

# **Forecasting Risk Attitudes: An Experimental Study of Actual and Forecast Risk Attitudes of Women and Men\***

Catherine C. Eckel  
Department of Economics  
Virginia Tech  
Blacksburg, VA 24061  
Phone : 540-231-7707  
Email : eckelc@vt.edu

Philip J. Grossman  
Department of Economics  
St. Cloud State University  
720 4<sup>th</sup> Avenue South, SH 386  
St. Cloud, MN 56301  
Phone: 320-255-4232  
Fax: 320-255-2228  
e-mail: pgrossman@stcloudstate.edu

\* -This research was supported by grants from the John D. and Catherine T. MacArthur Foundation, Network on Preferences and Norms, Subnetwork on Sources of Diversity in Risk Acceptance, and from St. Cloud State University, College of Social Sciences. At Virginia Tech, experiments were conducted at the Laboratory for the Study of Human Thought and Action.

## Forecasting Risk Attitudes

### ABSTRACT

Differences between women and men in attitudes toward risk are well documented across a variety of situations and environments. Studies have found women more likely to perceive a situation as risky. Women also exhibit greater risk aversion in their choice behavior and lower valuations of risky prospects. Women are found to have less risky portfolios of assets than men, and they report a lower propensity to assume financial risk than men. Regardless of whether or not there is a significant sex difference in risk preferences, important consequences may arise if there is a *perception* of greater risk aversion on the part of women. If women are, rightly or wrongly, stereotyped as more risk averse, this can lead to statistical discrimination, which could adversely affect women in many aspects of their lives.

This paper addresses both the question of sex differences in risk preferences and the question of whether a person's sex is read as a signal of risk preference. Subjects are presented with five gambles and asked to choose which of the five they wish to play. The gambles include one sure thing; the remaining four increase (linearly) in expected payoff and risk (measured by the standard deviation of expected payoff). Each subject also predicts which of the five gambles each of the other subjects would choose for herself. Three different choice environments are tested: gamble and investment frames with the possibility of losses, and a gamble frame with no losses. We find that women are significantly more risk averse than men in all three settings, and predictions of both women and men tend to confirm this difference.

# Forecasting Risk Attitudes

## I. Introduction

Differences between women and men in their responses to risk are well documented. Studies have found differences between women and men in the perceptions of the risk attached to alcohol and drug use (Spigner, Hawkins, and Loren, 1993); the catastrophic potential of nuclear war, technology, radioactive waste, industrial hazards, and environmental degradation (Flynn, Slovic, and Mertz, 1994); and the perceived riskiness of various recreational and social activities (Boverie, Scheuffele, and Raymond, 1995). Evidence also indicates men are more likely to engage in risky behavior such as gambling (Levin, Snyder, and Chapman, 1988); "direct risk" health behavior (Kristiansen, 1990); and unsafe sex (Swanson, Dibble, and Trocki, 1995). Women are found to have less risky asset portfolios than men (Jianakoplos and Bernasek, 1998), they report lower risk propensity towards financial risk than men (Brasky et al., 1997), and are more risk averse towards gambles than men (Levin, et al., 1998). In an experiment designed to mimic investment behavior, Powell and Ansic (1998) find that women choose less risky alternatives. Levy, Elron and Cohen (1999) conduct an investment experiment over several weeks, and find that women's lower willingness to take on financial risks significantly lowers their earnings relative to men.

Shubert, et al. (1999) offer contradictory evidence. They argue that abstract gambling experiments, and especially hypothetical gambles, may give inaccurate measures of relative risk aversion, and may not correspond to actual risk behavior in contextual decisions. They compare behavior in abstract decision contexts with those embedded in a specific investment or insurance context, and find that the richer context eliminates the difference in behavior between women

and men.

Regardless of whether or not there is a significant sex difference between the average risk preferences of women and men, important consequences may arise if there is a *perception* of greater risk aversion on the part of women. If women are, rightly or wrongly, stereotyped as more risk averse, this can lead to statistical discrimination that could adversely affect women in many aspects of their lives. An individual's choice of strategy may be colored by the sex (and possibly other visual characteristics which might signal risk preference) of the other individual(s) with whom she is interacting. For example, using visual characteristics such as sex as a signal, an advisor might alter the range of options offered a client to reflect his own, possibly incorrect, perception of the client's risk preferences.

This paper addresses both the question of sex differences in risk preferences and the question of whether sex (in addition to other visual characteristics) is taken to be a signal of risk preference. We ask: is the stereotype of women's greater risk aversion widely held? Subjects are presented with five gambles and asked to choose which of the five they wish to play. The gambles include one sure thing with the remaining four increasing (linearly) in expected payoff and risk (measured by the standard deviation of expected payoff). Each subject also predicts which of the five gambles each of the other subjects in her session choose for themselves. Our design includes three decision environments: an abstract gamble frame with and without the possibility of losses, and an investment frame with losses. Subjects also complete a commonly-used psychological instrument for assessing risk preferences. Across all three environments, we find a significant sex difference in risk aversion. In addition, both women and men predict greater risk aversion for women.

## **II. The Experiment**

### **Design**

The experiment consists of three components: a survey, a gamble choice, and a prediction of others' choices. All three parts are conducted for each of the three treatments. In our baseline Abstract Gamble with Losses treatment, all decisions are framed as simple gambles with two alternative payoffs. A second treatment maintains the payoff structure of the Abstract design, except that all decisions are described as Investments. In a third treatment, all payoffs are increased by \$6, and the subjects are not paid for completing the survey. This treatment is designed to test whether the results of the other two treatments are due to loss aversion rather than risk aversion on the part of women. All payoffs are shifted up so that the lowest possible payoff is zero. These changes are illustrated in Table 1.

In Part 1, subjects complete the psychological survey of risk attitudes. This survey has been shown to be related to risky behavior in a variety of situations, but has not previously been compared with subjects' decisions in an environment with financial stakes. Our purpose in including this component is twofold: to determine whether individuals' preferences over risky alternatives are consistent across different environments, and to provide a separate measure of risk attitudes that can act as a control variable in the analysis of financially risky decision-making.

In the treatments with losses, subjects are paid \$6 for completing the survey. We also inform the subjects that this money might be at risk at a later stage of the experiment. These treatments are designed so that subjects first "earn" an amount of money that is at risk in later stages of the experiments; subjects were compensated for completing a task rather than just being granted the money. This is done so that subjects feel entitled to the money, in order to minimize

the "house money" effect.<sup>1</sup> For the No Loss treatment, subjects are not paid for completing the survey; however, the payoffs for both outcomes of all five gambles are increased by \$6 so the expected earnings for any chosen gamble were equal across treatments.

In Part 2 of the experiment, subjects are presented with five different gambles, each having two possible outcomes. Each outcome has a 50 percent chance of occurring. Table 1 lists the five gambles, the payoffs associated with each possible outcome, the probabilities of the outcomes occurring, expected payoffs, and level of risk (measured by the standard deviation of expected payoff). In the Abstract treatment, the first gamble offers a sure payoff of \$10. The expected payoff increases \$2 with each subsequent gamble. In addition to the increasing average payoff, the risk, measured by the standard deviation of the payoff, increases. Gambles 1 through 3 all entail positive payoffs regardless of which outcome occurs. Gambles 4 and 5 entail a negative payoff should outcome B occur. Negative payoffs are deducted from the payment for completing the survey in Part 1 of the experiment. The gambles are design to maintain a linear relationship between payoff and risk.

In the Invest treatment, subjects face the same choices, but the decision is framed differently. Subjects are asked to choose a share of stock in one of five different companies. The payoff value of the stock is determined by the company's performance; each company except firm 1 faces a 50 percent chance of doing well and a 50 percent chance of doing poorly. The possible values of the shares are the same as the payoffs for the abstract gambles. The No Loss frame is the same as the Abstract treatment, except that all payoffs were increased by \$6. This removed the possibility of any losses, since the lowest possible payoff was zero.

---

<sup>1</sup> One issue that has only rarely been addressed in experimental research is the effect of "house money" on subjects' decisions in gambling experiments, i.e., do subjects make riskier choices than they would if playing with their own money? It is our belief that this procedure should instill a greater sense of property rights in the money and therefore elicit a more accurate measure of risk preference.

Part 3 of the experiment is designed to elicit subjects' beliefs about others' risk preferences. Each subject is asked to guess (or predict) the gamble choice of each of the other players. The only information a subject has on which to base a prediction is the set of visual clues provided by observing another. To encourage subjects to make their best predictions, subjects received \$1 for every correct prediction they made.

**Prodecure:**

We recruited 261 subjects from undergraduate social science and business courses at Saint Cloud State University (SCSU) and Virginia Polytechnic Institute and State University (VPI). Nineteen sessions were run with between seven and twenty-one subjects per session. (Appendix Table 1 provides the number of subjects per session by sex). Subjects are distributed across treatments as follows: 149 participated in the baseline Abstract-Gamble treatment (sessions 1-8); 57 in the Investment context (sessions 9 through 13 and 18), and 55 in the No Loss treatment (sessions 9 through 17 and 19).

Subjects were seated individually at tables with unobstructed views of all other subjects. Consent forms were distributed, signed by the subjects, and collected. The experimenter distributed a packet of materials containing written instructions for each of the three parts to the experiment and all necessary forms. (See Appendix A for all instructions and forms.) The written instructions also were read aloud for each part of the experiment, and forms were collected before proceeding to the next component.

Subjects completed Part 1 using scantron sheets. For Part 2, the gamble choice, subjects indicated on their forms which of the five gambles they wished to play. They were informed that each subject would roll a six-sided die to determine which of the two outcomes occurred. The die rolls were performed after all other parts of the experiment were completed. For Part 3, each

subject would stand in turn, so that every other subject could see him/her. The other subjects indicated on their prediction forms which of the five choices they thought the standing subject chose for himself.

After all forms were collected, the experimenters had each subject roll the die to determine which of the two outcomes for their chosen gamble determined their earnings. Total earnings were then calculated and subjects paid privately.

### **III. Results**

#### Subject Characteristics

Of the 261 subjects who participated in the experiment, 256 provided useable responses: 136 male and 120 female.<sup>2</sup> Table 2 provides a summary of the socioeconomic characteristics for the subject pool and separately by sex. The average age of subjects is 20. Subjects were overwhelmingly Caucasian.<sup>3</sup> Forty-three percent of the subjects are majoring in economics or business. Just over half of the subjects have either a part-time or full-time job. Differences between the characteristics of the men and the women are minor with the exception that women were more likely to be employed than men.

#### Subjects' Own Gamble Choice

The number of subjects making each of the choices detailed above is shown in Table 3 (pooled over all treatments). (Appendix Table 2 presents full data on the number of subjects choosing each gamble by sex and treatment.) The mean gamble choice made by all subjects was 3.45; the median was gamble 3. Men were significantly less risk averse than women; one-

---

<sup>2</sup> Four subjects did not fully or correctly complete either their prediction forms or subject information surveys and were dropped from the sample.

third of the men, but only 13 percent of the women, selected the riskiest gamble. On the other hand, women were almost twice as likely as men to select gambles 1 or 2. Men's mean gamble choice was 3.79 versus 3.08 for women. A means test rejects the null hypothesis of no differences in mean gamble choice by sex ( $t = 5.13, p\text{-value} < 0.001$ ). A  $\chi^2$  contingency table test also rejects the null hypothesis that the gamble choices are independent of sex ( $\chi^2(4) = 26.42, p\text{-value} < 0.001$ ) while an Epps-Singleton test rejects the null hypothesis that men and women's gamble choices have the same distribution ( $\chi^2(4) = 26.36, p\text{-value} < 0.001$ ).

Table 4 presents average choices by sex and treatment. We find little evidence that the framing of the gamble choice affects subjects' choices. In pairwise means tests, we are unable to reject the null hypothesis of no difference by treatment (Abstract vs. Investment  $t = 0.75$ ; Abstract vs. No Loss  $t = 0.41$ , and Investment vs. No Loss  $t = 0.95$ ;  $p\text{-value} > 0.17$  in each case).<sup>4</sup> Men's choices appear to vary slightly by treatment. Compared with the baseline Abstract treatment, men are less risk averse in the Investment frame, and more risk averse in the No Loss frame. Pairwise means tests indicate that only for the Investment vs. No Loss was there even a marginally significant difference in choices by men made across treatments ( $t = 1.53, p\text{-value} < 0.07$ ). In pairwise Epps-Singleton tests, we were able to reject the null hypothesis that choices were drawn from the same distribution for the Abstract vs. Investment pairing ( $\chi^2(4) = 9.93, p\text{-value} < 0.04$ ), but not for the other two pairings (Abstract vs. No Loss,  $\chi^2(4) = 2.55, p\text{-value} > 0.17$ ).

---

<sup>3</sup> The high proportion of Caucasian subjects (81 percent) is consistent with the general SCSU and VPI student population.

<sup>4</sup> In pairwise Epps-Singleton tests, we were unable to reject the null hypothesis that choices were drawn from the same distribution (Abstract vs. Investment,  $\chi^2(4) = 2.60, p\text{-value} < 0.63$ ; Abstract vs. No Loss,  $\chi^2(4) = 0.63, p\text{-value} < 0.96$ , and Investment vs. No Loss  $\chi^2(4) = 3.62, p\text{-value} < 0.46$ ).

value  $< 0.64$ , and Investment vs. No Loss  $\chi^2(4) = 7.55$ ,  $p$ -value  $< 0.11$ ). Women's mean choices do not vary significantly across treatments.<sup>5</sup>

The mean choice by men exceeds the mean choice by women in all treatments. Men are significantly less risk averse than women in all three treatments (Abstract  $t = 3.32$ ,  $p$ -value  $< 0.001$ ; Investment  $t = 3.96$ ,  $p$ -value  $< 0.001$ ; and No Loss  $t = 1.94$ ,  $p$ -value  $< 0.03$ ). In contrast to Schubert, et al., (1999) who found that sex differences disappeared when a richer, investment-based decision making context was used, we find that the difference between the decisions of women and men increase in the investment treatment. Our results also indicate that loss-aversion alone is not responsible for the difference between the choices of women and men that we observe in our baseline treatment.

We next turn to an analysis of the scores on the subject preference survey (Zuckerman, 1979). The survey is a forty-question instrument designed to elicit subject preferences for seeking out novel and stimulating activities, attitudes, and values and further exploring them. The survey is comprised of four subfactors measuring different aspects of sensation seeking. The Disinhibition (DIS) factor measures nonconformity with standards of acceptable social behavior. This type of sensation is achieved by drinking, gambling, and sex. The Boredom Susceptibility (BS) measures aversion to routine in one's life and intolerance of boring people. The Thrill and Adventure Seeking (TAS) factor measures preference for the thrills inherent in risky activities such as parachute jumping. Finally, the Experience Seeking (ES) factor addresses the preference for mentally arousing activities and a nonconforming lifestyle. Summary data are shown in Table 5. Two of the factors are lower for women, and BS is

---

<sup>5</sup> In pairwise Epps-Singleton tests, we were unable to reject the null hypothesis that choices were drawn from the same distribution for all pairings (Abstract vs. Investment,  $\chi^2(4) = 1.38$ ,  $p$ -value  $< 0.85$ ; Abstract vs. No Loss,  $\chi^2(4) = 1.29$ ,  $p$ -value  $< 0.87$ , and Investment vs. No Loss  $\chi^2(4) = 1.93$ ,  $p$ -value  $< 0.75$ ).

significantly so, consistent with previous results on the survey (see Zuckerman, 1989).

However, ES is significantly higher for women, in contrast to most findings. This result may be due to subject pool differences compared with Zuckerman's earlier research.

The Zuckerman scores and demographic variables are used as control variables in the final stage of our analysis of gamble choices, consisting of an ordered probit regression.<sup>6</sup> In addition to sex (MALE, = 1 if male), we controlled for age (AGE), employment status (JOB, = 0 if unemployed, 1 if holding a part-time job, and 2 if holding a full-time job), birth order (FIRST, = 1 if first born), racial status (MINORITY, = 1 if non-Caucasian), and major (ECON/BUS, = 1 if major is economics or business). Table 6 reports the results for both restricted and unrestricted ordered probit models. The unrestricted model lets the coefficient for MALE differ across treatments. This permits us to test whether placing the gamble in a more realistic context or relative loss aversion on the part of women explains the difference in gamble choices.

The results further confirm that women are less willing than men to accept risky alternatives in their choice of gambles. The coefficient for MALE is positive and significantly different from zero in every version of the model estimated. Furthermore, the log likelihood test of the null hypothesis that risk preferences do not differ across treatments cannot be rejected ( $\chi^2(2) = 1.19, p\text{-value} < 0.55$ ). The remaining socio-economic variables have no significant effect on gamble choice. Of the four sensation-seeking subfactors, none has any explanatory power and three have the opposite of the expected sign. This indicates that survey data is not a good predictor of behavior in an incentivized environment where subjects must choose an actual gamble.

---

<sup>6</sup> Gamble choices were coded as follows: gamble 1 = 0, gamble 2 = 1, gamble 3 = 2, gamble 4 = 3, and gamble 5 = 4.

## Gamble Predictions

In addition to choosing a gamble for themselves, subjects also predicted each others' gamble choices. Table 7 presents the gamble predictions by both the sex of the predictor and the sex of the person whose choice was being predicted. In total, 3,642 predictions were made. The mean predicted gamble is 2.96 versus the mean actual gamble choice of 3.45. A test of the null hypothesis of equal means is rejected ( $t = 6.61, p\text{-value} < 0.001$ ).

A number of interesting patterns are evident in Table 7. First, consistent with the stereotype and with actual choices made, men were predicted to be less risk averse than women by both women and men. The mean prediction by men for men of 3.35 is significantly greater than their mean prediction of 2.56 for women ( $t = 14.22, p\text{-value} < 0.001$ ). Women predicted a mean gamble of 3.29 for men but only 2.62 for women, also a significant difference ( $t = 12.32, p\text{-value} < 0.001$ ). Figures 1 and 2 present actual gamble choices and predictions by men and women by sex of the target subject.

Second, common to both sexes is the overestimation of both their own sexes and the opposites sexes' level of risk aversion. Men and women had mean actual gamble choices of 3.79 and 3.08, respectively. The predicted mean gamble for men and for women by all subjects were 3.32 and 2.59, respectively. In both cases, the null hypothesis of no difference between actual and predicted is rejected (men:  $t = 4.77, p\text{-value} < 0.001$ ; women:  $t = 4.77, p\text{-value} < 0.001$ ). Third, neither sex did better in predicting its own level of risk aversion. Both produce estimates that are significantly lower than actual gamble choices by approximately one-half a gamble choice (for men: actual = 3.79 vs. predicted = 3.35,  $t = 4.27, p\text{-value} < 0.001$ ; for women: actual = 3.08 vs. predicted = 2.62,  $t = 4.31, p\text{-value} < 0.001$ ).

---

Finally, there was consensus between the sexes regarding men's and women's risk aversion. The mean predictions for men and women did not differ by sex (for men: 3.35 by men vs. 3.29 by women,  $t = 1.14$ ,  $p$ -value = 0.13; for women: 2.56 and 2.62, respectively,  $t = 1.14$ ,  $p$ -value < 0.13).

We next address the question of whether women or men are better predictors of others' choices. Table 8 reports correlation coefficients for actual gamble choices and predicted gamble choices. While there is a significant positive correlation between actual choices made by all subjects and the predictions of those choices ( $r = 0.156$ ,  $p$ -value = 0.000), the predictions of others' choices are not very accurate. Men and women differ little in their overall ability to predict the choices made by others ( $r = 0.165$ ,  $p$ -value = 0.000; and  $r = 0.146$ ,  $p$ -value = 0.000, respectively). When controlling for the sex of the subject being predicted for, predictions were significantly correlated with the actual choices but neither sex was very accurate in predicting the choices made by either others of their own sex or choices made by others of the opposite sex.

To control for the fact that subjects made multiple predictions, we performed a random effects, ordered probit regression.<sup>7</sup> In the regression we also control for both visual characteristics of the target subject and characteristics of the predicting subject, which may condition a subject's predicted gamble. Visual characteristics that might be used to predict a subject's gamble choice include sex (MALE TARGET = 1 if male) and racial status (MINORITY TARGET, = 1 if non-Caucasian).<sup>8</sup> Characteristics of the predicting subject used in the analysis include the sex of the predicting subject (MALE PREDICTOR, = 1 if male), age

---

<sup>7</sup> Gamble choices and gamble predictions were coded in the same way.

<sup>8</sup> We did not control for the target subject's age due to small variation in this variable. Subjects ranged in age from 17 to 29. While we expect age to be an important visual characteristic for predicting risk preferences, the visual physical characteristics on which such predictions might be made are unlikely to be evident without greater age variation.

(PREDICTOR AGE), racial status (MINORITY PREDICTOR, = 1 if non-Caucasian); the predictor's own gamble choice (PREDICTOR GAMBLE), and the predictor's major (PREDICTOR ECON/BUS, = 1 if major is economics or business). Including the target's gamble choice (TARGET CHOICE) allows us a further test of the accuracy of subjects' predictions.

Table 9 reports results for both restricted and unrestricted random-effect, ordered probit models. The unrestricted model allows the coefficient for MALE TARGET to differ across treatments; results show that predictions do not vary significantly across treatments. The regression results provide additional evidence that visual characteristics condition a person's prediction of another's risk preferences. Both the sex (MALE TARGET) and racial status (MINORITY TARGET) of the target subject are significant determinants of predicted risk preferences. Male target subjects are deemed less risk averse, while minority target subjects are assumed to be more risk averse.

Characteristics of the predicting subject also condition predictions. Subjects prone to risk in their own choices (PREDICTOR GAMBLE) are more likely to assume that others have similar preferences. The riskier a subject's choice, the riskier she assumed the target subject's choice would be. This result is consistent with a well-known psychological bias; people tend to think that others' attitudes are like their own. There was no significant effect of either the predicting subject's sex, race, age, or major.

The coefficient on the variable TARGET CHOICE is positive and significant, indicating that subjects' predictions are positively related to the risk attitudes of others, controlling for characteristics of predictors and targets. However, as with the correlation coefficients in Table 8, the small magnitude of the coefficient indicates that predictions are not particularly accurate.

Overall the results show that subjects do pay attention to the visible characteristics of others, and condition their expectations about others' risk preferences on those characteristics. The sex and race of targets are strongly related to others' predictions of their risk preferences. Women and minorities are predicted to be more risk averse. Stereotyping of risk preference is alive and well.

#### **IV. Conclusion**

This study presents evidence supportive of the conclusion that women are more risk averse than are men. Faced with a choice from among five gambles of increasing expected payoff and risk, women, on average, were significantly more risk averse in their choices than were the men. This difference was observed in both the Abstract Gamble treatments as well as the Investment gamble treatment; in the Loss designs as well as the No Loss design. The economic implications of this greater risk aversion can be quite large; higher wage professions are often associated with greater risk and lower risk portfolios may ultimately mean lower returns and less wealth for women. On the one hand, this may be a troubling conclusion because of its implications for women's long-term financial well-being relative to men. On the other hand, however, the concern is mitigated by the fact that the outcomes represent the individuals' utility-maximizing choices. Assuming the long-term implications of risk-averse choices are known, members of both sexes have made rational decisions and there is no reason to assume men and women would make the same choices.<sup>9</sup>

Of possibly even greater importance is our evidence suggesting that subjects consistently use visual clues in assessing the risk preferences of others. Both men and women accurately

---

<sup>9</sup>In fact evolution theory would predict greater risk aversion by women than by men (see Low, 2000).

perceived, women to be, on average, significantly more risk averse than their male counterparts. (On the other hand, minorities were incorrectly assessed as being more risk averse, *ceteris paribus*.) Likewise, men and women consistently and similarly underpredicted the risk preferences of others. The average predictions by men for men and women and by women for men and women were uniformly low relative to average actual choices. Finally, the troubling finding is that neither sex accurately predicts the heterogeneity in risk attitudes either for their own sex or for the opposite sex.

The implications of this type of stereotyping are far-reaching. Statistical discrimination of this nature may restrict both men's and women's economic choices. For example, investment options may be tailored not to fit the female investor's risk preferences but instead to fit the broker's, possibly misguided, assessment of the investor's risk preferences. Grable and Lytton (1999) note the reliance of financial advisors on demographic characteristics to assess risk attitudes and that "This method assumes strong correlations between demographic and socioeconomic characteristics and financial risk tolerance.... In many cases heuristic judgments are little more than commonly accepted myths"(p. 165). Wang (1994) reports evidence of investment brokers offering women lower risk/lower expected return investments than those offered to men.

In employment negotiations, women, perceived as more risk averse or less willing to risk the breakdown of negotiation, may receive less generous initial offers and face more aggressive bargaining, leading to lower negotiated wages. Vesterlund (1997) shows that if, in a model with two types of workers, more risk-averse workers can be identified, then that group (women if the stereotype is applied) faces a distribution of wages that is stochastically dominated by the distribution for the less-risk-averse group. Johnson and Powell (1994) argue that women,

perceived to be less able to make risky decisions, are less likely to be given corporate promotions.

Finally, the impact of stereotyping can reach into other aspects of one's lives. In health care, doctors may tailor their treatment recommendations to reflect their assessment of their patient's risk preferences. Studies show that doctors are less likely to prescribe aggressive treatment for women patients compared with men with the same symptoms (e.g., Schulman, et al. 1999, and references therein). Other research suggests that these differences are not due to the preferences of the patients (Saha, et al., 1999).

While there is some evidence suggesting that statistical discrimination is affecting the choices available to men and women, this topic needs further and more careful study. Another issue that needs to be addressed is whether or not this stereotyping is consistent across cohorts, or if, as women have expanded their role in the economy beyond housewife, the stereotype has begun to fade.

**TABLE 1: Gamble Choices, Expected Payoffs, and Risk**

Choice	Event	Probability	Payoff:		Expected Payoff:		Risk*
			Abstract/ Investment	No Loss	Abstract/ Investment	No Loss	
1	A	50%	\$10	\$16	\$10	\$16	0.00
	B	50%	\$10	\$16			
2	A	50%	\$18	\$24	\$12	\$18	4.243
	B	50%	\$6	\$12			
3	A	50%	\$26	\$32	\$14	\$20	8.485
	B	50%	\$2	\$8			
4	A	50%	\$34	\$40	\$16	\$22	12.728
	B	50%	-\$2	\$4			
5	A	50%	\$42	\$48	\$18	\$24	16.971
	B	50%	-\$6	\$0			

\* - Measured as standard deviation of expected payoff.

**TABLE 2: Socioeconomic Characteristics of Subjects**

	All Subjects (N = 256)	Men (N = 136)	Women (N = 120)
<b>Age (Std. Dev.)</b>	20.17 (2.48)	20.26 (2.00)	20.07 (2.93)
<b>Minority (%)</b>	49 (19.1%)	30 (22.1%)	19 (15.8%)
<b>Work:</b>			
<b>No Job (%)</b>	114 (44.5%)	72 (52.9%)	42 (35.0%)
<b>Part-time Job (%)</b>	134 (52.3%)	62 (45.6%)	72 (60.0%)
<b>Full-time Job (%)</b>	8 (3.1%)	2 (1.5%)	6 (5.0%)
<b>Economics/Business</b>	110 (43.0%)	56 (41.2%)	54 (45.0%)
<b>First Born</b>	114 (44.50)	62 (45.5%)	52 (43.3%)

**TABLE 3: Number of Subjects Who Chose Each Gamble  
(All Treatments)**

<b>Choice</b>	<b>All Subjects (%)</b>	<b>Men (%)</b>	<b>Women (%)</b>
<b>1</b>	11 (4.3)	2 (1.5)	9 (7.5)
<b>2</b>	42 (16.4)	17 (12.5)	25 (20.8)
<b>3</b>	84 (32.8)	35 (25.7)	49 (40.8)
<b>4</b>	58 (22.7)	36 (26.5)	22 (18.3)
<b>5</b>	61 (23.8)	46 (33.8)	15 (12.5)
<b>Total</b>	256 (100)	136 (100)	120 (100)
<b>Mean (Std. Dev.)</b>	3.45 (1.15)	<b>3.79</b> (1.09)	<b>3.08</b> (1.10)

**Table 4: Mean Choices by Treatment**

<b>MEAN CHOICES:</b>	<b>All Subjects</b>	<b>Men</b>	<b>Women</b>
<b>Abstract Treatment (Std. Dev.)</b>	3.45 (1.17)	3.76 (1.18)	3.14 (1.08)
<b>Investment Treatment (Std. Dev.)</b>	3.57 (1.02)	4.00 (0.80)	3.00 (1.02)
<b>No Loss Treatment (Std. Dev.)</b>	3.36 (1.22)	3.63 (1.13)	2.95 (1.28)
<b>All Treatments (Std. Dev.)</b>	<b>3.45</b> (1.15)	<b>3.79</b> (1.09)	<b>3.08</b> (1.10)

**TABLE 5: Sensation Seeking Survey Scores by Sex**

	<b>All Subjects (N = 256)</b>	<b>Men (N = 136)</b>	<b>Women (N = 120)</b>	<b>Means Test t-stat. (p-value)</b>
<b>Total (std. dev.)</b>	21.00 (5.37)	20.99 (5.63)	21.00 (5.08)	0.01 (0.99)
<b>DIS (std. dev.)</b>	5.61 (2.25)	5.78 (2.25)	5.43 (2.24)	1.26 (0.21)
<b>BS (std. dev.)</b>	4.14 (2.04)	4.38 (2.06)	3.88 (1.99)	1.94* (0.05)
<b>TAS (std. dev.)</b>	6.23 (2.64)	6.15 (2.87)	6.31 (2.37)	0.47 (0.63)
<b>ES (std. dev.)</b>	5.01 (2.08)	4.68 (2.08)	5.38 (2.02)	2.73* (0.01)

\* - difference in means is significant.

**TABLE 6: Actual Gamble Choice: Ordered Probit Regression Results**

Variable	Ordered Probit Model Coefficients (Std. Error)	
	Restricted Model	Unrestricted Model
MALE	0.75* (0.15)	
MALE-ABSTRACT		0.74* (0.18)
MALE-INVESTMENT		0.90* (0.30)
MALE-NO LOSS		0.60* (0.25)
AGE	0.04 (0.04)	0.03 (0.04)
JOB	0.10 (0.13)	0.11 (0.14)
ECON/BUS	-0.17 (0.14)	-0.17 (0.14)
FIRST	-0.03 (0.14)	-0.03 (0.14)
MINORITY	-0.19 (0.17)	-0.19 (0.17)
DIS	-0.03 (0.03)	-0.03 (0.03)
BS	-0.01 (0.04)	-0.01 (0.04)
TAS	-0.04 (0.03)	-0.04 (0.03)
ES	0.05 (0.04)	0.05 (0.04)
CONSTANT	0.94 (0.86)	0.98 (0.85)
LLF	-361.01	-360.42

\* - Significant at the 5% level

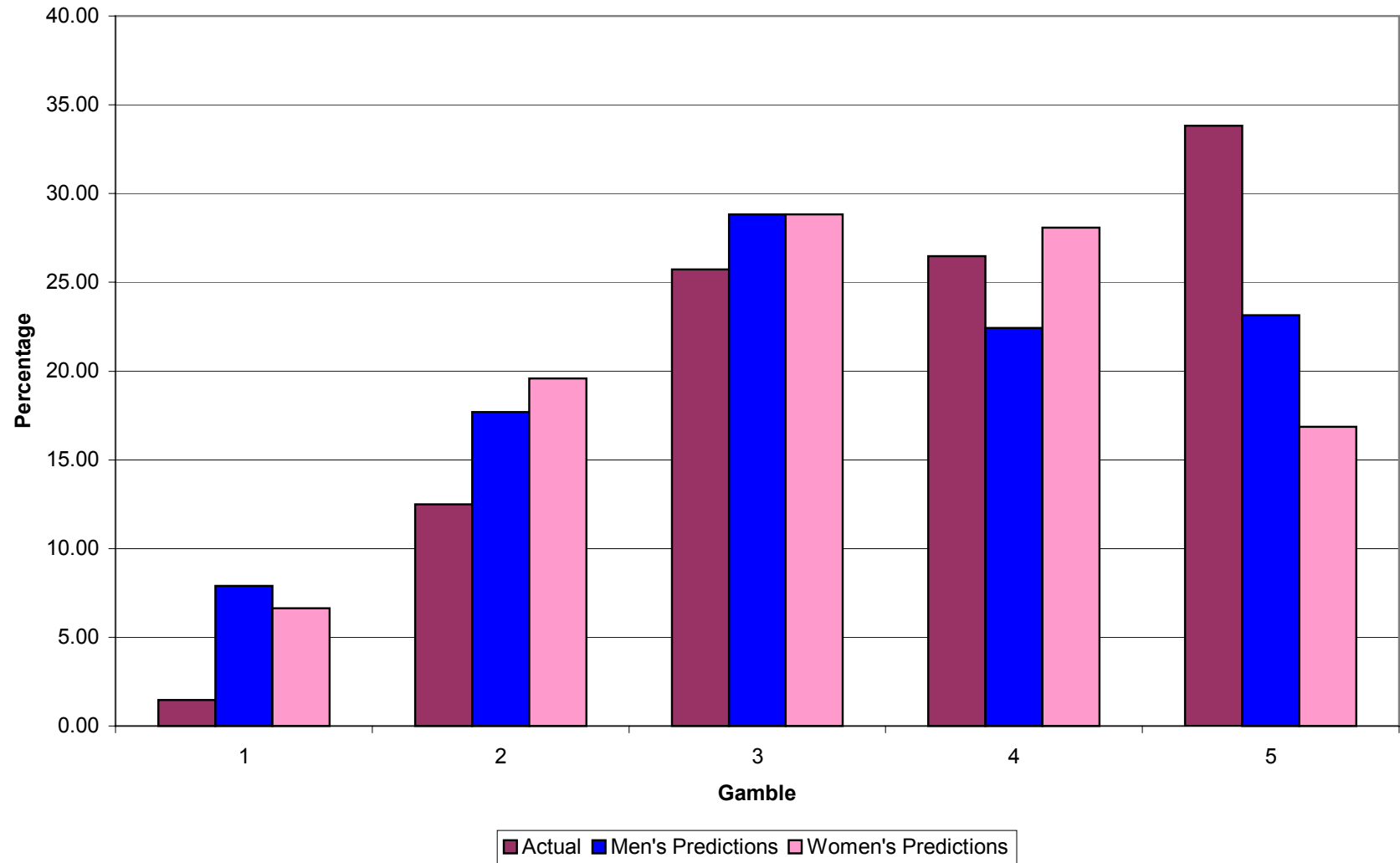
**TABLE 7: Gamble Predictions by Sex**

<b>Gamble</b>	<b>Predictions by All Subjects</b>		<b>Predictions by Men</b>		<b>Predictions by Women</b>	
	For Men (%)	For Women (%)	For Men (%)	For Women (%)	For Men (%)	For Women (%)
<b>1</b>	136 (7.28)	318 (17.94)	75 (7.89)	175 (19.04)	61 (6.64)	143 (16.74)
<b>2</b>	348 (18.62)	598 (33.73)	168 (17.68)	321 (34.93)	180 (19.59)	277 (32.44)
<b>3</b>	539 (28.84)	503 (28.37)	274 (28.84)	246 (26.77)	265 (28.84)	257 (30.09)
<b>4</b>	471 (25.20)	204 (11.51)	213 (22.42)	89 (9.68)	258 (28.07)	115 (13.47)
<b>5</b>	375 (20.06)	150 (8.46)	220 (23.16)	88 (9.58)	155 (16.32)	62 (7.26)
<b>Total</b>	1869	1773	950	919	919	854
<b>Mean Prediction (Std. Dev.)</b>	3.32 (1.20)	2.59 (1.16)	3.35 (1.23)	2.56 (1.18)	3.29 (1.16)	2.62 (1.13)

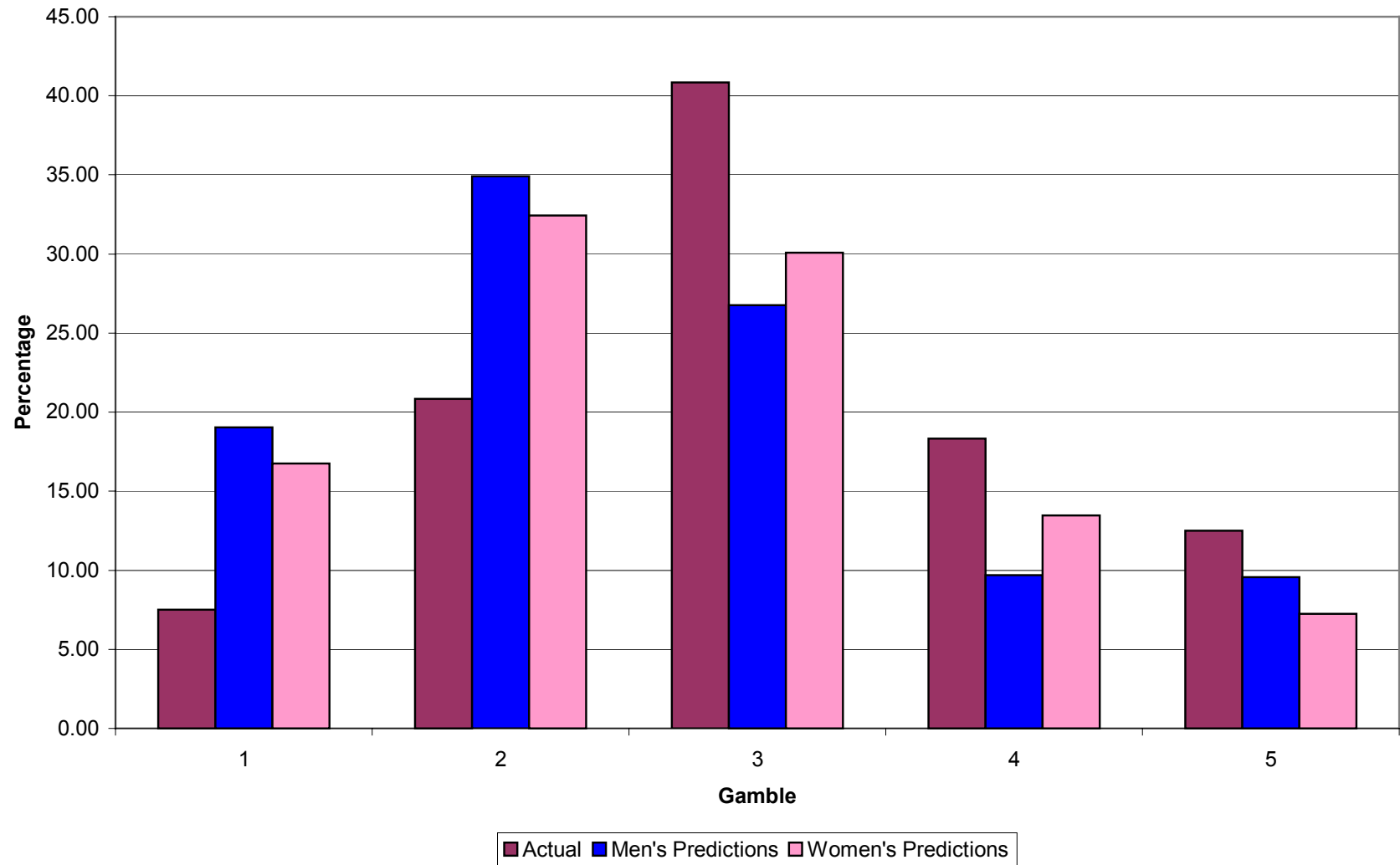
**TABLE 8: Correlation Coefficients for Actual and Predicted Choices**

<b>Target/Predictor</b>	<b>Correlation Coefficient</b>	<b>N</b>	<b>Z-statistic (p-value)</b>
<b>All/All</b>	0.156	3642	9.49 (0.00)
<b>All/Females</b>	0.146	1773	6.18 (0.00)
<b>Males/Females</b>	0.067	919	2.03 (0.02)
<b>Females/Females</b>	0.085	854	2.49 (0.01)
<b>All/Males</b>	0.165	1869	7.19 (0.00)
<b>Males/Males</b>	0.063	950	1.94 (0.03)
<b>Females/Males</b>	0.104	919	3.16 (0.00)

**Figure 1: Men's Actual Choices and Predicted Choices by Men and Women**



**Figure 2: Women's Actual Choices and Predicted Choices by Men and Women**



**TABLE 9: Predicted Gamble Choice: Random Effects, Ordered Probit Regression Results**

Variable	Coefficients (Std. Error)	
	Restricted Model	Unrestricted Model
MALE TARGET	0.74* (0.03)	
MALE TARGET – ABSTRACT		0.77* (0.03)
MALE TARGET – INVESTMENT		0.60* (0.10)
MALE TARGET- NO LOSS		0.70* (0.09)
MINORITY TARGET	-0.19* (0.04)	-0.19* (0.04)
TARGET CHOICE	0.09* (0.02)	0.09* (0.02)
MALE PREDICTOR	-0.14 (0.12)	-0.13 (0.12)
PREDICTOR AGE	0.02 (0.02)	0.02 (0.02)
MINORITY PREDICTOR	0.10 (0.12)	0.10 (0.12)
PREDICTOR GAMBLE	0.32* (0.05)	0.32* (0.05)
PREDICTOR ECON/BUS	-0.06 (0.11)	-0.05 (0.12)
CONSTANT	-0.09 (0.46)	-0.12 (0.46)
LLF	-4975.77	-4974.39

\* - Significant at the 5% level.

## REFERENCES

- Barsky, Robert B., Juster, F. Thomas, Kimbal, Miles S., and Shapiro, Matthew D. "Preference Parameters and Behavioral Heterogeneity: An Experimental Approach in the Health and Retirement Study." *Quarterly Journal of Economics*, 1997, 112, pp. 537-579.
- Boverie, Patricia E., Scheuffele, Denise J., and Raymond, Elizabeth L. "Multimethodological Approach to Examining Risk-Taking." *Current Psychology*, 1995, 13, pp. 289-302.
- Flynn, James, Slovic, Paul, and Mertz, C. K. "Gender, Race, and Perception of Environmental Health Risks." *Risk Analysis*, 1994, 14, pp. 1101-1108.
- Grable, John, and Lytton, Ruth H. "Financial Risk Tolerance Revisited: the Development of a Risk Assessment Instrument." *Financial Services Review* 8:163-181. 1999.
- Levy, Haim, Elron, Efrat, and Cohen, Allon. "Gender Differences in Risk Taking and Investment Behavior: An Experimental Analysis." Unpublished manuscript, The Hebrew University, 1999.
- Jianakoplos, Nancy A. and Bernasek, Alexandra. "Are Women More Risk Averse?" *Economic Inquiry*, 1998, 36, pp. 620-630.
- Johnson, Johnnie E. and Powell, Philip L. "Decision Making, Risk and Gender: Are Managers Different?" *British Journal of Management*, 1994, 5, pp. 123-138.
- Kristiansen, Connie M. "The Role of Values in the Relation Between Gender and Health Behaviour." *Social Behaviour*, 1990, 5, pp. 127-133.
- Levin, Irwin P., Snyder, Mary A., and Chapman, Daniel P. "The Interaction of Experiential and Situational Factors and Gender in a Simulated Risky Decision-Making Task." *The Journal of Psychology*, 1988, 122, pp. 173-181.
- Powell, Melanie, and Ansic, David. "Gender Differences in Risk Behaviour in Financial Decision-Making: An Experimental Analysis." *Journal of Economic Psychology* 18(6): 605-628. 1997.
- Saha, S., Stettin, G. D., Redberg, R. F. "Gender and Willingness to Undergo Invasive Cardiac Procedures." *Journal of General Internal Medicine* 14(2): 122-5. 1999.
- Shubert, R., Brown, M., Gysler, M. and Brachinger, H.W. "Financial Decision-Making: Are Women Really More Risk Averse?" *American Economic Review Papers and Proceedings*, 1999, 89, pp. 381-385.
- Schulman, Kevin A., Berlin, Jesse A., Harless, William, Kerner, Jon F., Sistrunk, Shyrl, Gersh, Bernard J., Dube, Ross, Taleghani, Christopher K., Burke, Jennifer E., Williams, Sankey, Eisenberg, John M., Escarce, Jose, and Ayers, William. "The Effects of Race and Sex on Physicians' Recommendations for Cardiac Catheterization." *The New England Journal of Medicine* 340(8): 618-26.
- Spigner, Clarence, Hawkins, Wesley, and Lorens, Wendy. "Gender Differences in Perception of Risk Associated with Alcohol and Drug Use Among College Students." *Women and Health*, 1993, 20, pp. 87-97.
- Swanson, J.M., Dibble, S.L., and Trocki, K. "A Description of the Gender Differences in Risk Behaviors in Young-Adults with Genital Herpes." *Public Health Nursing*, 1995, 12, pp. 99-108.

Vesterlund, Lise. "The Effects of Risk Aversion on Job Matching: Can Differences in Risk Aversion Explain the Wage Gap?" Unpublished manuscript, Iowa State University, 1997.

Wang, Penelope. "Brokers Still Treat Men Better Than Women." *Money*, 1994, 23, pp. 108-110.

Zuckerman, Marvin. *Sensation Seeking: Beyond the Optimal Level of Arousal* (New York: John Wiley, 1979).

## Appendix 1: Instructions and Forms

Player #: \_\_\_\_\_

### INSTRUCTIONS

You are asked to participate in a study of economic decision making. The study will take approximately one hour to complete. The study is comprised of three parts to be described at the appropriate time. You will be paid \$6 for completing Part 1. Your earnings for Parts 2 and 3 and your total earnings for the study will be determined by the decisions you and the other Players make in each part. You are free to make as much money as you can. How your compensation for Parts 2 and 3 and your total compensation will be determined is explained below. You will be paid in cash in private at the end of the session.

From this point on, with the exception of procedural questions addressed to the proctors, we request that there be no talking.

You have been designated Player # \_\_\_\_\_.

### Part 1

#### INTEREST AND PREFERENCE SURVEY

In this part of the study you will complete the attached survey. You will receive \$6 for completing the survey. You will be paid at the end of the study.

*Directions:* Each of the items below contains two choices A and B. Please indicate on the scantron provided which of the choices most describes your likes or the way you feel. In some cases you may find items in which both choices describe your likes or feelings. Please choose the one which better describes your likes or feelings. In some cases you may find items in which you do not like either choice. In these cases mark the choice you dislike least. Do not leave any items blank. It is important you respond to all items with only one choice, A or B. We are interested only in your likes or feelings, not in how others feel about these things or how one is supposed to feel. There are no right or wrong answers as in other kinds of tests. Be frank and give your honest appraisal of yourself.

---

#### INTEREST AND PREFERENCE SURVEY

1. A. I like wild uninhibited parties.  
B. I prefer quiet parties with good conversation.
2. A. There are some movies I enjoy seeing a second or even third time.  
B. I can't stand watching a movie that I've seen before.
3. A. I often wish I could be a mountain climber.  
B. I can't understand people who risk their necks climbing mountains.
4. A. I dislike all body odors.  
B. I like some of the earthy body smells.
5. A. I get bored seeing the same old faces.  
B. I like the comfortable familiarity of everyday friends.
6. A. I like to explore a strange city or section of town by myself, even if it means getting lost.  
B. I prefer a guide when I am in a place I don't know well.
7. A. I dislike people who do or say things just to shock or upset others.  
B. When you can predict almost everything a person will do and say he or she must be a bore.
8. A. I usually don't enjoy a movie or play where I can predict what will happen in advance.  
B. I don't mind watching a movie or play where I can predict what will happen in advance.
9. A. I have tried marijuana or would like to.  
B. I would never smoke marijuana.
10. A. I would not like to try any drug that might produce strange and dangerous effects on me.  
B. I would like to try some of the drugs that produce hallucinations.
11. A. A sensible person avoids activities that are dangerous.  
B. I sometimes like to do things that are a little frightening.
12. A. I dislike people who are uninhibited and free about sex.  
B. I enjoy the company of people who are uninhibited and free about sex.
13. A. I find that stimulants make me uncomfortable.  
B. I often like to get high (drinking liquor or smoking marijuana).
14. A. I like to try new foods that I have never tasted before.  
B. I order the dishes with which I am familiar so as to avoid disappointment and unpleasantness.

15. A. I enjoy looking at home movies, videos, or travel slides.  
B. Looking at someone's home movies, videos, or travel slides bores me tremendously.
  16. A. I would like to take up the sport of water skiing.  
B. I would not like to take up water skiing.
  17. A. I would like to try surfboarding riding.  
B. I would not like to try surfboarding riding.
  18. A. I would like to take off on a trip with no preplanned or definite routes, or timetable.  
B. When I go on a trip I would like to plan my route and timetable fairly carefully.
  19. A. I prefer the down to earth kinds of people as friends.  
B. I would like to make friends in some of the alternative groups like artists or rock musicians.
  20. A. I would not like to learn to fly an airplane.  
B. I would like to learn to fly an airplane.
  21. A. I prefer the surface of the water to the depths.  
B. I would like to go scuba diving.
  22. A. I would like to meet some persons who are homosexual (men or women).  
B. I stay away from anyone I suspect of being gay or lesbian.
  23. A. I would like to try parachute jumping.  
B. I would never want to try jumping out of a plane, with or without a parachute.
  24. A. I prefer friends who are excitingly unpredictable.  
B. I prefer friends who are reliable and predictable.
  25. A. I am not interested in experience for its own sake.  
B. I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal.
  26. A. The essence of good art is in its clarity, symmetry of form, and harmony of colors.  
B. I often find beauty in the clashing colors and irregular forms of modern paintings.
  27. A. I enjoy spending time in the familiar surroundings of home.  
B. I get very restless if I have to stay around home for any length of time.
  28. A. I like to dive off the high board.  
B. I don't like the feeling I get standing on the high board (or I don't go near it at all).
  29. A. I like to date persons who are physically exciting.  
B. I like to date persons who share my values.
  30. A. Heavy drinking usually ruins a party because some people get loud and boisterous.  
B. Keeping the drinks full is the key to a good party.
  31. A. The worst social sin is to be rude.  
B. The worst social sin is to be a bore.
  32. A. A person should have considerable sexual experience before marriage.  
B. It's better if two married persons begin their sexual experience with each other.
  33. A. Even if I had the money, I would not care to associate with flighty rich people who frequently appear in the newspapers and tabloids.  
B. I could conceive of myself seeking pleasures around the world with the sort of people who are frequently covered in newspapers and celebrity magazines.
  34. A. I like people who are sharp and witty even if they do sometimes insult others.  
B. I dislike people who have their fun at the expense of hurting the feelings of others.
  35. A. There is altogether too much portrayal of sex in movies.  
B. I enjoy watching many of the sexy scenes in movies.
  36. A. I feel best after taking a couple of drinks.  
B. Something is wrong with people who need liquor to feel good.
  37. A. People should dress according to some standard of taste, neatness, and style.  
B. People should dress in individual ways even if the effects are sometimes strange.
  38. A. Sailing long distances in small sailing crafts is foolhardy.  
B. I would like to sail a long distance in a small but seaworthy sailing craft.
  39. A. I have no patience with dull or boring persons.  
B. I find something interesting in almost every person I talk to.
  40. A. Skiing down a high mountain slope is a good way to end up on crutches.  
B. I think I would enjoy the sensations of skiing very fast down a high mountain slope.
-

## **Part 2**

### **GAMBLE SELECTION**

In this part of the study you will select from among five different gambles the one gamble you would like to play. The five different gambles are listed on your **GAMBLE SELECTION SHEET**. You must select one and only one of these gambles. To select a gamble place an **X** in the appropriate box. Each gamble has two possible outcomes (Event A or Event B) with the indicated probabilities of occurring. Your compensation for this part of the study will be determined by: 1) which of the five gambles you select; and 2) which of the two possible events occur.

*Please note that if you should select either gamble 4 or gamble 5 and Event B occurs, your losses will be deducted from your \$6 fee for completing the survey in Part 1 of the study.*

For example: If you select gamble 4 and Event A occurs, you will be paid \$34. If Event B occurs, you will have \$2 deducted from your \$6 survey completion fee.

For every gamble, each event has a 50% chance of occurring.

After you have selected your gamble the **GAMBLE SELECTION SHEET** will be collected by the proctor.

At the end of the study, you will roll a six-sided die to determine which event will occur. If you roll a 1, 2, or 3, Event A will occur. If you roll a 4, 5, or 6, Event B will occur.

There will be a separate roll of the die for each Player.

---

### **GAMBLE SELECTION SHEET**

Player # **01**

Mark your gamble selection with an **X** in the last column across from your preferred gamble.

Gamble	Event	Payoff	Probabilities	Your Selection
1	A	\$10	50%	
	B	\$10	50%	
2	A	\$18	50%	
	B	\$6	50%	
3	A	\$26	50%	
	B	\$2	50%	
4	A	\$34	50%	
	B	-\$2	50%	
5	A	\$42	50%	
	B	-\$6	50%	

---

---

**Part 3****GAMBLE PREDICTION**

For this part of the study you will select which of the five gambles you predict each of the other Players selected for himself/herself. One at a time, each Player will stand. The remaining Players will select which of the five gambles they predict that person selected for himself/herself and mark their predictions on their **GAMBLE PREDICTION SHEETS**. For every correct match between a subject's actual choice and your predicted choice for that subject, you will receive a bonus of \$1.

For example:

If Player #40 selected gamble 2 for himself and you predicted that Player #40 would select gamble 5, you will receive no bonus.

If Player #32 selected gamble 4 for herself and you predicted that Player #32 would select gamble 4, you will receive a \$1 bonus.

As each Player stands, please indicate (with an X) on your **GAMBLE PREDICTION SHEET** your prediction of that person's chosen gamble.

After all Players have stood up and all Players have made their predictions, the **GAMBLE PREDICTION SHEETS** will be collected by the proctor. The predictions will be recorded and compared with the gambles actually selected by the other Players. Again, you will receive a bonus of \$1 for every correct prediction.

**Payment**

At the end of the study, you will be called out into the hallway where you will roll a six-sided die to determine whether Event A or Event B for the gamble you have selected will occur. If you roll a 1, 2, or 3, Event A will occur. If you roll a 4, 5, or 6, Event B will occur.

There will be a separate roll of the die for each Player.

You will then be paid your total earnings (\$6 survey completion fee plus (minus) your earnings (losses) from the gamble plus any bonuses earned). After completing your receipt form, you may leave.

---

**GAMBLE PREDICTION SHEET**

Player # 01

For each Player, place an **X** in the box under the gamble you predict that Player has chosen for himself or herself.

Player #	Gamble 1 (\$10/\$10)	Gamble 2 (\$18/\$6)	Gamble 3 (\$26/\$2)	Gamble 4 (\$34/-/\$2)	Gamble 5 (\$42/-/\$6)
1					
2					
.....					
20					
21					

Appendix 2: Data Tables

**Appendix Table 1: Subjects Per Session By Sex**

<b>Session</b>	<b>Number of Men</b>	<b>Number of Women</b>
1	9	12
2	10	8
3	8	10
4	12	7
5	9	12
6	9	10
7	6	6
8	9	12
9	4	4
10	6	2
11	4	4
12	3	7
13	6	5
14	6	1
15	6	6
16	6	6
17	6	6
18	9	3
19	10	2

**Appendix Table 2: Gamble Choice by Treatment and by Sex**

Gamble	All Subjects (%)				Men (%)				Women (%)			
	All	Abstract	Investment	No Loss	All	Abstract	Investment	No Loss	All	Abstract	Investment	No Loss
1	11 (4.30)	7 (4.73)	1 (1.75)	3 (5.77)	2 (1.47)	2 (2.78)	0 (0.00)	0 (0.00)	9 (7.50)	5 (6.58)	1 (4.17)	3 (15.00)
2	42 (16.41)	25 (16.89)	7 (12.28)	10 (19.23)	17 (12.50)	11 (15.28)	0 (0.00)	6 (18.75)	25 (20.83)	14 (18.42)	7 (29.17)	4 (20.00)
3	84 (32.81)	48 (32.43)	19 (33.33)	17 (32.69)	35 (25.74)	15 (20.83)	10 (31.25)	10 (31.25)	49 (40.83)	33 (43.42)	9 (37.50)	7 (35.00)
4	58 (22.66)	32 (21.61)	17 (29.82)	9 (17.31)	36 (26.47)	18 (25.00)	12 (37.50)	6 (18.75)	22 (18.33)	14 (18.42)	5 (20.83)	3 (15.00)
5	61 (23.83)	36 (24.32)	12 (21.05)	13 (25.00)	46 (33.82)	26 (36.11)	10 (31.25)	10 (31.25)	15 (12.50)	10 (13.16)	2 (8.33)	3 (15.00)
Total	256	148	57	52	136	72	32	32	120	76	24	20
Mean Gamble Choice (Std. Dev.)	3.45 (1.15)	3.45 (1.17)	3.57 (1.02)	3.36 (1.22)	3.79 (1.09)	3.76 (1.18)	4.00 (0.80)	3.63 (1.13)	3.08 (1.10)	3.14 (1.08)	3.00 (1.02)	2.95 (1.28)