Against the Odds: Establishment of a Video Lottery Terminal Research Laboratory in a Naturalistic Setting

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RUNNING HEAD: Applied Research on Pathological Gambling

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History.

The Dalhousie Gambling Laboratory was founded in 1997. It occupies two rooms in the Psychology wing of the Life Sciences Centre at Dalhousie University. One of these is a standard laboratory with computers, files, telephone, etc. The other is a "bar-lab" complete with a bar, bar stools, a television, and two video lottery terminals (VLTs) of a sort found in bars throughout Nova Scotia. On entering the bar-lab, participants encounter brightly coloured walls, beer posters, music videos, and in some studies they are invited to purchase beverages from the bar (including beer and mixed drinks) as in a real-life bar situation. In most studies, participants are free to play the VLTs using money out of their own pockets, keeping any winnings they might obtain. Electronic control of the machines is maintained by the Atlantic Lottery Corporation computer in Moncton, New Brunswick, and the odds of winning or losing on the bar-lab VLTs are the same as on all other machines appearing in Nova Scotia.

Collaborators/Areas of Research Focus.

Three Ph.D. level psychologists with distinct areas of expertise are collaborating on several different applied and theoretical research issues in this laboratory. Dr. Raymond Klein is an experimental cognitive psychologist and a world-recognized authority on attention. Dr. Sherry Stewart is a clinical psychologist who is well known for her research on alcohol abuse, and co-morbidity between alcohol use and other psychological disorders. Dr. James Blackburn is an expert in neural mechanisms of reward and motivation; while retraining as a clinical psychologist at Dalhousie, Jim was

the prime mover behind the interdisciplinary proposal that led to government funding to develop the laboratory. Additionally, Dr. Patrick McGrath, former coordinator of the Cooperative Clinical Psychology Program at Dalhousie, was heavily involved in the initial negotiations with government agencies that resulted in the opening of this lab.

The principal goals of the research conducted in the Gambling Laboratory are to further the understanding of factors associated with pathological gambling and to suggest strategies for minimizing the negative impact of VLTs. Specific research issues within these broader goals include: reciprocal relations between alcohol intake and pathological gambling behaviour that may contribute to the high co-morbidity between these two psychological disorders (e.g., Crockford & el-Guebaly, 1998); factors contributing to arousal during gambling sessions in pathological versus non-pathological VLT players; possible differences in attentional function between pathological gamblers and controls that might perpetuate problem VLT use; impact of manipulating machine variables (e.g., speed at which the "reels" move on the VLT screen) on VLT play. Results of the studies to date have been presented at two conferences (Blackburn, McWilliams, McInerney, & Klein, 1999; McWilliams, Stewart, & Blackburn, 1999) and we are beginning to submit our findings to be reviewed for publication (Stewart, McWilliams, Blackburn, & Klein, 1999). As an example of our recent work, we find that although previous retrospective studies suggest that gamblers play VLTs in order to reduce negative mood (e.g., Beaudoin & Cox, 1998), when gamblers are observed while they actually engage in VLT use they report increased negative mood over the course of play. This increased negative mood is significantly correlated with the amount of money lost (Stewart et al., 1999).

Obstacles/Challenges.

One challenge we faced when designing the project was balancing ecological validity against the need for strict experimental control. Previous research had shown that studies conducted in sterile laboratory settings and using mock gambling machines in which subjects played for non-monetary incentives did not generalize to real-world gambling behaviour (Leary & Dickerson 1985). As a result, we attempted to make the Gambling Lab setting as naturalistic as possible, for example, using a type of VLT that is widely used in bars in Nova Scotia and having participants use their own money to play the machines. In an exception to this principal of maximizing ecological validity, participants in our studies are not permitted to smoke while playing VLTs, even though many regular VLT players are heavy smokers (Focal Research, 1998), as we lack a setting on campus that is equipped with necessary ventilation. On the other hand, it is important to exert control over extraneous variables. Without a reasonable degree of control of irrelevant variables, it is impossible to draw confident conclusions about the important factors underlying an interesting behavioural finding. As one example, in an in-progress study on the effects of alcohol consumption on risk-taking during VLT play, we assigned regular VLT players to one of two beverage conditions. In the experimental condition, the beverage was a fixed, mildly-intoxicating dose of vodka with orange juice mix. We included a control condition where participants consumed only mix (orange juice) to control for the effects of drinking, per se. Drinking only orange juice while playing VLTs may not be a typical experience for many VLT players. Nonetheless, without the inclusion of the orange juice control condition we would not have been able to determine whether risk-taking observed among VLT players who drank vodka and orange juice was specifically due to alcohol intake.

Ethical considerations presented unique challenges when we initially proposed the Gambling Laboratory, and the challenges have evolved along with our research questions. We considered it essential to draw from the population of interest – specifically pathological gamblers – rather than exclusively conducting analogue research with college students. This choice forced us to seriously consider methods to minimize potential harm that might occur as a consequence of study participation. For example, since most studies involve playing VLTs, we are always careful to exclude those who are currently trying to refrain from gambling. We also provide all participants with brochures outlining local treatment services for problem gamblers. As another example, in studies involving alcohol consumption, we use a well-validated screening measure to exclude those with possible alcoholism because alcohol administration can be harmful to those with a history of alcohol problems. To minimize chances of harm due to drinking in the lab, we have all participants who consume alcohol during our studies wait in the lab following the study until such time as their blood alcohol concentration is well under the legal limit for driving in the province of Nova Scotia. We also pay for taxi fare when alcohol-consuming participants have not arranged for alternative transportation home after study completion.

Our very stringent inclusion/exclusion requirements contribute to yet another obstacle – participant recruitment. Although a substantial proportion of regular VLT players are pathological gamblers, it has sometimes been difficult to find sufficient numbers of willing and eligible subjects. For this reason, we provide willing participants with $50 as an incentive to participate and as compensation for their time and effort.

In fact, participant reimbursement and taxi fares, along with equipment costs (e.g., psychophysiological recording equipment for the arousal studies), VLT rental, computer programming, and other technical support have made this research project relatively costly. Researchers planning studies of this magnitude must carefully consider and budget for the costs involved, and ensure adequate financial support early on in the planning process. We have been fortunate that there has been a strong commitment to research on pathological gambling in Nova Scotia since the introduction of the VLTs and casinos to this province.

A final challenge has been the need to obtain the cooperation of a large and diverse group of agencies crucial to the success of this research project. These include: the Nova Scotia Department of Health, the Nova Scotia Gaming Corporation, the Nova Scotia Gaming Foundation, the Nova Scotia Liquor Commission, the Atlantic Lottery Corporation, and a VLT manufacturer. Researchers contemplating applied projects of this nature should be aware that a considerable amount of time and effort goes into developing and maintaining relations with participating agencies.

Personal/Professional/Community Rewards and Benefits.

Despite these obstacles and challenges, this has been a particularly exciting and rewarding project for all involved. As researchers, it has been encouraging to note the widespread community and media interest in our work. This public interest has also aided participant recruitment and encouraged the co-operation of important agencies.

We have particularly enjoyed the benefits of interdisciplinary collaboration – learning a great deal from one another's expertise and methodologies. This type of

collaboration enhances the understanding of pathological gambling as a multifaceted cognitive, behavioural, and clinical entity.

An additional reward for the researchers involved has been the keen interest shown by many students and trainees in Gambling Laboratory activities. Several students/trainees have already worked on projects conducted in the lab, and some are currently doing so. Participation in Gambling Lab projects provides rich opportunities for students' development of their research skills. In particular, students have acquired experience conducting practical science, and have been exposed to the multidisciplinary collaboration and teamwork crucial for the success of research today (see Klein, in press).

One of the key features of this research project is its immediate relevance to prominent public policy and treatment issues. Because we are reporting our findings directly to policy makers, we believe that our results will have an important impact on aspects of video lottery gambling policy in Nova Scotia. For example, on the basis of ongoing research into the impact of machine variables on VLT play, we hope to be able to make specific recommendations on the ways in which current machines could be modified to minimize their negative impact. We also anticipate that our findings will suggest avenues for improving treatments available for pathological gamblers. For example, by studying mechanisms underlying the co-morbidity between alcohol abuse and pathological gambling, we hope to be able to make suggestions for improving interventions for clients with this common form of dual diagnosis.

Future Directions.

All of our studies to date have been conducted within our university-based laboratory. Although we have taken measures to maximize the ecological validity of the

lab environment, an important next step is to extend our findings to the real world contexts in which VLT play actually occurs. Therefore, the next phase of our research will extend the lab-based project on manipulation of machine parameters to a field project in an actual real world bar. This phase will likely present new challenges in the areas of participant recruitment, ethics, and securing the cooperation of participating agencies.

Conclusions.

We wish to caution that this type of relatively-naturalistic applied research is not a substitute for more precisely-controlled experimentation. The latter is necessary for a full theoretical elucidation of any clinical phenomena. For example, our research on possible attentional dysfunction(s) in pathological gamblers would not have been possible had attentional mechanisms not been thoroughly characterized through years of experimental studies in controlled laboratory settings. Nonetheless, applied research bridges the gap between basic research and clinical practice/policy-making. Despite the substantial obstacles and challenges we have at times encountered in this applied research effort, we have found the establishment and running of an applied gambling laboratory to be a very exciting and rewarding endeavor.

Author Notes

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