



GAMBLING RESEARCH REVEALS

Gambling and risk-related behaviour: An examination of differences between individuals

In the popular 1980s game show “Let’s Make A Deal,” host Monty Hall would give players the option of taking a guaranteed prize or exchanging it for the for a mystery prize behind the “curtain.” For no apparent reason, some individuals were perfectly willing to exchange their prize for the chance of obtaining a much better (or inferior) one while others were satisfied. Fortunately for viewers of the program, there were plenty individuals willing to take Monty up on his offer. But what was it about their personality that inspired those who took this risk versus others who did not?

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Interestingly, it is the element of high variability between possible outcomes that is commonly used to define the concept of “risk.” Measures of risk have previously been studied in association with gambling behaviour but the results have proven to be mixed and therefore inconclusive. To further complicate matters, it is presently unknown whether risky behaviour is consistent across situations and contexts, or if it varies as a function of situational and environmental factors, or is a combination of both.

In order to add to our scientific understanding of the relationship between gambling and risk-taking, University of Lethbridge Ph.D. student Sandeep Mishra initiated an Institute-funded research investigation entitled “Gambling and risk-taking: Individual differences in risk-acceptance and variance preference.”

A theory of risk-sensitive decision-making related to meeting survival “Needs”

While an undergraduate student at McMaster University, Mishra was introduced to research being done by Martin Daly and Margo Wilson. According to Mishra, “They made a name for themselves studying criminal behaviour not just as an isolated phenomenon, but as a larger part of general risk behaviour. It was this exposure that that got me excited about risk research, and about the broader implications of a general evolutionary approach to studying risk and risk-related behaviour.”

The Alberta Gaming Research Institute is a consortium of the Universities of Alberta, Calgary, and Lethbridge. Its primary purpose is to support and promote research into gaming and gambling in the province.*

OUR MISSION

To significantly improve Albertans' knowledge of how gambling affects society

Figure 1: Foraging Bird Example

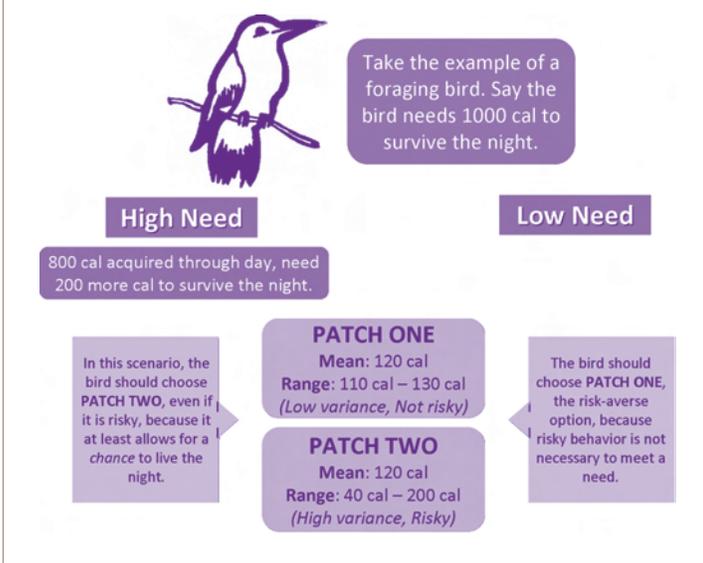
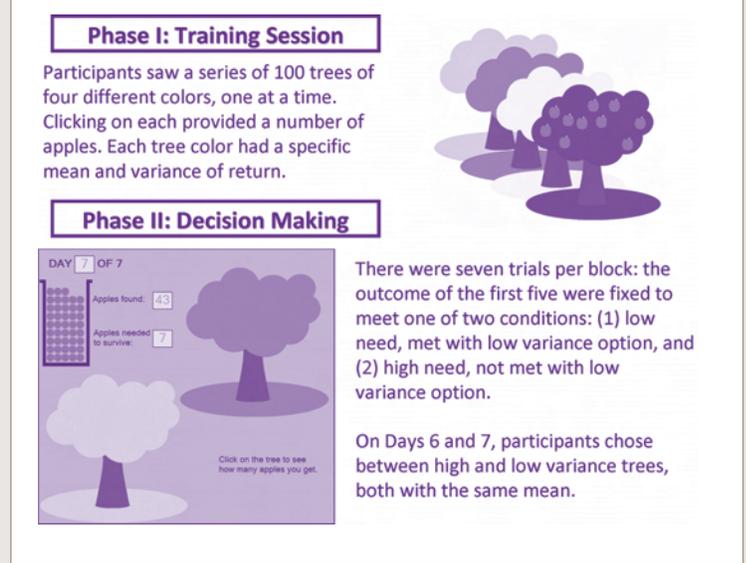


Figure 2: Implicit Risky Decision Making Example



Mishra explains that a decision-making theory from the field of behavioural ecology, called risk-sensitive foraging, is illustrative of the role of variance in risky decision-making. It posits that organisms make decisions in order to minimize the chance of an unfavourable¹ outcome from occurring, rather than to maximize a positive outcome. This theory has been empirically supported in numerous research investigations in non-human animal foragers, as well as in a few recent experiments involving human subjects. According to Mishra, “Results of these observations indicated that organisms were generally risk-averse and only risk-accepting when there was a need or aspiration to be fulfilled, that couldn’t be fulfilled from less risky options” (See Figure 1). Since real world scenarios indicate that some animals and people do prefer options that involve risk (at least in the absence of need), Mishra wanted to further examine the causes of this behaviour.

The laboratory simulations on undergraduate students

Mishra’s laboratory investigation involved developing simulations designed to determine (1) if humans with high levels of particular personality traits thought to be related to risk-taking (e.g., sensation seeking, impulsivity) were likely to prefer scenarios involving “high variance” options, and (2) if need is the primary motivator of risk-accepting behaviour. According to Mishra, “A preference for risky activities such as bungee jumping may not actually be risky in the sense that there is little variance in outcome; the likelihood of an uncertain outcome is very low. Such a preference may rather reflect a personality tendency for excitement, or extroversion, independent of risk propensity in terms of high variance preference.”

The first phase of Mishra’s research involved the recruitment of 240 participants (119 males; 121 females) from undergraduate psychology classes at the University of Lethbridge. Subjects completed a series of questionnaires which gauged traditional risk-taking using personality-based measures (e.g., Zuckerman’s Sensation Seeking Scale, Eysenck Impulsiveness Scale, etc.). Those that scored highest, lowest and at the mid-point on a composite measure of these traditional risk measures (impulsivity, sensation seeking, self-control, and extraversion) were invited to participate in phase two. This next phase involved the use of more comprehensive and interactive measures of risk-taking as variance, and under conditions of “need” in both explicit and implicit tasks (see Figure 2).

¹ An outcome that fails to meet one’s survival needs.

Generalized findings of laboratory investigations

Based on an analysis of data collected from this experiment, Mishra and colleagues were able to make a number of tentative conclusions about their risk-related findings.

The first conclusion was that **risk conceptualized as a personality trait is significantly related to risk conceptualized as variance preference**. In describing this finding, Mishra noted that, "Traits like sensation seeking, for example, have been shown to be very predictive of real-world 'risky' behaviours such as promiscuous sexual behaviour, aggressions, and even activities like bungee jumping or mountain climbing... so there are indeed personality traits that seem to 'drive' people to engage in such behaviours." In reflecting upon the mechanisms that drive the behaviour, Mishra speculates that it may potentially be related to physiological arousal. "It is possible that people that like high-risk or thrilling activities have a lower baseline of physiological arousal, and so need to seek more thrilling activities to meet their threshold need of arousal," says Mishra.

A second finding from the research was that, **under conditions of need, participants tended to make the most "rational" decision, regardless of sex or personality type**. Mishra points out that individual difference in variance preference also played a role in whether participants chose risky options or not, even above and beyond the role of need. When asked to comment on the ability of participants to calculate "rational" (i.e., "need-based") calculations in the laboratory simulations, Mishra noted that, "It appears that people are indeed able to work out probabilities, not only using an explicit task where all of the numbers are clearly provided, and some math can be done, but also using an implicit task, where participants had no explicit numbers provided. So, presumably, participants had a 'gut' feeling of the right decision in any given circumstance."

A third research finding was that **gambling tendencies do not predict risky decision-making under conditions of need**. Mishra found that most participants made the "rational" risk-sensitive choice based on need condition, not based on risk-as-personality (which is highly associated with gambling behaviour). It is pointed out by Mishra that, "Gambling itself is really just another form of risk-taking, in that gamblers expose their financial resources to variable outcomes that could involve big wins or losses. Some gambling researchers have suggested that gambling research should be integrated in a greater framework of risky behaviour, and I tend to agree with this notion. This suggestion is supported by studies that have identified instigative factors that are associated with both problem gambling and other types of risky behaviour, such as antisocial tendencies, poor academic performance, being male, traumatic life events, disrupted family relationships, early risky behaviour, low socioeconomic status, and low perceived social support."

Implications of risk behaviour research

One of the most important implications of the research being undertaken by Mishra is the relationship between risk-taking and crime. He notes that, "One of my related lines of research involves using archival data in crime reports to investigate patterns of criminal behaviour and risky behaviour over time at the aggregate level. I've found that crime rates significantly covary over time with rates of risky behaviours like violence, accidents, sexual behaviour, drug use, and school dropout. Evolutionary accounts of risky behaviour suggest that crime is simply an extreme form of risky behaviour, and thus, we would expect the two behaviours to covary. Our archival data lends some support to this contention. Other researchers have demonstrated that situations of high need (e.g., income inequality, low life expectancy) are the best predictors of criminal behaviour, including homicide. Together,

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these results suggest that (1) crime and risk are analogous phenomena, and (2) crime and risk may be seen as ‘smarter’ behavioural options in conditions of need.”

Mishra’s research is also broadening our understanding of individual preference or aversion to risk among non-human species. Another related line of his research involves an examination of ‘personality’ in Giant Madagascar Hissing Cockroaches. Says Mishra, “We’ve found that there are definitely reliable individual differences in these cockroaches, and identified them to ‘personality’ axes of libido and shy-bold. Shy-bold suggests that there are cockroaches that are more ‘risky’—for instance, more likely to step into light to obtain food, more likely to be aggressive—than others. This shy-bold axis has been found in several species... from insects, to birds, to mammals.” In fact, Mishra states, “Having a risky personality may represent a social ‘niche’; risky and non-risky individuals may thus exploit different behavioural strategies in an attempt to maximize survival, reproductive success, and fitness.”

Future plans involve further risk-related studies

In the future, Misha expects that he will continue his investigations related to risk-related decision-making throughout his Ph.D. and beyond using both human and non-human subjects. “Almost every human decision involves an element of risk, and so, the study of risky decision-making is extremely broadly applicable and relevant,” says Mishra. Indeed, his plan to focus on special populations under conditions of high need (e.g., the unemployed, problem gamblers, young males, and offenders) will undoubtedly have a number of important public policy implications.

Banff Conference on Internet Gambling

The Institute’s eighth annual conference will discuss the latest research on the prevalence and patterns of online gambling around the world; regulatory structures used in different countries; problem gambling and online treatment; player protection strategies; poker bots; and professional online gambling.

Date & Location: Friday, March 27 & Saturday, March 28, 2009 @ The Banff Centre, Banff, Alberta, Canada.

Call for Poster Submissions

A poster session will be held during the Institute’s 2009 conference on Internet Gambling. Researchers should email a 150-200 word abstract to Dr. Robert Williams at robert.williams@uleth.ca. Abstracts should include: title of research, names of author(s) with the presenting author underlined, author affiliation, and contact information. The poster can address any area of gambling, although research on online gambling is especially encouraged. Submission deadline is Friday, January 30, 2009.

