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# Are Subjects Making Financial Decisions in Lab Auctions or Are They Just Gambling?

## **Comments**

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# **Are Subjects Making Financial Decisions in Lab Auctions or Are They Just Gambling?**

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Optimal bidding strategies in first price and Dutch auctions are theoretically isomorphic but depend on bidder risk attitudes. However, laboratory experiments consistently find different behavior between auction formats. This paper explores whether the notion in psychology that financial and gambling risks are viewed differently can explain the discrepancy. Ultimately, the evidence does not support this hypothesis, but a bidder's propensity to gamble is associated with how much risk he takes in both auctions whereas his propensity to take financial risks is not. The results suggest that subjects may view themselves as gambling in laboratory auctions rather than making financial decisions.

Keywords: Multi-Domain Risk Attitudes, Auctions, Laboratory Experiments, Gambling  
JEL Codes: C9, D4, D8

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## 1. Introduction

Auctions are commonly employed in a practice and have received considerable attention from academics. While there are numerous formats and variations used for various financial transactions, two of the most well studied auction institutions are the first price sealed bid auction and the Dutch auction. In a standard first price sealed bid auction each bidder privately submits a bid. The person submitting the highest bid is declared the winner of the auction and buys the auctioned item at a price equal to his winning bid. The other bidders earn nothing. In the standard Dutch auction, a provisional price is set above the (anticipated) willingnesses to pay of the bidders. The price is then decreased incrementally until some bidder stops the process signaling an agreement to purchase at the currently specified price. Again, other bidders receive nothing.

These two distinct auction institutions are theoretically isomorphic when bidders have independent private values. That is to say that a bidder who should place a bid  $b$  in the in the first price sealed bid auction should agree to purchase at a price  $b$  in the Dutch auction. However, laboratory experiments going back to Coppinger, et al (1980) and Cox et al., (1982) have consistently demonstrated that people do not behave the same in the two auctions. Instead, people tend to bid as if they are more risk averse in first price auctions and less risk averse in Dutch auctions, with the result being that prices tend to be higher in first price auctions.

Cox, et al.(1983) evaluate two potential explanations: a utility from the suspense of waiting in the Dutch auction and a failure to properly Bayesian update beliefs about the distribution of the values of other bidders as the Dutch price falls. Cox, et al. (1983) compare these models by changing the conversion rate from earnings in the auction to actual cash payments to the subjects. They find that increasing the exchange rate does not impact prices, consistent with a failure to properly update, but not with a utility of suspense. However, this test assumes that the utility of suspense is independent of the stakes, an issue that has not been explored further (see Kagel 1995).

The two explanations for the lack of a behavioral isomorphism explored by Cox, et al. (1983) highlight potentially important psychological difference between first price and Dutch auctions. First, Dutch auctions are dynamic requiring bidders to make a series of decisions (to wait or to commit). Second, Dutch auctions are suspenseful. Once the price falls below a bidder's value, the bidder can take a sure thing or risk it for a bigger prize. This is the basis of numerous television

game shows such as Deal or No Deal which have been used to measure risk attitudes with large stakes (see Deck, et al. 2008 and Baltussen, et al. 2008). It is also reminiscent of many casino games. By contrast, there is little suspense and there is nothing dynamic in first price sealed bid auctions.

Recent work by psychologists has suggested that people do not view risk as a universal constant, as in a parameter value for someone who has constant relative risk averse preferences for all risky decisions ranging from criminal activity to marriage to career planning to medical procedures. Instead Weber, et al. (2002) and Blais and Weber (2006) argue that people compartmentalize risk into different domains. In particular they argue that people view financial risks differently from gambling risks. This suggests an alternative explanation for the lack of an isomorphism: people view suspenseful, dynamic Dutch auctions as gambling while they view static unsuspenseful first price auctions differently (presumably as financial decisions). Some support for this conjecture is found in Deck, et al. (2013a) who compare four different individual choice risk elicitation methods and find positive correlation between their two dynamic tasks and between their two static tasks, but not between any combination of a dynamic and a static task.<sup>1</sup> Notice that this within person heterogeneity is a distinct concept from work such as Filbeck, et al. (2005) who find some success in explaining between person variation using personality measures such as the well know Myers-Briggs classifications.

If people view the risks associated with first price and Dutch auctions as belonging to different domains and have different propensities to undertake risks in these domains, then one would not expect there to be an isomorphism between auction formats. At the same time, one's propensity to take risks in the relevant domain should be associated with behavior in a given auction. The next section of the paper describes an experiment designed to explore this explanation. The behavioral results are presented in a separate section followed by concluding remarks.

## 2. Experimental Design

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<sup>1</sup> Deck, et al. (2013a) are unable to explain within person risk heterogeneity using survey instruments specifically designed to identify domain specific risk propensities. However, in a related study, Deck, et al. (2013b) demonstrate that risk taking behavior can be affected by framing a decision as either a gambling task or a financial investment and that one's propensity to undertake financial risk can partially explain within subject variation on the mathematically identical tasks.

Weber, et al. (2002) and Blais and Weber (2006) developed the Domain-Specific Risk-Taking (DOSPERT) instrument to measure willingness to take risks in different domains. The survey uses a 5 point Likert scale ranging from 1 = Highly Unlikely to 5 = Highly Likely to ascertain a respondent's likelihood of engaging in certain activities.<sup>2</sup> Propensity to gamble is measured through agreement to statements like "Betting a day's income at a high stakes poker game" while propensity to undertake financial risks is measured by agreement to statement like "Investing 5% of your annual income in a very speculative stock." A respondent's score is taken to be the average response to a series of such statements.

As discussed in the introduction, the conjecture is that the Dutch auction is viewed as gambling to a larger degree than is the first price sealed bid auction. At the same time, it seems reasonable that one's propensity to undertake financial risk might impact behavior in both auction formats, but be more prevalent in the static first price auction. This leads to the following pair of hypotheses to be tested:

$H_{Auc}^{Inv}$ : One's investment score on the DOSPERT will increase the risk one is willing to take both auctions, but will have a greater effect in the first price auction.

$H_{Auc}^{Gam}$ : One's gambling score on the DOSPERT will increase the risk one is willing to take in both auctions, but will have a greater effect in the Dutch auction

To test these hypotheses, we conducted a within subjects comparison of behavior in a series of first price and Dutch auctions. In addition to the auction experiments, subjects also completed a survey that contained the DOSPERT scales and basic demographic information. Half of the subjects completed the Dutch auctions first and the first price auction last while the other half completed participated in the auctions in the other order. Regardless of the auction order, the survey was always administered second, between the two sets of auctions, to serve as a buffer between the two mathematically similar tasks.<sup>3</sup>

In each session, a group of subjects entered the lab. The subjects were drawn from the database of undergraduate study volunteers at the Economic Science Institute at Chapman University.

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<sup>2</sup> The complete DOSPERT battery also includes the perceived benefits and risks of engaging in an activity and covers domains such as social risk, recreational risk, and ethical risk.

<sup>3</sup> Copies of the survey and the auction directions are available upon request.

While some of the subjects had participated in other experiments, none had participated in any related studies. Given the potentially sensitive nature of some of the DOSPERT questions, subjects received a random code so that none of their responses could be linked to them personally. After sitting at an isolated computer terminal, the computerized directions were read aloud to ensure that everyone in the lab was receiving the same information. This necessitated that only a single task ordering be run in a session. As is standard in auctions experiments, subjects completed a series of auctions with fixed matching (i.e. bidding against the same people in each auction) and were paid their cumulative earnings. To ensure that subjects did not know who they were bidding against, there were multiple concurrent groups participating at the same time.

As described by Cox et al. (1982) and Deck and Wilson (2008), one must be careful in setting up the auction parameters so as not to introduce asymmetries between sealed bid and clock auctions. The following parameters were common between the two auctions:  $n = 3$  bidders, and values ( $v$ ) are iid from  $U[0,240]$ . The risk neutral prediction in both auctions is that one's bid is  $\frac{(n-1)v}{n}$  yielding an expected price is 120 and an expected profit per bidder of 20. However, the Dutch auction requires additional parameterizations: starting price, clock decrement, and clock speed. Our Dutch price started at 240 to be consistent with the first price auction where bids were capped at the maximum value. To accommodate "equilibrium" behavior, the message space (the admissible bids) must be finer than the realizations of values as one must be able to bid  $\frac{2v}{3}$ . Thus the clock increment should evenly divide  $\frac{2}{3}$  of the increments in values. For this reason and to keep the numbers simple values were restricted to multiples of 15 while clock prices were multiples of 10. The restriction was imposed on sealed bids for the same reasons and to maintain comparability. Finally, the clock speed for the Dutch auction is also an important design variable. Katok and Kwasnica (2008) report that faster clocks generate lower prices. They argue that slower clock speeds impose greater monitoring and opportunity costs on bidders and suggest this may explain why Lucking-Reiley (1999) failed to replicate the laboratory auction price ordering results in field experiments conducted via online auctions. An alternative explanation consistent with our hypothesis is that slower clocks are boring and thus not perceived as gambling given the lack of suspense. Our clock speed was set at 1 second per tic, which results in prices falling by 4.2% of the maximum value per second, similar to the (exciting) fast speed of a 5% price drop per second of Katok and Kwasnica (2008).

The auction winner received her value minus bid in cents thus inducing the values and making the decisions salient. Our subjects completed 30 first price auctions and 90 Dutch auctions. The distribution of values is intentionally similar to that used in Smith and Dickhaut (2005), who also run a total of 120 auctions.<sup>4</sup> In the Dutch auction, only the winner actually bids, meaning that no information is collected on the other  $n - 1$  bidders. The number of bidders is small to reduce this information loss. This is also the reason we ran three times as many Dutch auctions; we expect to observe thirty bids in each institution for each subject.<sup>5</sup>

A total of 42 subjects participated in these experiments; 21 in each auction ordering. Forty five percent of the subjects were male and the average age was approximately 21, the youngest participant was 19 and the oldest was 35. The experiments lasted approximately 90 minutes and the average salient earnings were approximately \$13. Subjects also received a \$7 participation payment.

### 3. Experimental Results

The average price in the first price sealed bid auction was 158.07 while the average price in the Dutch clock auction was 146.67, consistent with the findings of previous experimental studies. As we are not concerned with any specific functional form of risk aversion, we use the simple measure of bid/value as the variable of interest. A more risk-averse subject would bid a larger fraction of her value while a less risk-averse bidder would seek a greater profit by lowering her bid as a percentage of her value. Table 1 gives the relevant estimation results based upon the useable observations.<sup>6</sup> The dependent variable is the subject's average bid/value in the first price auction (estimation 1) and the Dutch auction (estimation 2). The dependent variable in estimation 3 is average bid/value in the first price auction minus average bid/value in the Dutch auction. IDom and GDom are the subjects DOSPERT scores for propensity to take investment and gambling risks respectively. A higher DOSPERT score indicates a greater willingness to engage in risky activity

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<sup>4</sup> Their auctions involve four bidders with values drawn from a uniform distribution,  $U[0,250]$ , so the expected profit per bidder is greater in our experiments. In our experiment, the upper bound of the support was changed to be a multiple of 15 for reasons described previously.

<sup>5</sup> The actual number of observations in the Dutch auction varied depending on realized values and the behavior of other bidders.

<sup>6</sup> One subject did not fully complete the survey and another subject went bankrupt in the Dutch auction. Once a subject goes bankrupt, the experimenter has effectively lost control over the subject's incentives as losses cannot be imposed due to institutional constraints. If the subject will receive \$0 if she has experimental losses of \$5 or \$5000, then her incentive is to take long shot gambles regardless of risk attitude as losses or small gains do not affect her real payoff.



within that domain. Age and Male capture demographic characteristics of the subject. DFirst is a dummy variable for a subject having gone through the Dutch auction first.

Based upon the estimated coefficients in (1) and (2), one's attitude towards gambling (GDom) has a significant impact on bidding behavior in both the first price and Dutch auctions. In both cases, a greater willingness to gamble is associated with less risk-averse bidding, consistent with our hypotheses  $H_{Auc}^{Inv}$  and  $H_{Auc}^{Gam}$ . However, the GDom variable is not significant in (3) indicating that one's attitude towards gambling does not have a differential effect in the two auction formats, inconsistent with  $H_{Auc}^{Gam}$ . An increase in one's willingness to accept investment risks does not significantly lower one's bid in either auction format as shown in estimations (1) and (2), nor does it explain any behavioral difference between auctions as shown in (3), inconsistent with  $H_{Auc}^{Inv}$ . Together these results indicate that one's willingness to engage in risky activities in the gambling domain, as measured by the survey instrument, does affect bidding behavior in the auctions, but it does not explain behavioral differences between them.

**Table 1. Average Bid/Value in First-Price Sealed-Bid and Dutch Auctions**

| Dependent Variable | (1)                      |              | (2)                      |              | (3)   |              |
|--------------------|--------------------------|--------------|--------------------------|--------------|---|--------------|
|                    | Avg (Bid/Value) in First |              | Avg (Bid/Value) in Dutch |              | Avg (Bid/Value) in First - Avg (Bid/Value) in Dutch |              |
|                    | Coefficient              | p-value      | Coefficient              | p-value      | Coefficient   | p-value      |
| Constant           | 0.664**                  | <0.001       | 0.759***                 | <0.001       | -0.095  | 0.309        |
| <b>IDom</b>        | <b>0.019</b>             | <b>0.169</b> | <b>0.004</b>             | <b>0.471</b> | <b>0.015</b>  | <b>0.192</b> |
| <b>GDom</b>        | <b>-0.036***</b>         | <b>0.007</b> | <b>-0.049***</b>         | <b>0.003</b> | <b>0.013</b>  | <b>0.290</b> |
| Age                | 0.006*                   | 0.051        | 0.007**                  | 0.032        | -0.002  | 0.647        |
| Male               | 0.004                    | 0.858        | -0.006                   | 0.821        | 0.010   | 0.754        |
| DFirst             | -0.044*                  | 0.074        | -0.026                   | 0.322        | -0.070*   | 0.059        |

Notes: \*, \*\*, and \*\*\* indicate significant difference from 0 at the 10, 5, and 1 percent significance levels. The p-values are calculated using White heteroskedasticity corrected standard errors. All p-values are two sided except IDom and GDom in (1), (2), and (3), which are one sided in the direction suggested by the hypotheses.

The other coefficient estimations reported in Table 1 reveal interesting patterns as well. First, age has equal (and significant) explanatory power in both auctions. Older subjects behave in a more risk-averse manner in both the Dutch and first price auctions. Evidence that the age effect is equal is given by the lack of significance on age in (3). Second, we find no evidence of a gender effect, controlling for DOSPERT scores, in either auction as evidence by the lack of significance on Male in all three estimations. Finally, there is evidence of an ordering effect.<sup>7</sup> Those subjects who

<sup>7</sup> This ordering effect could also be related to the presence of the survey.

experienced the Dutch auction first were relatively more risk loving in the first price auction as evidenced by the coefficients on DFirst. From (3) the difference in behavior between auctions is smaller when subjects experience the Dutch auction first.

#### **4. Conclusions**

First price sealed bid and Dutch auctions are not behaviorally isomorphic as predicted by standard economic theory. This paper reports results from a series of controlled laboratory experiments that explore domain specific risk attitudes as a possible explanation for this phenomenon. The Dutch auction is suspenseful and dynamic, which is similar to many gambling activities. Indeed, we find that that behavior in the Dutch auction is in fact influenced by one's willingness to take gambling risks but not one's willingness to take financial risks. By contrast, a first price sealed bid auction is not suspenseful or dynamic. However, observed behavior in the first price auction is also related to one's willingness to take gambling risks but not financial risks. These findings suggest that differences in bidding behavior between auctions cannot be attributed to the auctions appealing to different aspects of a bidder's personality, at least not as measured by established scales in psychology. A potentially more concerning conclusion from our experiments is that subjects appear to view bidding behavior in both the first price and the Dutch auction as gambling activities rather than financial investments. The degree to which this impacts the general ability to extrapolate auction behavior from the lab to the field depends in part on the degree to which auctions in the field are viewed as gambling as well, a currently open question.

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**Appendix: Subject Directions and Survey**  
**To be made available upon request - Not intended for publication**

This appendix contains two sets of subject instructions and the survey instrument.

The first set of directions (3 pages) is for the first price auction and the second set of directions (3 pages) is for the Dutch auction.

Headings in brackets, [ ], were added for the reader and were not observed by the subjects.

[First Price Auction Directions Page 1]

This is an experiment in the economics of market decision making. The instructions are simple, and if you follow them carefully and make good decisions you may earn a considerable amount of money which will be paid to you in CASH at the end of the experiment.

In this experiment we are going to create a market in which you will be buyers of a fictitious commodity in a sequence of auctions. There are **3** bidders total in your market (including you) each attempting to buy one unit from an auctioneer. The other bidders in your market will be randomly determined for each auction. The computer will act as the auctioneer, but it is completely passive in the sense that it is used solely to store and transmit information on decisions made by the participants in the market.

[First Price Auction Directions Page 2]

This is your personal record sheet for the market experiment. Notice the column labeled “**Resale Value**”; it indicates the value to you of purchasing a unit of this commodity. This value to you may be thought of as the amount you would receive if you were to resell the unit.

These resale values are assigned randomly. You have an equally likely chance of receiving any **resale value** from **[0, 15, 30, 45 ... 210, 225, 240]**.

Furthermore, the chance of you being assigned any particular value in this range, for example, **120**, is not changed if that value was assigned earlier to you or to another participant. It is therefore possible for you to get the same resale value for different auction periods or for two participants to have the same value in the same auction. All participants will have their resale values assigned in this manner.

[First Price Auction Directions Page 3]

If you are able to make a purchase (we will describe the buying process soon) you will receive the difference between your resale value and the price you pay.

**TO SUM UP:**

$$\text{Resale Value} - \text{Price Paid} = \text{Profit}$$

Note that your cash profits depend upon your ability to buy a unit at a price *below* the resale value given on your personal record sheet. Also note that if you buy a unit at a price equal to its resale value your profit will be zero. If you buy a unit at a price greater than its resale value you will lose money.

Your earnings will be automatically entered in your record sheet at the close of each auction. Earnings (profits) are accumulated over several auctions, with your total profit at the end of the experiment being the summation of your profits over all auctions. But, you may ask, “How do I purchase this commodity?” Good question.

[First Price Auction Directions Page 4]

This is how your screen will look during the actual experiment. You can attempt to purchase the commodity in each auction by entering a bid for it. The highest bidder in each auction will be awarded the unit. Your bid for each auction period will be entered in the text box next to the command button “Submit bid”.

In the text box above your bid holds your **resale value** for the current commodity. The text box below holds the potential profit. This is a calculation of your earnings should you win the auction. Once you are happy with your bid confirm it and wait for the other bidders to finish.

Your bid will be automatically rounded to the nearest 10 cents.

[First Price Auction Directions Page 5]

In the following auctions the price you pay (assuming you are the highest bidder) will be equal to your bid. (In the case of a tie, the first bidder to confirm their bid is the winner.)

You pay what you bid only if you are awarded the unit. If you do not receive the unit, the column labeled "Profit" will have a "-" entered in it. The price the unit is sold for will be entered in the column labeled **Market Price** so that you will have a record of all contracts made.

[First Price Auction Directions Page 6]

Let's review the important items:

(1) The highest bidder will be the only person to receive the unit.

(2) The price you pay will be equal to your bid. You can change your bid if you have not yet confirmed it already.

(3) There are **3** bidders in each auction and everyone has a random **resale value** between **0** and **240**, inclusive.

If you have any questions raise your hand and ask the monitor.

Your earnings may suffer if you proceed into the marketplace without understanding the instructions!

[Dutch Auction Directions Page 1]

This is an experiment in the economics of market decision making. The instructions are simple, and if you follow them carefully and make good decisions you may earn a considerable amount of money which will be paid to you in CASH at the end of the experiment.

In this experiment we are going to create a market in which you will be buyers of a fictitious commodity in a sequence of auctions. There are **3** bidders total in your market (including you) each attempting to buy one unit from an auctioneer. The other bidders in your market will be randomly determined for each auction. The computer will act as the auctioneer, but it is completely passive in the sense that it is used solely to store and transmit information on decisions made by the participants in the market.

[Dutch Auction Directions Page 2]

This is your personal record sheet for the market experiment. Notice the column labeled “Resale Value”; it indicates the value to you of purchasing a unit of this commodity. This value to you may be thought of as the amount you would receive if you were to resell the unit.

These resale values are assigned randomly. You have an equally likely chance of receiving any resale value from **[0, 15, 30, 45 ... 210, 225, 240]**.

Furthermore, the chance of you being assigned any particular value in this range, for example, **120**, is not changed if that value was assigned earlier to you or to another participant. It is therefore possible for you to get the same resale value for different auction periods or for two participants to have the same value in the same auction. All participants will have their resale values assigned in this manner.



[Dutch Auction Directions Page 3]

If you are able to make a purchase (we will describe the buying process soon) you will receive the difference between your resale value and the price you pay.

**TO SUM UP:**

$$\text{Resale Value} - \text{Price Paid} = \text{Profit}$$

Note that your cash profits depend upon your ability to buy a unit at a price *below* the resale value given on your personal record sheet. Also note that if you buy a unit at a price equal to its resale value your profit will be zero. If you buy a unit at a price greater than its resale value you will lose money.

Your earnings will be automatically entered in your record sheet at the close of each auction. Earnings (profits) are accumulated over several auctions, with your total profit at the end of the experiment being the summation of your profits over all auctions. But, you may ask, “How do I purchase this commodity?” Good question.

[Dutch Auction Directions Page 4]

This is how your screen will look during the actual experiment. You can attempt to purchase the unit of commodity in each auction.

At the beginning of each auction, the clock in the upper right corner of your screen will display the opening price, which is 240. This is displayed at the 12 o’clock position and in the center of the clock. Every second the price will **decrease** by 10 until the **first** bidder clicks on the green “Buy” button. The **first** bidder who clicks on the “Buy” button will win the auction and pay the amount on the clock when the button was clicked.

Your **resale value** is displayed in the text box above the current price. The text box below holds the potential profit. This is a calculation of your earnings should you win the auction at the current price by clicking “Buy.”

[Dutch Auction Directions Page 5]

If no one clicks on the “Buy” button when the price reaches 0, then the auction ends with no one buying the unit.

You pay the price on the clock only if you are awarded the unit. If you do not receive the unit, the column labeled “Profit” will have a “-” entered in it. The price the unit is sold for will be entered in the column labeled **Market Price** so that you will have a record of all contracts made.

The status bar at the bottom of your screen will countdown 5 seconds until the next auction begins.

[Dutch Auction Directions Page 6]

Let’s review the important items:

- (1) The **first** bidder to click on the “Buy” button will be the only person to receive the unit.
- (2) This bidder will pay the price on the clock when the button was clicked.
- (3) There are **3** bidders in each auction and everyone has a random **resale value** between **0** and **240**, inclusive.

If you have any questions raise your hand and ask the monitor.

Your earnings may suffer if you proceed into the marketplace without understanding the instructions!

**GENERAL INSTRUCTIONS**


**CODE:** \_\_\_\_\_

Please read the instructions and questions carefully before responding. Remember that there are no right or wrong answers, so please answer each question as honestly as possible.

Below is an example of the types of questions you will see in this survey.

PLEASE DESCRIBE YOUR FEELINGS BY PUTTING A CHECK MARK (✓) ACROSS THE NUMBER THAT BEST DESCRIBES YOU AND YOUR REACTIONS.

Strongly Disagree  
Disagree  
Neutral  
Agree  
Strongly Agree



**1. How much do you agree or disagree with the statement below?**

a. I think buying letters will be very useful..... [1] [2] [3] [4] [5]

You will simply choose the response that best represents how much you agree or disagree with the statement “I think buying letters will be very useful.” As you can see, the person who responded to this question neither disagreed nor agreed with the statement, so she marked the 3 or Neutral box. Of course, if you strongly agreed with the statement, you would mark the 5 or Strongly Agree box, and so on.

## PART I

**INSTRUCTIONS:** The following items are statements about personal characteristics. Please use the scale provided to indicate how much each item describes you by choosing whether you agree or disagree with the statement. Please be as honest and forthright as you can, and remember that there are no right or wrong answers.

PLEASE DESCRIBE YOUR FEELINGS BY PUTTING A CHECK MARK (✓) ACROSS THE NUMBER THAT BEST DESCRIBES YOU.

**How much do you agree or disagree with the statements below?**

|   |     | <i>Strongly Disagree</i> | <i>Disagree</i> | <i>Neutral</i> | <i>Agree</i> | <i>Strongly Agree</i> |
|---|-----|--------------------------|-----------------|----------------|--------------|-----------------------|
| 1. I am the life of the party.....                      | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 2. I don't talk a lot .....                             | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 3. I feel comfortable around people.....                | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 4. I keep in the background.....                        | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 5. I start conversations.....                           | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 6. I have little to say.....                            | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 7. I talk to a lot of different people at parties.....  | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 8. I don't like to draw attention to myself.....        | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 9. I don't mind being the center of attention.....      | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 10. I am quiet around strangers.....                    | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 11. I feel little concern for others .....              | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 12. I am interested in people.....                      | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 13. I insult people.....                                | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 14. I sympathize with others' feelings.....             | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 15. I am not interested in other people's problems..... | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 16. I have a soft heart.....                            | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 17. I am not really interested in others.....           | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 18. I take time out for others.....                     | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 19. I feel others' emotions.....                        | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 20. I make people feel at ease.....                     | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 21. I am always prepared.....                           | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 22. I leave my belongings around.....                   | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 23. I pay attention to details.....                     | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 24. I make a mess of things.....                        | [1] | [2]                      | [3]             | [4]            | [5]          |                       |
| 25. I get chores done right away.....                   | [1] | [2]                      | [3]             | [4]            | [5]          |                       |

**INSTRUCTIONS:** The following items are statements about personal characteristics. Please use the scale provided to indicate how much each item describes you by choosing whether you agree or disagree with the statement. Please be as honest and forthright as you can, and remember that there are no right or wrong answers.

PLEASE DESCRIBE YOUR FEELINGS BY PUTTING A CHECK MARK (✓) ACROSS THE NUMBER THAT BEST DESCRIBES YOU AND YOUR REACTIONS.

| <b>How much do you agree or disagree with the statements below?</b> |                          |                 |                |              |                       |
|---|--------------------------|-----------------|----------------|--------------|-----------------------|
|   | <i>Strongly Disagree</i> | <i>Disagree</i> | <i>Neutral</i> | <i>Agree</i> | <i>Strongly Agree</i> |
| 26. I often forget to put things back in their proper place.....    | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 27. I like order.....   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 28. I shirk my duties.....  | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 29. I follow a schedule.....  | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 30. I am exacting in my work.....                                   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 31. I get stressed out easily.....                                  | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 32. I am relaxed most of the time.....                              | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 33. I worry about things.....                                       | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 34. I seldom feel blue.....   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 35. I am easily disturbed.....                                      | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 36. I get upset easily.....   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 37. I change my mood a lot.....                                     | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 38. I have frequent mood swings.....                                | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 39. I get irritated easily.....                                     | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 40. I often feel blue.....  | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 41. I have a rich vocabulary.....                                   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 42. I have difficulty understanding abstract ideas.....             | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 43. I have a vivid imagination.....                                 | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 44. I am not interested in abstract ideas.....                      | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 45. I have excellent ideas.....                                     | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 46. I do not have a good imagination.....                           | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 47. I use difficult words.....                                      | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 48. I spend time reflecting on things.....                          | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 49. I am full of ideas.....   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 50. I am quick to understand things.....                            | [1]                      | [2]             | [3]            | [4]          | [5]                   |

**INSTRUCTIONS:** For each of the following statements, indicate your likelihood of engaging in each activity or behavior. Please be as honest and forthright as you can, and remember that there are no right or wrong answers.

PLEASE DESCRIBE YOUR FEELINGS BY PUTTING A CHECK MARK (✓) ACROSS THE NUMBER THAT BEST DESCRIBES YOU AND YOUR REACTIONS.

| <b>How likely are you to engage in each of the following behaviors?</b>                                   | <i>Highly Unlikely</i> | <i>Unlikely</i> | <i>Neutral</i> | <i>Likely</i> | <i>Highly Likely</i> |
|---|------------------------|-----------------|----------------|---------------|----------------------|
| 51. Admitting that your tastes are different from those of your friends.....                              | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 52. Disagreeing with your father on a major issue.....  | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 53. Arguing with a friend about an issue on which he or she has a very different opinion.....             | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 54. Approaching your boss to ask for a raise.....   | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 55. Telling a friend if his or her significant other has made a pass at you...                            | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 56. Wearing provocative or unconventional clothes on occasion.....  | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 57. Defending an unpopular issue that you believe at a social occasion...                                 | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 58. Taking a job that you enjoy over one that is prestigious but less enjoyable.....                      | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 59. Going camping in the wilderness, beyond the civilization of a campground.....                         | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 60. Chasing a tornado or hurricane by car to take dramatic photos.....                                    | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 61. Going on a vacation in a third world country without prearranged travel and hotel accommodations..... | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 62. Going down a ski run that is beyond your ability or closed.....                                       | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 63. Going whitewater rafting during rapid water flows in the spring.....                                  | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 64. Periodically engaging in a dangerous sport (e.g., mountain climbing or sky diving).....               | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 65. Trying out bungee jumping at least once.....  | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 66. Piloting your own small plane, if you could.....  | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 67. Buying an illegal drug for your own use.....  | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 68. Consuming five or more servings of alcohol in a single evening.....                                   | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 69. Not wearing a seatbelt when being a passenger in the front seat.....                                  | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 70. Not wearing a helmet when riding a motorcycle.....  | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 71. Exposing yourself to sun without using sunscreen.....   | [1]                    | [2]             | [3]            | [4]           | [5]                  |
| 72. Walking home alone at night in a somewhat unsafe area of town.....                                    | [1]                    | [2]             | [3]            | [4]           | [5]                  |

**INSTRUCTIONS:** For each of the following statements, indicate your likelihood of engaging in each activity or behavior. Please be as honest and forthright as you can, and remember that there are no right or wrong answers.

PLEASE DESCRIBE YOUR FEELINGS BY PUTTING A CHECK MARK (✓) ACROSS THE NUMBER THAT BEST DESCRIBES YOU AND YOUR REACTIONS.

| <b>How likely are you to engage in each of the following behaviors?</b>                                      | <div style="display: flex; justify-content: space-around; font-size: small;"> <span>Highly Unlikely</span> <span>Unlikely</span> <span>Neutral</span> <span>Likely</span> <span>Highly Likely</span> </div> |     |     |     |     |
|--|---|-----|-----|-----|-----|
| 73. Engaging in unprotected sex.....   | [1]   | [2] | [3] | [4] | [5] |
| 74. Regularly eating high cholesterol foods.....   | [1]   | [2] | [3] | [4] | [5] |
| 75. Betting a day's income at the horse races.....   | [1]   | [2] | [3] | [4] | [5] |
| 76. Betting a day's income at a high stakes poker game.....  | [1]   | [2] | [3] | [4] | [5] |
| 77. Betting a day's income on the outcome of a sporting event (e.g., baseball, football, or basketball)..... | [1]   | [2] | [3] | [4] | [5] |
| 78. Gambling a week's income at a casino .....   | [1]   | [2] | [3] | [4] | [5] |
| 79. Cheating on an exam.....   | [1]   | [2] | [3] | [4] | [5] |
| 80. Cheating by a significant amount on your income tax return.....  | [1]   | [2] | [3] | [4] | [5] |
| 81. Having an affair with a married man or woman.....  | [1]   | [2] | [3] | [4] | [5] |
| 82. Forging somebody's signature.....  | [1]   | [2] | [3] | [4] | [5] |
| 83. Passing off somebody else's work as your own.....  | [1]   | [2] | [3] | [4] | [5] |
| 84. Illegally copying a piece of software.....   | [1]   | [2] | [3] | [4] | [5] |
| 85. Shoplifting a small item (e.g., lipstick or a pen).....  | [1]   | [2] | [3] | [4] | [5] |
| 86. Stealing an additional TV cable connection off the one you pay for....                                   | [1]   | [2] | [3] | [4] | [5] |
| 87. Investing 10% of your annual income in a moderate growth mutual fund (medium risk).....                  | [1]   | [2] | [3] | [4] | [5] |
| 88. Investing 5% of your annual income in a speculative stock.....   | [1]   | [2] | [3] | [4] | [5] |
| 89. Investing 5% of your annual income in a very conservative stock.....                                     | [1]   | [2] | [3] | [4] | [5] |
| 90. Investing 10% of your income in government bonds (risk free).....  | [1]   | [2] | [3] | [4] | [5] |

**INSTRUCTIONS:** The following items are statements about personal characteristics. Please use the scale provided to indicate how much each item describes you by choosing whether you agree or disagree with the statement. Please be as honest and forthright as you can, and remember that there are no right or wrong answers.

PLEASE DESCRIBE YOUR FEELINGS BY PUTTING A CHECK MARK (✓) ACROSS THE NUMBER THAT BEST DESCRIBES YOU AND YOUR REACTIONS.

| <b>How much do you agree or disagree with the statements below?</b> |  | <i>Strongly Disagree</i> | <i>Disagree</i> | <i>Neutral</i> | <i>Agree</i> | <i>Strongly Agree</i> |
|---|--|--------------------------|-----------------|----------------|--------------|-----------------------|
| 91.   | I thrive on opportunities to demonstrate that my abilities or talents are better than those of other people.....                       | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 92.   | I have a strong need to know how I stand in comparison to my co-workers or peers.....  | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 93.   | I often compete with my friends.....   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 94.   | I feel best about myself when I perform better than others.....  | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 95.   | I often find myself pondering over the ways that I am better or worse off than other people around me.....                             | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 96.   | If a friend was having a personal problem, I would help him/her even if it meant sacrificing my money or time.....                     | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 97.   | I value friends who are caring, empathic individuals.....  | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 98.   | It is important to me that I uphold my commitments to significant people in my life.....   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 99.   | Caring deeply about another person such as a close friend or relative is important to me.....  | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 100.  | Knowing that a close other acknowledges and values the role that I play in their life makes me feel like a worthwhile person.....      | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 101.  | Making a lasting contribution to groups that I belong to, such as my work organization, is very important to me.....                   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 102.  | When I become involved in a group project, I do my best to ensure its success.....   | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 103.  | I feel great pride when my team or group does well, even if I'm not the main reason for its success.....                               | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 104.  | I would be honored if I were chosen by an organization or club that I belong to, to represent them at a conference or meeting.....     | [1]                      | [2]             | [3]            | [4]          | [5]                   |
| 105.  | When I'm part of a team, I am concerned about the group as a whole instead of whether team members like me or whether I like them..... | [1]                      | [2]             | [3]            | [4]          | [5]                   |



## PART II

**INSTRUCTIONS:** Please answer each of the following questions about yourself.

106. What is your gender?

- a. Male
- b. Female

107. When is your birth year? \_\_\_\_\_

108. What is your race?

- a. White
- b. Black or African American
- c. Other

109. Are you Hispanic or Latino?

- a. Yes
- b. No

110. How much education did your father have?

- a. 0-11 grades
- b. 12 grades (high school graduate)
- c. College or higher

111. How much education did your mother have?

- a. 0-11 grades
- b. 12 grades (high school graduate)
- c. College or higher