypothesis that male pathological gamblers have a characteristic high level of sensation seeking traits. Compared to a control population, pathological gamblers scored significantly lower on the Thrill and Adventure Scale, the Experience Seeking Scale and the Total score of the Zuckerman's Sensation Seeking Scale.

Similarly, extraversion was found to be low in the pathological gamblers. Consistent with other reports, it correlated significantly with the Sensation Seeking Scale but with the exception of the Thrill and Adventure Seeking Scale. Other empirical studies on social and pathological gamblers have yielded inconsistent findings on the Extraversion scale of the Eysenck Personality Questionnaire. Seager reported elevated scores but Koller and McConaghy et al. lower scores. Heterogeneity of groups sampled in terms of type of gambling, horse-racing, poker machines or cards, may account for these results.

| Table 1. SSS, EPQ and STAI Scores of 51 Pathological Gamblers Seeking Treatment |
|---------------------------------|-----|-----|-----|-----|
| (a) Sensation Seeking Scale     | TAS | ES  | Dis. | BS  | Total |
| Mean                            | 4.90| 4.09| 4.98 | 3.51| 17.45 |
| SD                              | 2.55| 2.3 | 2.26 | 1.60| 5.83  |
| (b) Eysenck Personality Questionnaire |
| P                               | 5.94|     |     |     |       |
| E                               |     | 11.82|     |     |       |
| N                               |     |     | 14.76|     |       |
| L                               |     |     |     | 6.16|       |
| Mean                            | 3.82| 5.11| 5.78 | 3.70|       |
| SD                              |      |     |     |     |       |
| (c) Spielberger's STAI          |       |
| State anxiety                   | 47.32|     |     |     |       |
| Trait anxiety                   | 48.07|     |     |     |       |
| Mean                            | 11.59|     |     |     |       |
| SD                              | 9.38 |     |     |     |       |

Sensation seeking is related to drug and risk-taking behaviours. Blaszcynski et al. administered a 32-item Addiction Scale derived from the Eysenck Personality Questionnaire to pathological gamblers and heroin addicts. Male pathological gamblers showed a similar profile to the heroin addicts supporting the concept of gambling as an addictive behaviour. Heroin addicts are high sensation seekers. The low sensation seeking noted in the pathological gamblers may suggest that the commonality between the two groups on the Addiction Scale is accounted for by its loading on affective items.

Participation in gambling is related to socio-economic factors with a positive relationship shown between gambling, income and education. In the present study socio-economic status correlated with sensation seeking. The proportion within each social class except class A was relatively even. Given the absence of data on the degree of influence of social class on sensation seeking, it is assumed that the low number of class A subjects has not significantly affected overall results.

Consistent with other reports, sensation-seeking was negatively correlated with age. Participation in gambling in a national sample also showed a tendency to decline uniformly with age.

A number of possible explanations for the unexpected finding of low sensation seeking may be offered if replication establishes that the results were not due to chance.

All previous studies have utilized subjects, either analogue volunteers or regular gamblers. Volunteers for a variety of experiments and activities
tend to be high sensation seekers and this factor may account for the reported positive relationship. The assumption of no difference between regular and pathological gamblers except for amount gambled may not be valid. McCormick et al., for example, found a high incidence of affective disorders in their sample of 50 pathological gamblers seeking treatment. Seventy-six percent met Research Diagnostic Criteria for major depressive disorder, 14% reporting premorbid onset of symptomatology. Excitement or arousal, it is argued, could have a differential function in pathological as compared to regular gamblers; that is, it may have the purpose of reducing dysphoric mood or the intolerable stress-related tension. Perhaps the likeliest explanation is that gamblers seeking treatment differ from those not seeking treatment. Subjects seeking treatment have been reported to differ in having higher neuroticism scores than those not seeking treatment.

Dickerson identified two distinct reinforcers important in the maintenance of gambling behaviour: cash won, reinforced according to a variable ratio, and subjective excitement associated with placing bets and the gambling environment which was reinforced on a fixed interval schedule. The latter reinforcer, the subjective ‘high’ may be the more important determinant underlying the addictive process. The strength of this ‘high’ has been noted in the clinical experience of the first author in which gamblers have described their experience as analogous to the ‘fix of the drug addict’ which permitted secondary reward in the form of ‘psychic or emotional release’ from stresses.

Classical and instrumental conditioning processes involved in the repetitive association of excitement and gambling establish a habitual behaviour pattern. The first author has noted that, initially, gambling activity is carried out for its excitement value. Pathological gamblers report that subsequently if, when confronted with stress they react with either anxiety or depression, they increase their involvement in gambling to narrow attention and awareness of disturbing life situations, or to reduce their dysphoric mood. Unfortunately continued financial losses consequent to excess gambling exacerbates their dysphoria and anxiety and promulgates the need for continued gambling. The gambler enters the downward increasing spiral of options as described by LeSueur.

Attempts to cease gambling when stimulated to do so at this stage become difficult due to the operation of the behaviour completion mechanism as described by McConaghy and McConaghy et al. Under this model, once behaviour completion mechanisms are established and activated by appropriate cues, failure to complete the behaviour results in increased arousal which the individual experiences as a sense of tension or anxiety and which drives him to complete that behaviour. The change in arousal leads to an increase in preoccupation and urge to carry out the compulsive activity.

It is suggested that pathological gamblers are not sensation seekers and that avoidance or reduction of noxious physiological or cognitive states in interaction with the behaviour completion mechanism are important determinants of persistence in pathological gambling.

References
high frequency gambling and ‘withdrawal’ symptoms, British Journal of Addiction, 76, pp. 401–405.


