

# **THE WHEEL OF MISFORTUNE: USING GAMBLING TO ASSESS THE LINK BETWEEN RISKY BEHAVIOR AND ATTACHMENT**

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## **Abstract**

A gambling game was used to test whether individuals in the company of friends would take greater risk than individuals in the presence of strangers. Undergraduate males and females (N=46) played a word puzzle game on wheels that offered high-gain/high-risk, low-gain/low-risk alternatives. Across three trials, results supported predictions that participants in the presence of friends exhibited more risk-taking behavior than participants in the presence of strangers. These results suggested that friends serve as a secure base for adults, consistent with attachment theory and findings from infant studies of secure base effects.

## **Introduction**

Each day people participate in risky behavior by taking physical, social, legal, or financial risks. People involve themselves in physical activities, substance abuse, sexual promiscuity, and criminal activity everyday to varying degrees (Bell, Forthun, & Sun, 2000). Even though these activities are potentially hazardous, people continuously partake in them. A multitude of past research has examined what motivates participation in these types of risky behaviors (Shapiro, Siegel, Scovill, & Hays, 1998; Levine, & Singer, 1988; Cooper, Shaver, & Collins, 1998; Horvath, & Zuckerman, 1993; Zuckerman, & Kuhlman, 2000). The majority of risk behavior research has focused on personality traits such as sensations seeking (Horvath, & Zuckerman, 1993; Zuckerman, & Kuhlman, 2000). However, a predominance of risky behavior occurs in group contexts, for example fraternities. This suggests that there may be a relationship between an individual's feeling of connectedness to others and their motivation to take risks. Moreover, research on infants and adults supports the idea that, an individual's sense of attachment is linked to their exploratory behavior (Passman, 1976; Passman, 1977; Passman, & Weisberg, 1975; Hazan, & Shaver, 1990). Our study expanded upon this theme by considering risky behavior as "exploratory". Consistent with attachment theory, we hypothesized that individuals in the presence of someone to whom they are securely attached will be more inclined to exhibit risky behavior in a gambling paradigm.

A strong correlation has been identified between sensation seeking and risk-taking behavior (Horvath, & Zuckerman, 1993; Zuckerman, & Kuhlman, 2000). Hovarth and Zuckerman (1993) discuss how multiple factors affect sensation seekers' behavior. High

sensation seekers are more afflicted by an optimistic bias, which causes them to underestimate the possibility for negative outcomes. Furthermore, this bias increases as their exposure to given activities increases. In addition, impulsivity has been found to be positively related to risky behavior and negatively related to risk appraisal. Sensation seeking has been recognized as having a high heritability, which suggests some genetic influence (Zuckerman, & Kuhlman, 2000). These factors contribute to individual differences in risk-taking behaviors. But what social mechanisms make risk-taking more likely for anyone?

In the 1960's and 1970's, there was a plethora of studies that examined group effects on risk-taking behavior, a phenomenon known as the risky shift (Wallach, Kogan, & Bem, 1964; Bem, Wallach, & Kogan, 1965; Clement, & Sullivan, 1970). These studies found that subjects tended to take higher risks when working in groups than when alone. Due to the fact that these studies utilized group interactions and relied on the choice dilemma questionnaire for assessing risk-taking behavior, drawing substantial conclusions about observed behavior was difficult. For example, the change in behavior may have been due to persuasion from high risk takers in the group or the diffusion of responsibility from acting in a group (Felsenthal, 1979). Thus, the ambiguities in the design of this research made attempts to pinpoint a social mechanism for risk taking complicated.

Research into the development of attachment may provide an avenue for understanding risk-taking behavior. Developmental research has repeatedly demonstrated a link between exploratory behavior and the secure base phenomenon in young children (Ainsworth, & Bowlby, 1991; Ainsworth, 1989; Passman, 1976; Passman, 1977; Passman, & Weisberg, 1975). Exploratory behavior in children is supported by the presence of an attachment person or object, which serves as a "secure base" (Ainsworth, 1989; Passman, & Weisberg, 1975; Ainsworth, & Bowlby, 1991). Passman (1977) found that infants completed more trials of an exploratory task when an attachment stimulus, either their mother or their blanket, was present. Conversely, an infant in the presence of a stranger (in the Strange Situation paradigm) explored less due to the lack of security an attachment stimulus provides (Ainsworth, & Bowlby, 1991). Hazan and Shaver (1990) extended the research of attachment theory and exploratory behavior to adults. Based on the premise that adult work is functionally similar to childhood exploration, Hazan and Shaver (1990) studied the quality of adult's attachment to others and their attitudes about work. They found that adults who were more securely attached in their interpersonal relationships felt more satisfied, optimistic, and comfortable in their work environment. This finding suggests that attachment and exploratory processes of infants extends to adult life.

These social processes are believed to encourage exploration by reducing anxiety. Passman (1977) refers to this mechanism as a possible explanation for his findings. He proposed that the presence of an attachment object acts as an anxiety reducing agent making participants more inclined to demonstrate exploratory behavior; when attachment objects are absent, subjects' anxiety increases eliciting less proclivity to explore. Given this model, it seems reasonable to generalize this mechanism to adults and their behavior. Specifically, a friend should function to provide a secure base for adults in the same manner that a mother provides a secure base for an infant. This base should reduce anxiety for participants thus making them more inclined to participate in risky behavior.

There is a lack of research that directly relates risk-taking behavior and attachment. Thus, our study was unique in that we examined attachment and the risk-taking behavior of young adults with a gambling paradigm. Gambling has been operationally defined as “staking something of value on the outcome of some uncertain contingency” (Eadington, 1976). Given this definition, gambling was considered as risk taking behavior (Powell, Hardoon, Derevensky, & Gupta, 1999). Studies looking at sensation seeking and risk behavior have illustrated a strong positive correlation between sensation seeking and gambling (Anderson, & Brown, 1984; Horvath, & Zuckerman, 1993). In order to quantitatively assess the effects of attachment on risk behavior, participants engaged in a gambling game under one of three conditions intended to induce various levels of attachment. These conditions were A) friend (participant in the presence of best same-sex friend), B) stranger (participant in the presence of an experimental confederate), or C) alone (participants alone with experimenter).

Our specific predictions follow:

1. Participants in the presence of a friend would more frequently spin a high-risk wheel than when in the presence of a stranger or by themselves.
2. Participants in the presence of a friend will score lower on the Social Anxiety Scale (Fenigstein, 1975) than those with a stranger or by themselves.

## **Method**

### *Participants*

Twenty-four male and 22 female undergraduate students from an introductory psychology class at a small liberal arts college participated and received laboratory credit.

### *Materials*

Questionnaires were used to determine the quality of attachment; participants were administered three questionnaires: the General Relationship Questionnaire (Collins, & Reed, 1990), the Intimate Friendship Scale (Sharabany, 1994). To measure self-consciousness, participants took the Socially Conscious Scale (Fenigstein, Scheier, & Buss, 1975). Participants in the stranger and alone groups answered the General Relationship Questionnaire, the Balanced Inventory of Desirable Responding Scale (Kroner, & Weekes, 1996), and the Socially Conscious Scale. One of the wheels was low-risk with 6 bankrupt spaces and 12 guess-a-letter spaces. The high-risk wheel had 12 bankrupt spaces and 6 letter-given spaces. The wheels were eight inches in diameter with a central spinning arm.

### *Procedure*

Participants were randomly assigned to one of three conditions: friend, stranger, or alone. Those assigned to the friend condition were asked to bring their closest same sex friend.

Upon arriving at the lab, participants were seated at a 160-degree angle, twenty inches away from the independent stimulus, facing the opposite direction. They were instructed not to interact with the other person for the friend and stranger conditions. The

participants, friends and strangers all filled out the questionnaires to determine the level of attachment to each other and globally.

The participants were instructed on how to play the game. Participants were told the first two games were just practice. For the third puzzle, participants were told if they solved the puzzle they would receive an hour's worth of credit but, if they did not solve the puzzle, that they would lose all credit for the study. Regardless of how the participant performed on the third puzzle, everyone received an hour's worth of credit.

To control the amount of time each participant played, all participants were allowed five minutes to play each game. The friend or stranger was given a magazine to read while the participant played the game. After the first two practice games, a third experimental trial game was played by the participant. In order to control for participants ability to solve word-puzzles, the games were successively more difficult; and the final experimental trial was impossible to solve. The participant wagered the poker chips on either the high or low-risk wheels in order to obtain letters and ultimately solve the word-puzzle. Both wheels cost one chip per spin. If the participant landed on a "guess" space they were allowed to guess a letter, and their wagered chip was returned. If the participant landed on a "letter" space they were given a letter within the word, and their wagered chip was returned. If they landed on the "bankrupt" space on either wheel, they lost their wagered chip (see Appendix B). Upon completion, participants was thanked and debriefed.

## Results

To measure the degree of risky decisions taken by each participant, we created a risk ratio that served as the dependent measure. The risk ratio was computed by dividing the number of spins on the risky letter wheel over the total number of spins on both wheels. This calculation was made separately for each trial, resulting in three risk scores for each participant.<sup>1</sup>

To test the prediction that participants would act in a more risky manner in the friend condition compared to the alone and stranger conditions, a between-subjects Analysis of Variance (ANOVA) was performed on the risk ratio for trial three. Risk scores for each trial were the dependent variable, and the independent variable was the condition (friend, stranger, alone). Unexpectedly, there was no effect of condition,  $F(2,39)=2.235, p>.05$ . Exploratory inspection of the means revealed that the alone condition provoked unexpected differences between males and females. Trials one and two were designed as practice trials but in fact, participants had different success and failure experiences on these trials. Because this history may have affected responses in trial three, we reanalyzed the data by considering all three trials across only the stranger and friend conditions, omitting the alone condition. A multivariate analysis of variance (MANOVA) across all three risk scores for all these trials yielded a marginally significant main effect for condition,  $F(3,22)= 2.89, p=.058$ . As predicted, condition had a systematic effect on risk-taking across all three trials (see Table 1).

The overall result was supported by univariate  $F$ -tests for trial one,  $F(1,24)=5.38, p=.029$ , and for trial three  $F(1,24)=3.45, p=.075$ , but not for trial two,  $F(1,24)=1.02, p=.32$ . Directional tests of our prediction that participants in the friend condition would act in a more risky manner than participants in the stranger condition were significant for

trial one  $t(24)=2.32, p=.015$ , and for trial three  $t(28)=1.86, p=.035$  but not for trial two  $t(24)=1.01, p=.16$ . These findings generally supported predictions that friends induce risk-taking behavior (see Figure 1).

## Discussion

Initial analysis across all three conditions did not support our predictions; however, we observed the friend condition tended to be higher than that of the stranger condition on the risk scores over the three trials, while the alone condition varied randomly throughout the trials. When risk taking was compared for only the friend and stranger conditions, predictions were confirmed. Specifically for trials one and three, participants in the friend condition exhibited significantly more risk-taking behavior than participants in the stranger condition. Additionally, trial two showed a similar trend. These results provided partial support for our hypothesis that people in the presence of an attachment stimulus will participate in more risk-taking behavior than those who are not in the presence of such a stimulus.

Our results supported the idea that the presence of a secure attachment base serves as encouragement for a person to take more risky behavior than when such a base is absent. Passman (1976, 1977) examined the effects of such stimuli with children in the strange situation and originally developed this idea. Children in the strange situation were less inhibited due to the presence of a security stimulus (Passman, 1977). In our study, the presence of a friend functioned similarly to the security stimulus in Passman's work, in that participants in the presence of their friends demonstrated riskier behavior compared to people not in the presence of a security stimulus. This supports the idea that the behavioral effects of attachment stimulus carry-over into adult life. Our findings may add to the work of Hazan and Shaver (1990) by potentially isolating the secure attachment stimulus that allows for a more satisfied and comfortable work environment for people who were rated as more securely attached.

Our findings also have larger implications for risk-taking behavior in young adults. In particular, they suggest that social settings can have a profound impact on an individual's decision-making processes involving elements of risk. However, a number of unexpected limiting factors in our study, reduce the degree to which we can discuss our results.

We expected participants in the alone condition to behave in a consistently conservative manner, similar to the participants in the stranger condition. However, participants in the alone condition varied across the three trials and by gender, and the implementation of the alone condition may have been problematic. The nature of the study required the presence of an experimenter to facilitate the game; therefore, participants in the alone condition were not truly alone. The presence of the experimenter may have confounded the mechanism we thought would influence people's risk-taking, moreover, the gender of the experimenter (male) impacted decisions of male and female participants differently (Etaugh, Houtler, & Ptasnik, 1988). A post-hoc exploratory analysis of gender revealed a prevalent trend between males and females in the alone condition. The trend revealed that men tended to act in a more risky manner when compared to women. It is a possibility that a competitive phenomenon was elicited in males by the presence of a male experimenter (Ginsburg, H. J., & Miller, S. M., 1982;

Slovic, P., 1966). Perhaps the presence of male experimenters raised females' social anxiety and thus diminished their risk-taking behavior. Future studies could control this confound by automating the game and thereby eliminating experimenter impact. Also, studies could be designed to directly investigate gender effects by systematically matching or mixing experimenter-participant genders.

Another limitation within our study was the unforeseen experience effects that occurred in the first and second trials. The first and second trials were meant to be puzzles that could be solved by all the participants. However, not all of the participants were able to solve these puzzles. This experience effect certainly confounded participants playing on the third trial. In order to accommodate for this confound, the results were analyzed across all three trials. Notwithstanding the effort to correct for this problem, the impact of experience was still evident in the results of trial two. Future studies should avoid this confound by pre-testing the puzzles to make sure that they are ones that participants could consistently solve. Another limitation of our study was the small sample size. The trends in our data lent themselves towards significance that would most likely have been discovered with more participants. Also, because our samples were relatively small, analysis of the data collected from the questionnaires did not yield any meaningful results, consequently we did not report that data. Given that the majority of past risk research has focused on personality traits, questionnaires that assess such traits could provide some useful insights in conjunction with attachment measures.

There are many other types of risk taking behaviors that future studies may investigate (Bell, Forthun, & Sun, 2000). The goal of our study was to investigate risk taking behavior and attachment through a gambling paradigm. However, the design of our study placed participants in a forced choice gambling situation, which may not have been a true representation of voluntary gambling situations. Additionally, there are many situations involving risk besides gambling that should be addressed. Physical activities, substance abuse, sexual promiscuity, and criminal activity are all risky behaviors that could be addressed through various paradigms besides gambling. One such example includes social risk-taking in various environments. In particular, a study could be designed to measure the differences in an individual's willingness to take social risks at a bar when in the presence of a friend versus by themselves. These situations would be worthy of investigation in a framework similar to ours since these situations often arise in the presence of both friends and strangers.

Our study found that participants in the presence of a friend took significantly more risk than those in the presence of a stranger, supporting the hypothesis that adult behavior is affected by the presence of secure bases. In the past, risk-taking and attachment have usually been studied independently of each other. This study was a novel way to look at a possible connection between attachment and risk-taking behavior. Our study provides an initial foundation between risk-taking and attachment providing motivation for future studies to continue research within this context.

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#### Footnotes

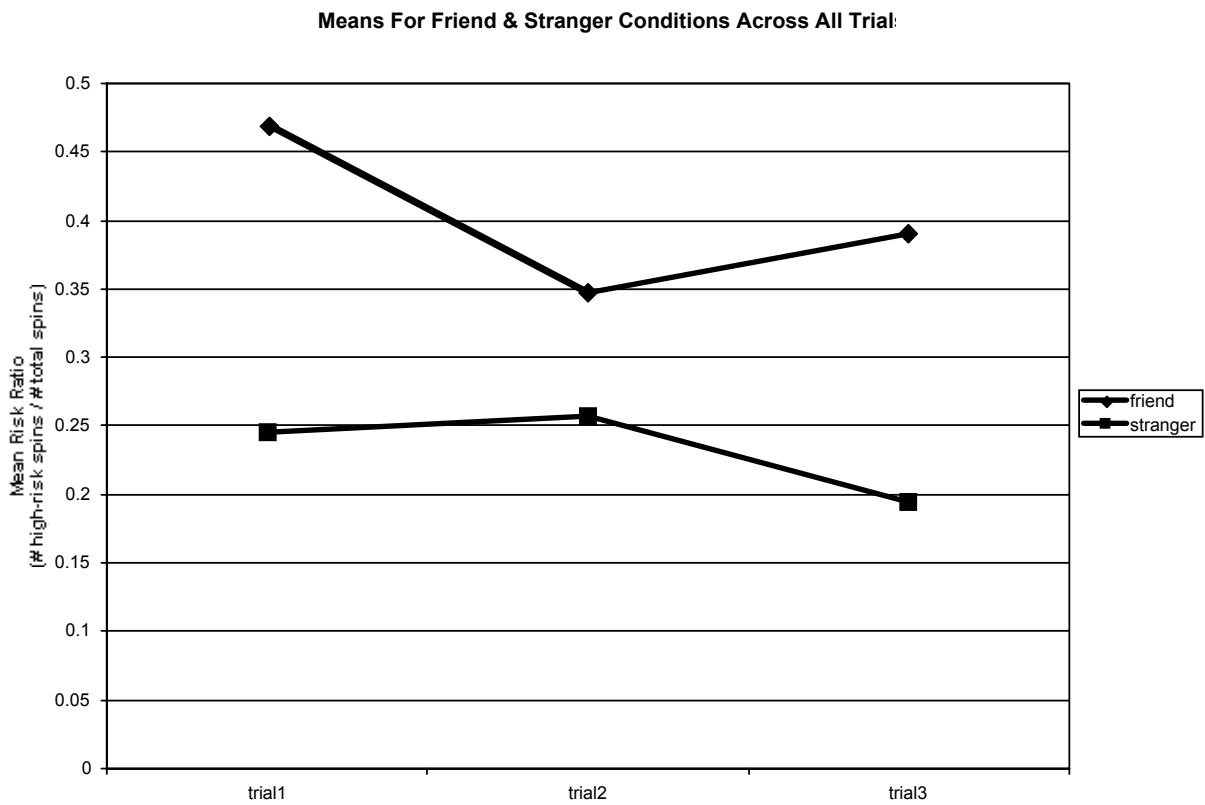
<sup>1</sup>Analysis excluded four outliers and five participants whose data was only recorded for trial 3.

**Table 1**

*Mean Risk Ratios For All Conditions Across All Trials*

	Friend		Stranger		Alone	
	Mean	SD	Mean	SD	Mean	SD
Trial 1	.4695	.2783	.2458	.1985	.4664	.2820
Trial 2	.3478	.2647	.2567	.1790	.2920	.2919
Trial 3	.3898	.3343	.1948	.1523	.3467	.2707

*Figure 1. Mean risk ratio for friend and stranger conditions across all trials.*



Appendix A

**Certificate of Informed Consent**

This experiment investigates the strategic decisions people use when they play games by examining how participants solve puzzles. The total time for your participation will be no more than 30 minutes. By spinning a wheel to play a word puzzle game you can win or lose lab credit. All participants start with 30 minutes of lab credit time and can potentially win one hour worth of credit by solving the word puzzle or lose all lab credit by not retaining enough chips when time has expired. The game is fun and short; however, it is difficult even for college students.

I voluntarily agree in this project. I understand I can withdraw from the project at any time, and that I can decline to answer any questions without prejudice to me. I also understand that any information obtained from me during the course of my participation will remain confidential and will be used solely for research purposes.

\_\_\_\_\_  
Name (please print)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

## Appendix B

### Instructions

- This experiment involves spinning a wheel to solve a word puzzle.
- You will have 3 puzzles to solve. The first two are practice.
- Please do not speak with the other person in the room at anytime during the experiment.
- You have 5 minutes to play the game.
- You begin with 10 chips. You use these chips in exchange for spins on one of the two wheels.
- Each wheel costs 1 chip per spin.
- Decide which wheel you wish to spin, and place one chip in the box next to that wheel.
- If you spin and stop on a **“letter”** space, you may choose any space on the board to uncover. If you uncover a letter that appears more than once in the puzzle those spaces will also be uncovered. You will have 1 chip given back to you.
- If you spin and stop on a **“guess”** space, you may guess a letter of the phrase. If you guess a *correct* letter you will have 1 chip given back to you.
- If you spin and stop on a “bankrupt” space you will not have a chip returned to you.
- It costs 1 chip to take a guess at solving the puzzle.

### 3<sup>rd</sup> Puzzle

- All participants start with 30 minutes of lab credit time.
- If you solve the puzzle you win 1 hour worth of credit.
- If you do not retain enough chips when time has expired you will lose all lab credit for this study.
  - If at the end of the third puzzle, you have not solved the puzzle, you must choose one of the cards in front of you to turn over.
  - Each card has a number written on the other side. These numbers correspond to the number of chips you need to have retained to get credit.

Appendix C  
Post-Game Questionnaire  
Please circle one

On which wheel were you most likely to land on a “Bankrupt”?

Letter Wheel

Guess Wheel

Which wheel was most likely to give you payoff?

Letter Wheel

Guess Wheel

Which wheel was the riskiest?

Letter Wheel

Guess Wheel

## Appendix D

### **Debrief**

The purpose of this experiment was to examine the relationship between personality and how it relates to social conditions. Participants were involved in one of three social conditions, being with a friend, being with a stranger, or alone. The experiment was used to examine whether these different social conditions affected your game playing strategies.

For more information see the poster board in the basement of Olin hall, or contact [jnoval@mail.colgate.edu](mailto:jnoval@mail.colgate.edu) or [zmitchell@colgate.mail.edu](mailto:zmitchell@colgate.mail.edu).

