THE GAMBLING BEHAVIOR OF AMERICAN INDIAN AND NON-INDIAN PARTICIPANTS: EFFECTS OF THE ACTIONS AND ETHNICITY OF A CONFEDERATE

Casey L. McDougall, M.A., J. Douglas McDonald, Ph.D.,
and Jeffrey N. Weatherly, Ph.D.

Abstract: The present experiment investigated whether the gambling of American Indian (AI) and non-AI participants would be sensitive to the actions and/or ethnicity of another gambler (i.e., a confederate) when playing a slot-machine simulation. Eight male AIs and eight male non-AIs participated in five gambling sessions. In one, the participant gambled alone. In the other four, the participant played in the presence of a confederate of the same or different ethnicity who gambled the entire session or quit after playing five times. The gambling of the AI and non-AI participants did not differ, nor was either group sensitive to whether the confederate was AI or non-AI. Gambling behavior was altered by the confederate's actions, with participants gambling less when the confederate left the session than when alone or when the confederate stayed and gambled. These results suggest that the differences in gambling problems between AIs and non-AIs reported in the overall literature may not be a function of ethnicity per se. They also suggest that the actions of other gamblers may inhibit gambling, which may have treatment implications.

The gambling industry is not new, but it is certainly growing. Within the United States, the number of states that have at least one form of gambling has risen from 2 to 48 in the past 27 years (MacLin, Dixon, & Hayes, 1999). Furthermore, online gambling is becoming even more popular than conventional gambling with the growth of the Internet, its accessibility, and the increased popularity of gambling in general (Young, 2004). Petry (2005) has estimated that over 90% of Americans will gamble in their lifetime.

Fortunately, although many people engage in gambling, the majority of them do not experience adverse consequences from their behavior. Yet a small percentage of individuals will display gambling problems. For example, it is estimated that anywhere from 1% to 3% of the American population suffers from pathological gambling (PG; Loba, Stewart, Klein, & Blackburn, 2001; and see Petry, 2005 for a review). Some have suggested that the growth of the gambling industry has also led to an increased number of individuals with gambling-related problems (Wardman, el-Guebaly, & Hodgins, 2001). Although the vast majority of people do not develop gambling problems, it is not because they do not gamble. The fact that gambling is so widespread makes it an important area of study. It is an alluring activity, and studying the factors that influence it will inform us about a behavior that nearly everyone engages in at one time or another, and can lead to treatments for those with gambling problems.

Researchers have certainly not ignored the study of gambling; however, few have used direct manipulation to study it. A recent search of citations and abstracts for "gambling" using *PsycINFO* (conducted on June 26th, 2007) yielded a total of 3,077 articles. When "gambling" was paired with the keyword term "experiment," a mere 155 articles were identified, suggesting that only 5% of the gambling literature involves experimentation. This low percentage is discouraging because experimentation represents the most straightforward and powerful way to determine cause-and-effect relationships. Determining the causal factors underlying gambling-related problems would seem important for developing successful treatments for PG.

To this end, our laboratory has conducted several experiments on gambling behavior. For instance, Weatherly, McDougall, and Gillis (2006) demonstrated that situational factors present within the gambling session can influence gambling behavior. In their Experiment 1, non-pathological gamblers played a slot-machine simulation, with participants assigned to one of three groups. One group was told that they were gambling with credits that were worth money. The second group was shown cash ($10) by the researcher and told that the money could be used to purchase credits to play the simulation. Participants in the final group physically held the $10 in cash and, if they wanted to gamble on the simulation, were required to give it back to the researcher. Participants in this last group were the least likely to play the simulation and, even when they did, they played fewer trials and bet less money than participants in the other groups.

It seems likely that other situational factors, beyond the salience of money, may influence gambling. For instance, most gambling behavior takes place in a social setting and it would seem reasonable to suspect that social factors likely influence gambling. Indeed, social psychology has demonstrated that social factors can profoundly influence behavior (e.g., conformity; Asch, 1955). It is therefore possible that social factors such as conformity also influence gambling.

Conformity can be defined as an act or change of one's behavior to match or model a majority group's responses (Cialdini & Goldstein, 2004). For example, Asch (1955) conducted a classic study on conformity. Participants, in groups of eight, discriminated the length of a line or size of a ball. Unbeknownst to the participant, seven of the so-called participants were confederates who provided incorrect responses. Results showed that the responses from true participants were often influenced by those of the confederates.

Research does exist that indicates that gambling behavior can be influenced by others. However, it is quite dated and, consistent with the above analysis of the literature, there are not a large number of published studies on the topic. Bauer and Turner (1974) had 48 male and 48 female college students bet on the outcome of a toss of dice. Participants tracked points in an effort to win a $20 prize. Half of the participants were randomly chosen to play individually and the other half were divided into groups of four and told to place their bet as a group. Results showed that groups of participants placed higher bets and played more trials than did individuals. Although one could question whether this procedure legitimately generalizes to actual gambling behavior, the results are suggestive.

Blascovich, Gunsberg, and Howe (1975) studied group influence on risk taking, using the amount bet when participants played blackjack as the dependent measure. Thirty-two state trial judges, betting with their own money, played blackjack on two separate occasions, once alone with a dealer and once in a group of three players. Unknown to the actual participant, the other two players in the groups condition were confederates. Blascovich et al. reported a moderate increase in the amount participants bet when playing in a group versus when playing alone. This study is unique in that participants were gambling with their own money. However, participants always played alone before playing in a group. Thus, it is possible that the increase in the amount bet was the outcome of an order effect rather than social influence.

Although it is reasonable that situational factors contribute to gambling behavior, dispositional factors likely do as well. For instance, Petry (2005) lists six risk factors for PG. Those factors are age, ethnic minority status, socio-economic status, marital status, gender, and drug use. Specifically, young individuals, ethnic minorities, the less affluent, single or divorced individuals, males, and drug users are more likely to suffer from PG than their counterparts[1].

Of particular interest for the present study is the risk factor of ethnic minority status. Specifically, research suggests that American Indian (AI) and Indigenous populations consistently show higher rates of PG compared to non-Indigenous groups (e.g., Wardman et al., 2001; and see Petry, 2005, for a review). For instance, Wardman et al. reported that Indigenous populations have rates of problematic gambling that are two to five times higher than those of non-Indigenous populations.

The reason why AIs suffer from PG at greater rates than the majority population is not known. It is possible that the heightened rate represents a difference between or across populations (e.g., a genetic difference). Then again, AI populations differ from the majority population on many variables such as psychopathology, substance abuse, and socio-economic status (McDonald & Chaney, 2003; Petry, 2005; Zitzow, 1996). Therefore, it is possible that the differences in the rates of PG are related to these other variables and are not linked directly with AIs.

Some authors have suggested the degree to which AIs identify with their tribal culture impacts their mental health and adaptive behavior (McDonald & Chaney, 2003; McDonald & Gonzalez, 2006). Oetting and Beauvais (1990) proposed the Orthogonal Theory of Biculturalism, which suggests that ethnic minority members who identify highly among both their own culture of origin and the Majority culture (i.e., "Bicultural") function more adaptively and exhibit lower levels of psychopathology than those identifying lower in both ("Marginal"). Those identifying more highly with their culture of origin but lower with the Majority are considered "Traditional," while those identifying highly with the Majority but lower with their culture of origin are considered "Assimilated." This suggestion was compelling enough to indicate that cultural issues should be considered in this study to some extent.

The Orthogonal Theory of Biculturalism is of present interest because it suggests that more traditional AIs are culturally sensitive, perhaps more so than members of the majority population. Given that research has suggested that conformity can differ across cultures and ethnicities (e.g., see Bond & Smith, 1996), one could hypothesize that AIs may be more sensitive to social influences when gambling than non-AIs. In other words, AIs may be more sensitive to cultural issues than non-AIs due to the fact that they are continually confronted with two different cultural perspectives; thus, they may be more aware of, and influenced by, social factors than non-AIs.

In the present experiment, AI and non-AI males were recruited to play a slot-machine simulation. Only males were recruited because they tend to gamble at heightened rates compared to females (see Petry, 2005) and using only one sex of participant allowed us to keep the present design at a manageable level in terms of the number of sessions required. The participants played the simulation either alone or in a room with a male confederate who played the simulation on another computer. In half of the conditions in which the confederate was present, the confederate was an AI. In the other half, the confederate was Caucasian. Furthermore, in half of the conditions in which the confederate was present, the confederate played the simulation only a brief time before quitting and leaving the room. In the other sessions, the confederate played the simulation for the complete length of the session.

Given previous research, we made the following predictions. First, participants would gamble the most when the confederate was present and gambled the entire session. Second, AI participants would gamble more than non-AI participants. Third, participants' gambling behavior would differ as a function of the ethnicity of the confederate. That is, the social influence of the confederate would be greatest when the participant and confederate were of the same ethnicity. The social influence would be decreased when the confederates differed in ethnicity.

Method

Participants, Materials, and Apparatus

Eight AI males (mean age = 26 years) and eight non-AI males (mean age = 23 years) participated. Again, males were recruited because they display a greater propensity to gamble than females, and the inclusion of females would have tripled the size of the present study.

Participants were recruited through the University of North Dakota's psychology department participant pool and the local community. In order to participate, each individual had to be 21 years of age or older and score less than a 5 on the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987). The SOGS is a 20-item scale that assesses an individual's gambling history and is the most widely used assessment tool for gambling problems (Petry, 2005). A score of 5 or greater on the SOGS suggests the possible presence of PG.

One AI and two non-AIs scored 5 or more on the SOGS. These individuals were told they did not met the inclusion criteria for the study, given extra course credit (when applicable), and dismissed. These participants were replaced.

Those who were invited to participate were compensated with extra course credit (when applicable) and money, the amount of which was determined by the outcome of their gambling during the sessions. Participants played a customized version of a slot-machine simulation by MacLin et al. (1999). This version of the software was similar to the original with the exception that each individual outcome could be programmed *a priori*, allowing the researchers to ensure that each participant experienced the same series of outcomes when playing the simulation. The software was loaded on two separate computers, one an IBM-compatible desktop computer and the other an IBM-compatible laptop computer. The gambling sessions were conducted in a windowless room that measured approximately 3 m by 3 m. The room contained two tables, with a computer located on each, and three chairs.

Procedure

Before the present study was implemented, the procedure received the approval of the Institutional Review Board of the University of North Dakota. The experiment proper involved five gambling sessions. At the beginning of the first session, the researcher checked the participant's identification to ensure he was at least 21 years of age. The participant went through the process of providing informed consent. Afterwards, the participant completed the SOGS followed by the demographic questionnaire. While the participant completed the demographic questionnaire, the researcher scored the SOGS. In the event that the participant's initial session was one in which a confederate was present, the participant was informed that the confederate had completed these questionnaires in a previous session. If the participant was eligible to continue (i.e., SOGS < 5), the researcher read the following:

"You will now be given the opportunity to play a computer-simulated slot machine. This simulation has been designed to function as a slot machine that you would find in an actual casino. Five symbols will appear on the slot machine while you are playing: pot of gold, kings, bars, sevens, and blank spaces. The winning combinations of these symbols, as well as payoffs for those combinations, are presented on the computer monitor. To win, a winning combination must appear on the middle row. You will be staked with 100 credits per session. Each credit is worth $0.05. Thus, you are staked with $5 per session. You may bet 1 credit or 5 max credits per play and your goal should be to end the session with as many credits as you can. You may quit (i.e., end the session) at any time. The session will end when A) you quit playing, B) 15 minutes have elapsed, or C) you reach zero credits. You will be paid in cash at the end of the final session for the number of credits you have accumulated over the course of the experiment. Do you have any questions?"

Questions were answered by repeating the above instructions. After the researcher read the instructions and answered any questions, the participant played the simulation until one of the three criteria was met. At the end of the fifth session, the researcher read a debriefing statement to the participant, paid the participant for the total credits he had accumulated across the five sessions, and then dismissed the participant.

The five separate sessions differed as to the presence of a confederate, the ethnicity of the confederate, and the behavior of the confederate. Each participant experienced one gambling session in which he was the only gambler (control condition), two sessions in which an AI confederate was present and two sessions in which a non-AI confederate was present. In one of the sessions in which the AI or non-AI confederate was present, the confederate quit playing early in the session. Specifically, the confederate played the simulation five times and then informed the researcher that he was quitting. At this point, the researcher informed the confederate that he would be contacted to schedule another session and the confederate left the room. In the other confederate-present sessions, the confederate played the simulation for the entire 15 minutes. When a confederate was present, interaction between the participant and confederate was minimal. Confederates were instructed to refrain from initiating interactions with the participants, but to respond "normally" should the participant initiate an interaction.

The order of sessions was varied across participants. Sessions were conducted once per day (i.e., multiple sessions were not conducted on the same calendar day). Each participant encountered the same AI and non-AI confederates, although whether those confederates were part of a "stay" or "leave" session varied across participants. The same researcher was present during each session.

Finally, five sequences of outcomes were employed, each programmed to pay back at 85% (i.e., at the end of the sequence, had the participant bet one credit on each trial, the participant would have 85 of the 100 original credits remaining). The sessions in which participants experienced each of the five sequences of outcomes varied across participants.

Dependent Measures: The main dependent measures were the number of times the participants played the slot-machine simulation during the session (trials) and the total amount of credits they risked across the session (money bet). Number of trials served as a measure of duration or persistence, whereas money bet served as a measure of risk taking. Because participants could bet 1 or 5 credits per trial, these measures were not perfectly correlated. For example, by betting differently, it was possible for a participant who played only 10 trials to risk more money than one that played 40 trials.

Results

Two series of analyses were conducted. The first was a comparison of participants' gambling during the sessions in which a confederate was present. The second was a comparison of behaviors across conditions in which confederates were or were not present.

Confederate Present

The number of trials played in sessions in which a confederate was present was analyzed by conducting a three-way (Participant Ethnicity X Confederate Action X Confederate Ethnicity) mixed-model analysis of variance (ANOVA) on the data from individual participants. Participant ethnicity was the grouping factor. Confederate action and confederate ethnicity were both repeated measures. The main effect of participant ethnicity was not significant, $F\,(1, 14) = .733$, $p = .406$, $\eta^2 = .050$, indicating that the AI and non-AI participants did not differ in the number of trials they played. The main effect of confederate action was significant, $F\,(1, 14) = 7.57$, $p = .016$, $\eta^2 = .351$, indicating that participants played fewer trials when the confederate left the session early than when the confederate played throughout the session. The main effect of confederate ethnicity was not significant, F (1, 14) = .695, p = .419, η^2 = .047, indicating that the ethnicity of the confederate did not influence the number of trials played. None of the possible interactions were significant. For this analysis, and all that follow, results were considered significant at p<.05.

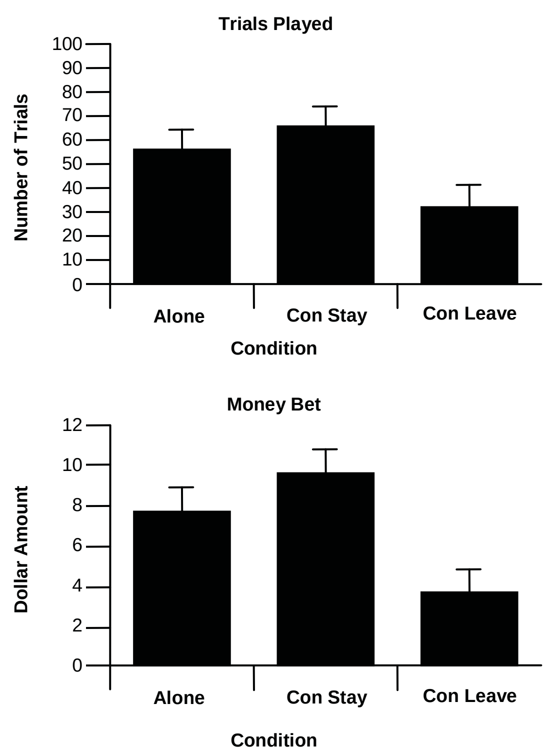
The total amount of money bet across the session was analyzed by conducting a three-way (Participant Ethnicity X Confederate Action X Confederate Ethnicity) mixed-model ANOVA on the amount of money gambled by individual participants. Participant ethnicity was again the grouping factor, with confederate action and confederate ethnicity being repeated measures. The main effect of participant ethnicity was not significant, F (1, 14) = .002, p = .962, η^2 = .000, indicating that the AI and non-AI participants did not differ in the amount of money they bet. Again, however, the main effect of confederate action was significant, F (1, 14) = 19.77, p = .001, η^2 = .585, indicating that participants risked less money when the confederate left the session early than when the confederate played throughout the session. The main effect of confederate ethnicity was not significant, F (1, 14) = .303, p = .590, η^2 = .021, indicating that participants risked similar amounts of money regardless of whether the confederate was an AI or a non-AI. None of the possible interactions were significant.

Cross-condition Comparisons

Because both of the above analyses only found a significant effect of the actions of the confederate, data were collapsed across the factors of participant ethnicity and confederate ethnicity. To determine whether the significant effects of confederate action was to increase gambling when the confederate stayed throughout the entire session or to decrease gambling when the confederate left the session early, two one-way ANOVAs were conducted. The ANOVA on the number of trials played resulted in a significant difference, F (2, 30) = 4.98, p = .014, η^2 = .249. In order to ascertain the source of the difference, a follow-up paired samples t test was conducted on each possible pair of conditions. Results showed that the number of trials played in the conditions in which the confederate left was significantly less than in either the alone condition, t(15) = 2.40, p = .030, or the conditions in which the confederate stayed, t(15) = 2.82, p = .013. The number of trials played in the alone and confederate stayed conditions did not differ significantly.

The second one-way was conducted on the total amount of money bet in the alone, confederate stays, and confederate leaves conditions. A significant main effect was observed, *F* (2, 30) = 6.80, *p* = .004, η^2 = .312. Follow-up paired samples *t* tests showed that the amount of money bet in the confederate leaves conditions was significantly less than in either the alone, *t*(15) = 2.52, *p* = .024, or the confederate stays conditions, *t*(15) = 4.49, *p*<.001. The amount of money bet in the alone and confederate stays conditions did not differ significantly. The effects of confederate action are presented in Figure 1.

Figure 1



Discussion

The results did not support our hypotheses. We predicted that the presence of a confederate who gambled the entire session would increase the gambling of the participants. The actions of the confederate did significantly influence participants' gambling, but the effect of the confederate's action was observed when the confederate left, not stayed in, the session. We predicted that AI participants would gamble more than non-AI participants. They did not. Finally, we predicted that the effect of the confederate would vary as a function of the confederate's ethnicity. No evidence was found to support this prediction.

Finding that having a confederate present and gambling throughout the session does not increase gambling behavior speaks to the allure of gambling. That is, the research literature on conformity (e.g., Asch, 1955), as well as social facilitation (see Guerin, 1993), would lead one to predict that participants' gambling should have increased. However, participants gambled similarly when there was no confederate present and when there was a confederate who was present throughout the session.

The decrease in gambling produced by the confederate leaving the session adds to the list of results from our laboratory that demonstrate that gambling can be inhibited, but not easily facilitated. For example, Weatherly et al. (2006) demonstrated that having participants handle the money they had been staked led to a decrease in gambling behavior. Weatherly and Brandt (2004) showed, across two experiments, that increasing the value of the credits participants were gambling produced significant decreases in participants' gambling. Weatherly, Sauter, and King (2004) found that participants who experienced an immediate big win when playing the slot-machine simulation quit playing significantly earlier than participants who experienced several early small wins or who never won at all.

Finding that experimental manipulations often decrease, not increase, gambling suggests that when gambling behavior occurs, it does so at near-ceiling levels. On the one hand, this possibility is potentially bad news because it would suggest that people are prone to gamble, which would promote PG. On the other hand, finding that manipulations can decrease gambling is potentially good news because it would suggest that it should be possible to decrease problem gambling (i.e., successfully treat PG). Of course, the present findings require replication before strong conclusions can be forwarded. However, the results do seem to indicate that gambling behavior can be influenced by the actions of others. Thus, mental health care providers might be wise to consider who the client gambles with when dealing with the client's behavior problem.

It should also be noted that the present results do not rule out the idea that a confederate's presence or behavior will never promote gambling behavior. In the present experiment, there was little or no competition or interaction between the participant and the confederate. Had the procedure incorporated a competition component, it seems reasonable to predict that more gambling would have been observed in the confederate stays condition relative to the condition in which participants gambled alone. Indeed, previous research has suggested that gambling can be facilitated by the presence and/or actions of others (Bauer & Turner, 1973; Blascovich et al., 1975).

Given the heightened rates of PG among AIs relative to the population at large (Volberg & Abbott; 1997: Wardman et al. 2001; Zitzow; 1996), the failure to find differences in gambling behavior of the AI and non-AI participants may be viewed as surprising. In fact, one could potentially claim that our results represent a Type II error in that a difference did exist, but we employed too few participants for the effect to reach statistical significance. This argument cannot be completely ruled out; however, it seems unlikely. The largest effect size for participant ethnicity was small (η^2 = . 05), indicating that this predictor was not substantial. With this effect size, over 400 participants would have been required before a significant effect of participant ethnicity was observed. Thus, although an effect of ethnicity may have eventually emerged; there are clearly more potent factors (e.g., the action of a confederate) that can influence gambling behavior.

It may also be possible be that AI and non-AI groups did not substantially differ by ethnicity. That is, the AI participants were drawn from the university population (and the surrounding community). Thus, these individuals may have been acculturated similarly to the non-AI participants, accounting for the small effect sizes and lack of significant differences in behavior. Had we drawn our AI participants from a reservation population, significant differences may have emerged. Furthermore, the effect of specific cultural orientation (i.e., Biculturalism) on AIs' gambling behaviors is also an area that bears further investigation, as suggested previously. Unfortunately, the sample size requirements in this study's design precluded such an inquiry. This limitation cannot be countered and warrants future research.

One could argue that the results were affected by excluding those individuals with SOGS scores over 5 (i.e., normalized the groups across ethnicities). However, as noted above, only three individuals were excluded because they did not meet our inclusion criteria. Furthermore, gambling experience (as measured by the SOGS) is separate, and theoretically independent, from ethnicity. We would argue that normalizing the groups by SOGS score provided the strongest possible test of ethnic differences.

On another level, results may have been influenced had women been included in the initial design. Indeed, replication with female samples may be warranted before any final conclusions are reached. This possible limitation of the study cannot be countered. However, in this study males were of interest because they are known to exhibit higher levels of gambling-related problems than females. In addition, the inclusion of females at the time would have inhibited the feasiblility of the research design becuase sample size and independent conditions would have tripled.

We would also argue that the failure to find significant effects of participants' ethnicity is not a socially negative outcome. Although the literature indicates that AIs suffer from PG at greater rates than the majority population, the source of that difference has not been clearly identified. It is possible that the difference is purely one of ethnicity (i.e., genetics). However, it is also possible that the differences in PG are produced indirectly by other factors, such as the presence of other disorders, environmental factors, employment, education opportunities, lack of social opportunities, or poverty (e.g., Wardman et al., 2001). The present results favor the latter possibility over the former.

Given the failure to find a significant effect of participants' ethnicity, it is perhaps less than surprising that the confederates' ethnicity also failed to produce significant differences in participants' gambling. As is always the case with null results, there are numerous possibilities for why an effect was not found. In this instance, it is possible that the participants' limited interaction with the confederates limited the impact of the confederates' ethnicity. Then again, if our AI and non-AI participants did not truly differ much from one another, then it would seem reasonable that they would have similar reactions to the ethnicity of the confederates. Alternatively, our pan-Indian approach may have worked against our hypothesis. That is, we did not control for tribal affiliation of the AI confederates relative to that of the AI participants. It is possible that an effect would have been observed had we matched for tribal affiliation.

In conclusion, the present study provides some novel and potentially welcome results. The actions of another gambler (i.e., the confederate) can influence a person's gambling behavior, and does so by potentially inhibiting it. Although ethnic differences are prevalent in the gambling literature, our results found little evidence to support the idea that ethnicity is a major factor controlling gambling behavior. This outcome has increased importance given that our procedure, unlike the vast majority of research published on gambling, employed an experimental design. The present study does not represent the definitive work on how conformity or ethnicity influences gambling. However, it does highlight the fact that much additional research is needed in this particular area.

Casey L. McDougall
Indians into Psychology Doctoral Education
(INPSYDE) Program
Department of Psychology
University of North Dakota
Grand Forks, ND 58202-8380
E-mail: casey.mcdougall@und.nodak.edu

References

Asch, S. E. (1955). Opinions and social pressure. *Scientific American, 193*(5), 31-35.

Bauer, R. H. & Turner, J. H. (1974). Betting behavior in sexually homogeneous and heterogeneous groups. *Psychological Reports, 34*(1), 252-258.

Blascovich, J., Gunsberg, G. P., Howe, R. C. (1975). Blackjack and the risky shift: II. Monetary stakes. *Journal of Experimental Social Psychology, 11*(3), 224-232.

Bond, M. H., & Smith, P. B. (1996). Culture and conformity: A meta-analysis of studies using Asch's (1952b, 1956) line judgment task. *Psychological Bulletin, 119*, 111-137.

Cialdini, R. B. & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology, 55*, 591-621.

Guerin, B. (1993). *Social Facilitation*. New York, NY: Cambridge University Press.

Lesieur, H. R. & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144*, 1184-1188.

Loba, P., Stewart, S. H., Klein, R. M., & Blackburn, J. R. (2001). Manipulations of the features of standard video lottery terminal (VLT) games: Effects in pathological and non-pathological gamblers. *Journal of Gambling Studies, 17*(4), 297-320.

MacLin, O. H., Dixon, M. R. & Hayes, L. A. (1999). A computerized slot machine simulation to investigate the variables involved in gambling behavior. *Behavior Research Methods, Instruments & Computers, 31*(4), 731-734.

McDonald, J.D. & Chaney, J. (2003). Resistance to multiculturalism: The "Indian problem." In J. Mio & G. Iwamasa (Eds.), *Culturally diverse mental health: The challenges of research and resistance*. New York: Brunner-Ruttledge.

McDonald, J. D. & Gonzalez J. (2006). Cognitive-behavioral therapy with American Indians. In P. A. Hays & G. Y. Iwamasa, *Culturally Responsive Cognitive Behavioral Therapy: Assessment, Practice, and Supervision* (pp. 23-45). Washington, DC: American Psychological Association.

Oetting, E. R., & Beauvais, F. (1990). Orthogonal cultural identification theory: The cultural identification of minority adolescents. *The International Journal of the Addictions, 25*(5A & 6A), 655-685.

Petry, N. M. (2005*). Pathological gambling: Etiology, comorbidity, and treatment*. Washington, DC: American Psychological Association.

Proquest Information and Learning Company, 2006. *PsycINFO with full text and with psycARTICLES*. EBSCOhost, Retrieved June 26th, 2007.

Volberg, R. A. & Abbott, M. W. (1997). Gambling and problem gambling among indigenous peoples. *Substance Use & Misuse, 32*(11), 1525-1538.

Wardman, D., el-Gueblay, N., & Hodgins, D. (2001). Problem and pathological gambling in North American Aboriginal populations: A review in the empirical literature. *Journal of Gambling Studies, 17*(2), 81-100.

Weatherly, J. N., & Brandt, A. E. (2004). Participants' sensitivity to percentage payback and credit value when playing a slot-machine simulation. *Behavior and Social Issues, 13*, 33-50.

Weatherly, J., McDougall, C., & Gillis, A. (2006). A bird in hand: Discouraging gambling on slot machine simulation. *Journal of Psychology: Interdisciplinary and Applied, 140*(4), 347-361.

Weatherly, J. N., Sauter, J. M., & King, B.M. (2004). The "big win" and resistance to extinction when gambling. *The Journal of Psychology, 138*, 495-504.

Young, K. S. (2004). Internet addiction: A new clinical phenomenon and its consequences. *American Behavioral Scientist, 48*(4), 402-415

Zitzow, D. (1996). A comparative study of problematic gambling behaviors between American Indian and non-Indian adults in a northern plains reservation. *American Indian & Alaska Native Mental Health Research, 7*(2), 27-41.

Footnote

[1] These variables or factors have been associated with PG, but that does not necessarily place them in a causal role. In fact, as noted by Petry (2005), the exact relationship between these factors and PG is not known. They may directly impact gambling, gambling may impact them, or some other factor(s) may be related to these risk factors and gambling. Additional research will determine which of the above is correct.

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