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Economic Behavior in Entrepreneurs:
An Experimental Approach to Risk Attitudes and Overconfidence

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Introduction

Economics is the study of incentive and scarcity, and in his economic theory of entrepreneurship, Mark Casson wrote "an entrepreneur is someone who specializes in taking judgmental decisions about the co-ordination of scare resources". It follows that entrepreneurs have long been celebrated economically, both as figureheads of commerce and topics of research. Investment in new ventures drives the market forward, and the entrepreneur acts as a bridge between this capital and the labor supply. Entrepreneurs are necessary in a capital society, just as capital accumulation is necessary for economic growth. Furthermore, they comprise a significant amount of the labor force. The Bureau of Labor Statistics estimates that the self-employed make up anywhere between 5-10% of the labor force. Furthermore the US census counts that 89% of American firms are small businesses[1]. Additionally, there are over 3,000 state and local chambers of commerce, most of whom affiliate with the national Chamber of Commerce, the country's largest lobbyist group.

[1] For simplicity's sake I am defining "small business" as a firm with fewer than 20 employees, The official census number is 5,377,631 out of 6,022,127 firms

The study of entrepreneurs is common ground to many branches of economics, including, but not limited to Behavioral, Labor, and Financial, and a complete view of the subject is truly an interdisciplinary interest. As such the presence of entrepreneurs in the market poses certain questions. Waldfogel's theory of "Lumpy Markets" states that fixed costs and product differentiation are inversely related (Waldfogel 21) . This theory in conjunction with the large requirement of startup capital and the inherent failure rate of new business begs the question of the entrepreneur's attitudes towards risk. Needless to say, exactly what makes someone an entrepreneur is of interest to us. Are they, as a group, significantly different from the rest of the populace? Are entrepreneurs more likely to be risk loving or risk averse? Are they optimistic or overconfident? What about within the group? Are there correlates between entrepreneurs and a given set of behavior or attitudes? Are they smokers? Do they have a tendency to be obese? Is there a difference between a successful entrepreneur and an unsuccessful one?

These questions have been the subject of a recent and ongoing contentious debate. Since new businesses are so likely to fail, it would appear that entrepreneurs are risk seeking. However, some seem to feel that they are actually risk averse and either have different value functions or are privy to asymmetric information. For-example, noted social commentator Malcolm Gladwell has described the entrepreneurial persona as hawk-like, the opposite of risk seeking. While this presents an interesting viewpoint, his essay lacks the statistical rigor, and tangibility that we are trying to present. Regardless, the behavior of entrepreneurs is a timely subject. Given the current state of the world economy, a better understanding of the mechanisms behind entrepreneurial investment is invaluable for promoting growth and investment.

The motivation behind this paper is to profile the entrepreneur. We want to eventually be able to study how entrepreneurial success is linked to these preferences. In particular, how do these attitudes towards risk and time affect business and investment? To start this profile, the Emory University Research Group gathered data on self-identified entrepreneurs by running a series of experiments described in the procedure and methods section. These data were supplemented with data from the Kauffman Foundation Index of Entrepreneurial Activity (KIEA).

We hypothesized that the entrepreneurs surveyed would be more risk seeking and less loss averse than the average person. Additionally, we hypothesized that entrepreneurs are overconfident. The reasons for these hypotheses are that in order to enter the market as an entrepreneur, an individual must either ignore or alternatively interpret the average success rate, and be willing to invest both time and capital into his or her new enterprise.

In this paper, you can expect to find a comprehensive review of the available economic information on entrepreneurs as well as the theories on choice under risk, and how it applies to entrepreneurial activity. You will then see a description of our experiment, in which we presented subjects with a comprehensive survey, which included several lottery choices designed to identify and measure attitudes towards risk. Additionally we gathered their demographic information as well as some basic behavioral inferences using widely available psychological questionnaires. Following that, I will present our calculations on how to best model these attitudes and results on the entrepreneurial profile. I will conclude with a discussion including many of the policy implications to

this research, because by knowing how entrepreneurs function, we can institute better measures to promote or influence economic growth.

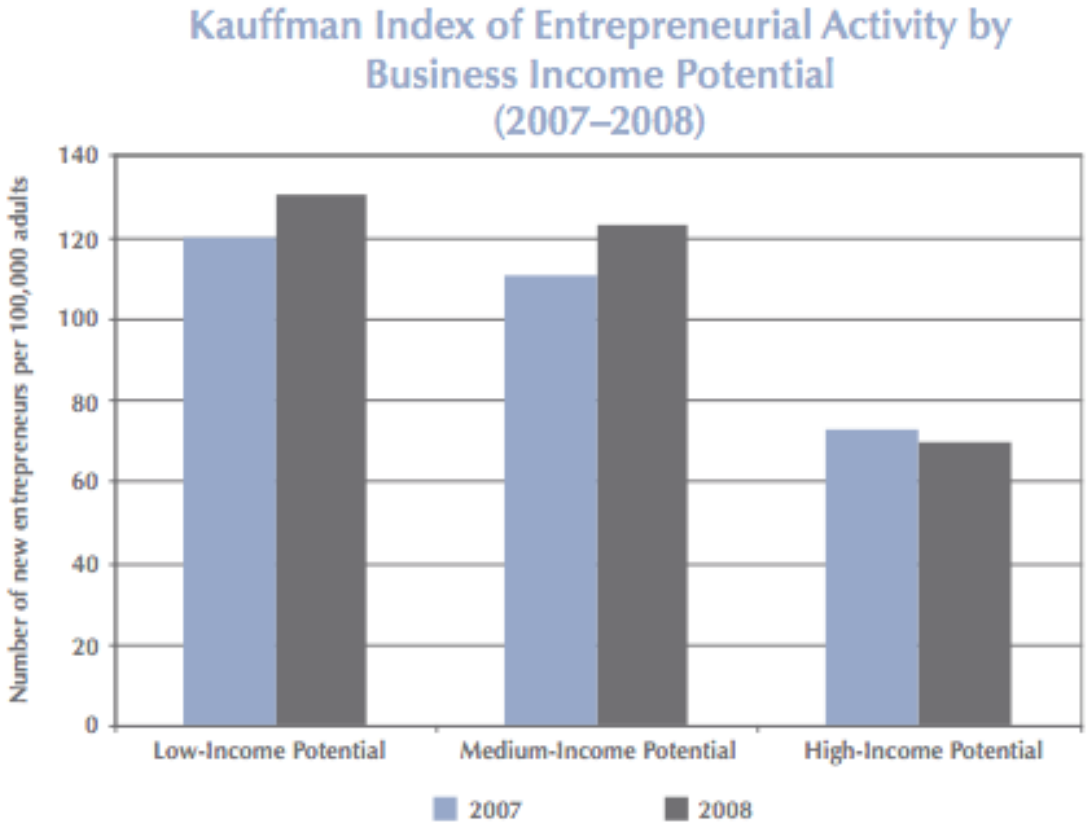
Theoretical Framework

As previously noted there is much debate in the academic community over "what makes an entrepreneur". Part of this problem stems from a failure to accurately define the term, because "the problem of…establishing the boundaries of the field of entrepreneurship still has not been solved" (Bruyat 166). Without this definition, it follows that we have difficulty measuring entrepreneurship. Some intricacies to keep in mind are the noted differences between a cooperative start up and the solo entrepreneur, long and short-term businesses. With so much to ponder, how does one measure entrepreneurial success? Given these measurement problems, most of the surveys we reference instead substitute self-employment for the term entrepreneur. For the purposes of our experiment, it sufficed to have the subjects select themselves into the binary state of entrepreneur or not. In researching the topic, I find it useful to remind myself of Justice Stewart's quip, "I shall not attempt to further define [pornography], but I know it when I see it"

Taking the measurement of new business creation as an instrument for entrepreneurial activity, we see that there exist distinct subgroups of entrepreneurs. One such way to sort these subgroups is by income potential[2], as defined by the KIEA. These subgroups imply a difference between "necessity" and "opportunity" entrepreneurship (Fairlie 6). As implied by the term, necessity entrepreneurship is business creation as a

[2] Using CPS data, businesses are classified into different levels of potential for income and growth based on average net business income for all businesses in their detailed industry

means of last resort for employment. Over the course of 2008[3], women sharply increased their rate of entrepreneurial activity, as did Latinos and Asian American immigrants. However, the business creation amongst these minority groups accounted for a disproportionate amount of low-income potential businesses.



Businesses that start up in conditions of high unemployment have worse success rates, and firm-hazard rates increase with aggregate unemployment (Parker, 224). However, this may not be a comment on inherent risk attitude, as the previous data provide evidence that in recessions, necessity entrepreneurship increases, while opportunity entrepreneurship decreases.

[3] The most recent data set available at the time of writing

Our study of entrepreneurs is especially timely given that the most recent data shows that our home state of Georgia experienced the highest rate of new business creation both over the past year (590 per 100,000 adults) and over the past decade (.17 percentage points). Furthermore, Emory's metropolitan area of Atlanta experienced the highest activity rate at .74%. Considering the increased immigration trends in metro Atlanta, and Georgia as a whole, it is interesting to note how economic behavior varies across subgroups of entrepreneurs.

The primary goal of our experiment was to profile the entrepreneur through risk preference and cognitive attitudes. It is true that the claim of being able to measure risk, let alone preference is indeed an ambitious one, and in many ways larger-than-life. However, it is actually a quite obtainable goal because we can measure choice, and through these choices we can determine a preference ordering. The axiom of revealed preference states that if a person chooses a certain bundle of goods, while another bundle is affordable, the chosen bundle must be "revealed preferred". With enough of these revealed preferences we can derive an individual's utility and value functions and therefore his associated indifference curves.

With such a diverse, and perpetually dynamic group of people, it is interesting to look for common behaviors and psychological traits. In the Economics of Self-Employment and Entrepreneurship, Parker notes several possible determinants of entrepreneurship. Two that are of particular interest are the need for achievement (n-Ach), and overconfidence.

On n-Ach, Parker writes, "if obsessive, inner-directed and non-conformist traits are deep-rooted, any only entrepreneurship can satisfy the individuals who possess them,

then we might expect to see these individuals persisting in the entrepreneurship despite lack of reward…" This description paints an almost pathological picture of the entrepreneur, yet is supported by the fact that "…Shapero (1975) reported that 72% of those he surveyed would still want to start a new company if their present one failed"

As for overconfidence, Parker writes, "another possibility is that the self-employed suffer from unrealistic optimism and remain in a low-return occupation because they anticipate high future profits" (Parker 245). Are these entrepreneurs aware of the actual odds of success and think they can beat them? Or is there a failure of the market to efficiently allocate this information to potential entrepreneurs?

We attempt to measure these factors with the psychological surveys (LOT-R, and BIS/BAS) that were administered in our experiment. The path from a discussion of these traits and factors leads into a discussion of risk aversion, which we are similarly interested in. Of the available literature on entrepreneurs, much has been theorized, but little has been done to actually measure risk attitudes empirically. This is discussed further in the following section on risk.

Risk

It is well documented that most people are averse to risk. When deliberating over investments or gambles, we look for the sure thing. This aversion can be shown many ways, through lottery choice, for example, or the concavity of utility curves. Regardless, it is apparent that risk attitude is an essential element of the entrepreneur and deserves a significant amount of our attention.

However, before we proceed into this realm, it is important to note the difference between risk and uncertainty. While they can be defined in many ways, for our purposes,

risk is said to exist if a consequence of an action in the individual's choice set is a set of possible outcomes each occurring with a *known* probability. Meanwhile, uncertainty exists when said probabilities are *unknown* (Bowles 101). We want to avoid a situation in which these choices are being made under uncertainty, as this is not an experiment to test for numeracy. As you can see in our survey choices, we have done all that is possible to reduce the amount of uncertainty in the experiment. However, there is a significant amount of literature devoted to the entrepreneurial bearing of uncertainty as opposed to risk, and the associated attitudes towards it. We shall call such a willingness to bear uncertainty proneness, and the major viewpoints regarding it will be discussed later in this section.

I would be remiss if in a discussion of risk I did not include one of the most popular utility functions for modeling attitude towards risk—the set of power functions known as constant relative risk aversion or CRRA. The family of CRRA functions allows for an inference of risk aversion through its level concavity. With CRRA for money x, the utility function is $u(x) = x^{1-r}$ for $x > 0$. This specification implies risk preference for $r < 0$, risk neutrality for $r = 0$, and risk aversion for $r > 0$ (Holt 5). In using CRRA models, risk-aversion and concavity are synonymous, however, for our purposes it has been demonstrated that when making choices under risk humans are prone to, for lack of a better term, errors in judgment, such as framing effects and bias towards the status-quo.

Noting such judgment errors and biases, Tversky and Kahneman developed Prospect theory as an alternative to the existing Expected Utility theory or EUT for short. While we are all familiar with EUT, Prospect Theory is distinct for several reasons, which proved elementary in helping us design our experiment, and calculating the

parameters of interest. The main distinction between Prospect theory and EUT is Prospect theory introduces the concept of a reference point. This allows the theory to concentrate on changes in states of wealth, rather than absolute values. Through Prospect theory and a study of reference points, we see that in addition to risk aversion, and perhaps the prevailing force behind it, most people are in fact loss averse, by a factor of about two. This means that, on average, people find losses about twice as painful as an associated gain.

In addition to the existence of reference points, prospect theory takes account of probability weighting. Evidence suggests that people tend to under or overestimate certain probabilities. Theoretically, we can infer a function for these probability distortions, such as the Prelec Weighting Function. He notes that among the properties of his weighting function, regressiveness[4] "generates the important "four-fold pattern of risk attitudes, which is risk-seeking for small-probability gains and large-probability losses, and risk-aversion for small-probability losses and large-probability gains" (Prelec 498). The extension of concavity principle of CRRA to probability weighting gives us a more complete picture of risk aversion and the behavioral correlates behind it. This, along with further differences between Prospect Theory and CRRA, is discussed further in the section on parameter calculation.

Previous studies have shown that propensity to take risks is closely correlated with household income. Likewise, EUT states that under decreasing absolute risk aversion, wealthier people are more likely to take risks than poor people (Camerer 6). These theories on risk propensity extend to the realm of entrepreneurs. There are two competing schools of thought on this topic. One is consistent with the view of the

[4] i.e. intersecting the diagonal from above

entrepreneur as a gambler, subject to probabilistic fallacy and inherently risk seeking, with the other view being the polar opposite—that is, calculating and risk averse.

There has been evidence for both schools of thought. In the early theories of entrepreneurship, Knight was the first to view the entrepreneur as more than an arbitrageur. He felt that the entrepreneur was a bearer of uncertainty seeing as "business decisions practically never concern calculable probabilities" (vanPraag 12). Whereas Knight felt the entrepreneur was uncertainty prone, Marshall viewed him as risk loving. "The latter phenomenon [attraction to entrepreneurship] occurs because (young) risk lovers are more attracted by the prospect of a great success than they are deterred by the fear of failure" (vanPraag 9). Contrary to both, Schumpeter saw the entrepreneur as so risk averse that one would not bear any, nor would one even supply capital. To Schumpeter, innovation is an endogenous process carried out by the entrepreneur, but not necessarily for profit (vanPraag 12).

Procedure and Experimental Methods

It is with these varying views of the entrepreneur in mind that we design our experiment. The first step of which is the selection of a sample. Ideally samples are representative, but for our purposes, subjects were self-selected volunteers at the World Chamber of Commerce (WCC) meeting in Atlanta, GA. The WCC presents an interesting data set due to its multicultural membership pool and the fact that it represents entrepreneurs from many different parts of the business world. Subjects were compensated based on their selection of lottery choices and random draw to determine which lottery the compensation and the outcome of said lottery. Subjects were

automatically compensated with $25 and could additionally earn a minimum of $4 and up to $970. The average earnings from participating were $45.

The pool was consisted of 32 subjects overall. About 60% of the subjects were white, and a little less than 20% were Hispanic. 85 percent of the subjects identified themselves as entrepreneurs and about the same amount held a bachelor's degree or above. For more detailed information on the subject pool and a brief description of their survey responses and results please consult the table on the following page.

However, this sample is not free of bias. Obviously 32 people is not representative, and there was no randomization in the selection. Additionally, the self-selection may skew the bias in favor of rent-seeking entrepreneurs, wishing to receive payment for their task completion. Finally, there are simply not enough people to draw conclusions at the ethnic and sexual levels, consider Hispanic women for example.

Subjects were administered the survey either online or via hard copy. The survey (as you can see from the complete text in the appendix) was divided into several sections. These sections include demographic information, business information, and the lottery choices themselves, as well two numeracy quizzes and the psychological evaluations. Certain sections of the survey were used as filler material, what follows is a discussion of the variables of interest.

All in all, the demographic questions are mostly unremarkable, however, one should note the inclusion of the risky behavior variables within this section. That is questions related to tobacco and alcohol consumption behaviors. Not only should these behaviors hypothetically related to risk and time discounting factors, but also there is

some evidence of their effect on business success[5]. Speaking of which, there exists an entity separate from the demographic questions designed to get a feel for the subjects' respective business personas. This includes questions on their kind of business and their presumption of odds of success, which in turn relates to their feelings of optimism and motivation.

	Variable	Description/Range of Values	Mean (Std)	Median	Min *Max*
Demographic	Male	Sex of the Subject, Dummy: 1 Male, 0 Female	0.656 (.483)	1	0 *1*
	Age	Age of the Subject in Years, 19-64	41.75 (12.71)	41.5	12.71
	White	Race of the Subject, Dummy: 1 White, 0 Other	0.59375 (.499)	1	0.499
	BMI	Body Mass Index of Subject (703*weight/in^2)	26.394 (4.343)	25.75	20.358 *38.67*
	Entre?	Is the subject an entrepreneur Dummy: 1Yes, 0 No	0.843 (.369)	1	0 *1*
	Degree	Does the subject hold a bachelor's or above Dummy: 1 Yes, 0 No	0.875 (.366)	1	0 *1*
	v26	How many cigarettes per day does the subject smoke on average	1.156 (.574)	1	1 *4*
	v28	How many alcoholic beverages does the subject consume per week on average	1.625 (.793)	1	1 *4*
Choices	Opt	Optimism variable as measured by the LOT-R, sum of variables 82, 84, 85,88, 90, 91	16.862 (2.326)	17	11 *22*
	BIS	Measure of the Behavioral Inhibition System, sum of variables 95, 101, 106, 109, 112, 115, 117	15.667 (3.198)	15	10 *21*
	BASD	Measure of Behavioral Activation System—Drive, sum of variables 96, 102, 105, 114	7.067 (2.362)	6.5	4 *12*
	BASRR	Measure of Behavioral Activation System—Reward Response, sum of variables 97, 100, 107, 111,116	6.519 (1.312)	6	5 *9*
	BASFS	Measure of Behavioral Activation System—Fun Seeking, sum of variables 98, 103, 108, 113	7.833 (2.135)	7.5	5 *12*

[5] For further insight on this effect, please consult my peer Benedic N. Ippolito's paper "Alcohol & Income: Examining the Drinkers Bonus Using Panel Data"

Parameters	Alpha	Probability-sensitivity parameter	0.683 (.103)	.7	.4 *.85*
	Sigma	Parameter representing the degree of concavity of the utility function	0.745 (.186)	.787	.325 *1*
	Lambda	Loss-aversion parameter	2.456 (2.617)	1.5875	.17 *9.577*

I mentioned previously that we are not interested in testing for numeracy. However, the two quizzes, named "Numbers" and "MENSA" respectively would appear to suggest otherwise. In fact these quizzes serve two very important purposes. One is simply as filler. The quizzes essentially waste time between tasks. Secondly, and perhaps more important, after each quiz we ask, "how well do you think you did on this quiz compared to other entrepreneurs?" This question, along with the psychological survey, helps us to gauge overconfidence.

The psychological survey choices were taken from the set of Carver's self-reporting instruments. The two we are concerned with are the revised Life Orientation Test[6] (LOT-R) and the Behavioral Activation and Inhibition scales (BIS/BAS). The LOT-R is a measure of optimism and pessimism, and for our purposes serves as a proxy for what we define as overconfidence. The BIS/BAS serves to measure motivation and is extremely useful in serving as a baseline comparison for our parameter inferences.

In using the LOT-R it is important to note that "There is no cut-off for optimism or pessimism" and it should be used as a "continuous dimension of variability" (Carver 1). For these reasons, we have sorted the list of subjects by their summed LOT-R scores (the variable defined as "opt"), with the highest scores being the most overconfident. Additionally it proved useful to group subjects by their opt quartiles as having similar optimism attitudes.

While optimism exists as a single variable, the BIS/BAS on the other hand presents multiple variables as it is subdivided into four groups of interest. The BIS stands alone as a one-dimensional measure of behavioral inhibition, and is associated with

[6] Carver notes that the brevity of the LOT-R makes it ideal for use in projects (such as ours) where many measures are being used.

sensitivity to punishment (Carver 5). Subjects tend to be higher on the BIS scale when they are nervous. The BAS scales, however, are split amongst three measures: Drive, which pertains to pursuit of goals, Fun Seeking, which reflects desire for new rewards as well as willingness to spontaneously approach a potentially rewarding event, and Reward Responsiveness, which focuses on positive responses to the occurrence or anticipation of a reward (Carver 5). It follows that we use the BIS/BAS reporting in analyzing the relationship between attitude toward risk and entrepreneurial behavior.

The lottery choices are based on those used in the paper "Risk and Time Preferences: Experimental and household survey data from Vietnam." They were carefully designed such that any particular combination of choices in the lotteries yields all three parameters of interest (Camerer 8). Subjects are asked at what point they would they would switch from lottery A to lottery B. This enforces the necessary monotonicity for eliciting the parameters of interest. Only after the survey was complete did subjects learn the amount earned.

Parameter Calculations

Our experiment produced three parameters of interest, namely, alpha (α), sigma (σ), and lambda (λ). Sigma represents the degree of concavity of the utility function. However, the other two parameters are taken from the prospect theory concept that in addition to concavity of the utility, risk aversion is influenced by non-linear probability weighting and loss aversion (Camerer 6), represented by the parameters alpha and lambda respectively.

Alpha and sigma were calculated using the array of choices in the first two lottery tasks. Here our procedure slightly differs from that of Camerer and Tanaka. Whereas

they created additional tables to round parameter inferences to the nearest .05, we used the information in the figures below to establish the potential ranges of values for the parameters for each lottery selection. Once theses ranges are determined, we simply averaged the mean values of each range for a more accurate prediction. For example if you switched after gamble 5 in each lottery, we would infer an alpha between .4 and .8 for lottery one (mean of .6) and an alpha between .6 and 1 (mean of .8) for lottery two. Averaging these two ranges results in an inferred alpha of .7, which is consistent with Camerer and Tanaka's inference, since we did not have to approximate to the nearest increment of .05.

Series 1 (Question 1-14)

σ \ α	.4	.5	.6	.7	.8	.9	1
.2	9	10	11	12	13	14	**never**
.3	8	9	10	11	12	13	**14**
.4	7	8	9	10	11	12	**13**
.5	6	7	8	9	10	11	**12**
.6	5	6	7	8	9	10	**11**
.7	4	5	6	7	8	9	**10**
.8	3	4	5	6	7	8	**9**
.9	2	3	4	5	6	7	**8**
1	1	2	3	4	5	6	**7**

Series 2 (Question 15-28)

σ \ α	.4	.5	.6	.7	.8	.9	1
.2	never	14	13	12	11	10	**9**
.3	14	13	12	11	10	9	**8**
.4	13	12	11	10	9	8	**7**
.5	12	11	10	9	8	7	**6**
.6	11	10	9	8	7	6	**5**
.7	10	9	8	7	6	5	**4**
.8	9	8	7	6	5	4	**3**
.9	8	7	6	5	4	3	**2**
1	7	6	5	4	3	2	**1**

Bold indicates choices compatible with EU (α=1) and risk-aversion.

Series 3 (Question 29-35)

Switching question	σ=0.2	σ=0.6	σ=1
1	λ>0.14	λ>0.20	λ>0.29
2	0.14<λ<1.26	.20<λ<1.38	0.29<λ<1.53
3	1.26<λ<1.88	1.38<λ<1.71	1.53<λ<1.71
4	1.88<λ<2.31	1.71<λ<2.25	1.71<λ<2.42
5	2.31<λ<4.32	2.25<λ<3.73	2.42<λ<3.63
6	4.32<λ<5.43	3.73<λ<4.82	3.63<λ<4.83
7	5.43<λ<9.78	4.82<λ<9.13	4.83<λ<9.67

Once sigma is approximated, we use it along with lottery task 3 to determine lambda. Camerer and Tanaka's lambda estimator is detailed for sigma={.2, .6, 1}

(below). Simple arithmetic allowed us to infer a more complete table for the above set[7] and all tenths in between. From there, approximating lambda is just a matter of weighted averages.

After calculating all the parameters, we calculated the pair wise correlations of all variables. Obviously, this is a large data set, so the correlations had to be trimmed down to focus on the previously discussed variables of interest: demographic data, self-reporting instrumental results, business information, and the parameter inferences. Of particular interest here is looking at health and personal risk, such as smoking, with the financial risk of the lottery choices. We repeated these calculations sorting by field, race, and gender.

With the correlations of interest calculated, the next logical step is to run tests of significance. Camerer notes that if "If prospect theory is a more appropriate model than EUT, we expect α to be smaller than 1, and λ to be larger than 1î (Camerer 9). This statement creates a testable hypothesis, which we apply to the pool of entrepreneurs. From there we can test statements about entrepreneurial risk attitudes and feelings of optimism and overconfidence. Additionally, we planned to run a few regressions to examine the effect of variation in variables, which are discussed in the following results section.

Results

Thirty-one (admissible) people participated in the experiment. Of those, 26 identified themselves as entrepreneurs. Entrepreneurs tended to be more risk seeking than the regular population, yet less likely to distort probabilities. Entrepreneurs are less

[7] See appendix

loss averse, yet amongst themselves, male subjects tend to be more loss averse than female ones.

Correlations

Initial correlation calculations produced some interesting behavioral patterns among entrepreneurs. Significant results show that higher loss aversion attitudes were associated with greater amounts of smoking and drinking.

	Cigarettes per day	Alcoholic drinks per week
Lambda	.475	.414
	(.014)	(.035)
$Sigma_{white}$		-.581
		(.011)
$Sigma_{young}$		-.435
		(.048)
$Sigma_{male}$		-.456
		(.043)

However, drinking and risk aversion, as measured by concavity, have a negative correlation amongst white entrepreneurs in the sample. This result suggests that the more prone to risk one is, the more he or she drinks. We see a similar result for men and entrepreneurs younger than 50.

With the Hispanic, we see two disturbing behavioral results: an extremely strong positive correlation between BMI and concavity (r=.915, p=.01), and an extremely strong negative correlation between optimism and drinking (r=-.968, p=.001).

Psychologically, there is a positive correlation amongst entrepreneurs between presumed likelihood of business success, and presumed success on the MENSA quiz. (r=.415, p=.048). These results suggest that overconfidence is not unique to any one aspect of life, such as business, and it may indeed carry over to other facets of one's character.

Significance Tests

As stated earlier, if Prospect Theory is a better model for choice under risk, lambda will be significantly greater than one and alpha will be significantly less than one. This represents our first set of tests.

```
One-sample t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
   lamda |      26    2.632962    .5473449    2.790923    1.505684     3.76024
------------------------------------------------------------------------------
    mean = mean(lamda)                                            t =   2.9834
Ho: mean = 1                                     degrees of freedom =       25

    Ha: mean < 1                 Ha: mean != 1                 Ha: mean > 1
 Pr(T < t) = 0.9969         Pr(|T| > |t|) = 0.0063          Pr(T > t) = 0.0031
```

```
One-sample t test
------------------------------------------------------------------------------
Variable |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
   alpha |      26    .6846154    .0172134    .0877716    .6491637    .7200671
------------------------------------------------------------------------------
    mean = mean(alpha)                                            t = -18.3220
Ho: mean = 1                                     degrees of freedom =       25

    Ha: mean < 1                 Ha: mean != 1                 Ha: mean > 1
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000
```

Since both of these tests are significant at the 5% level, we can safely reject the null hypothesis that Expected Utility Theory is a more appropriate model for choice under risk in entrepreneurs.

As for the hypothesis that entrepreneurs are overconfident, we devised a set of three tests. The first test, checks to see whether or not there is a difference between the entrepreneur's predicted odds of personal success differ from the odds of a similar business owner. The next two tests refer back to the quizzes and check whether the entrepreneurs think they did significantly better than the rest of the subject pool.

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
odds	26	2.192308	.5233597	2.668621	1.114428	3.270187

mean = mean(odds) t = 2.2782
Ho: mean = 1 degrees of freedom = 25

Ha: mean < 1 Ha: mean != 1 Ha: mean > 1
Pr(T < t) = 0.9842 Pr(|T| > |t|) = 0.0315 Pr(T > t) = 0.0158

As you can see from the above regression, the entrepreneurs surveyed think, on average, that they are 22 times more likely to succeed than any business like theirs. This is a strong argument in favor of overconfidence. This argument is again strengthened by the evidence that on the numbers quiz most entrepreneurs think they scored in the top 20-30%.

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
v55	26	7.153846	.3581676	1.826304	6.416186	7.891506

mean = mean(v55) t = 6.0135
Ho: mean = 5 degrees of freedom = 25

Ha: mean < 5 Ha: mean != 5 Ha: mean > 5
Pr(T < t) = 1.0000 Pr(|T| > |t|) = 0.0000 Pr(T > t) = 0.0000

Furthermore, non-entrepreneurs do not think they did any better on average.

One-sample t test

Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
v55	5	5.6	1.122497	2.50998	2.483448	8.716552

mean = mean(v55) t = 0.5345
Ho: mean = 5 degrees of freedom = 4

Ha: mean < 5 Ha: mean != 5 Ha: mean > 5
Pr(T < t) = 0.6893 Pr(|T| > |t|) = 0.6213 Pr(T > t) = 0.3107

However, for the MENSA quiz, entrepreneurs do not think their performance was significantly better or worse than the other subjects. Since all other tests have directed us towards overconfidence, perhaps the MENSA quiz establishes a bias for some unforeseen reason, such as a negative association with the name.

Regressions

Any standard discussion of the entrepreneur tends to include a probit regression modeling incentive to enter the market as an entrepreneur. Unfortunately, our sample is not large enough to put proper faith in regression analysis. However, some regressions have produced weakly significant results suggesting that with a larger, more normal sample, regressions be worthwhile and of economic interest. It is with this hope in mind that I chose not report the regression results.

Conclusions

There are many theories on what makes an entrepreneur. While some variation in the model is encouraged, it is useful to have a cohesive viewpoint, which can serve as a springboard for debate. In this experiment, subjects chose between a series gambles, which allowed us to measure not only their attitudes towards risk, but also parameters that measure probability distortion and loss aversion. These parameters are derived from Prospect Theory—the seminal work in behavioral economics. We also measured,

amongst other metrics, for overconfidence, a trait that seems to fit the model of the entrepreneur.

Significance testing showed that Prospect Theory is a more appropriate model than the standard Expected Utility Theory. Additionally, tests provided some evidence that the entrepreneurs surveyed are, indeed, overconfident. The experiment showed less risk-aversion in the entrepreneurial population, yet it is my personal opinion that entrepreneurs are either risk or uncertainty seeking. The findings regarding overconfidence only affirmed these beliefs.

That being said, much more research remains and is necessary. Physically, the subject pool was as robust as time allotted, but ideally could be stronger, with more survey responses. Our experiment covered time discounting, however, due to constraints, I was not able to introduce it in this paper. It should be noted that enterprising a business requires a great deal of patience and the discount rates of entrepreneurs is likely to be of economic interest. There also exist some ideological concerns with experimental economics. For example, the axiom of revealed preference is considered by some to be "vacuous, because it is silent on the question of motives and behavior" (Bowles 100)

Although I disagree with these concerns, it is important to keep note of them in a discussion of determinants of entrepreneurial start-up. Further study of which can help institute policies that can better incentivize people to become entrepreneurs, forecast entrepreneurial behavior, and train future and existing entrepreneurs, in turn growing the economy.

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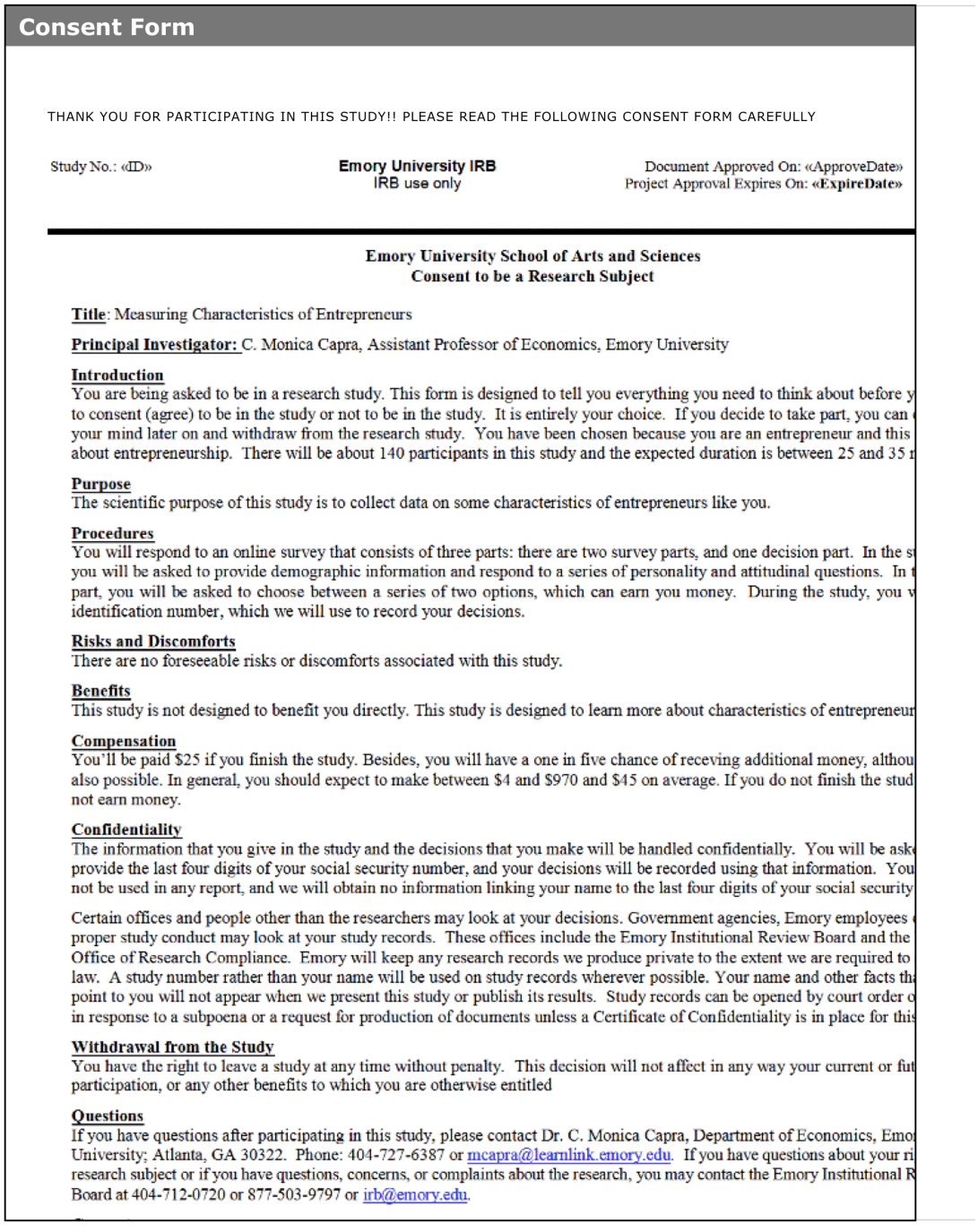
Appendix

Survey



Consent Form

THANK YOU FOR PARTICIPATING IN THIS STUDY!! PLEASE READ THE FOLLOWING CONSENT FORM CAREFULLY

Study No.: «ID»

Emory University IRB
IRB use only

Document Approved On: «ApproveDate»
Project Approval Expires On: **«ExpireDate»**

Emory University School of Arts and Sciences
Consent to be a Research Subject

Title: Measuring Characteristics of Entrepreneurs

Principal Investigator: C. Monica Capra, Assistant Professor of Economics, Emory University

Introduction
You are being asked to be in a research study. This form is designed to tell you everything you need to think about before y to consent (agree) to be in the study or not to be in the study. It is entirely your choice. If you decide to take part, you can your mind later on and withdraw from the research study. You have been chosen because you are an entrepreneur and this about entrepreneurship. There will be about 140 participants in this study and the expected duration is between 25 and 35 r

Purpose
The scientific purpose of this study is to collect data on some characteristics of entrepreneurs like you.

Procedures
You will respond to an online survey that consists of three parts: there are two survey parts, and one decision part. In the s you will be asked to provide demographic information and respond to a series of personality and attitudinal questions. In t part, you will be asked to choose between a series of two options, which can earn you money. During the study, you w identification number, which we will use to record your decisions.

Risks and Discomforts
There are no foreseeable risks or discomforts associated with this study.

Benefits
This study is not designed to benefit you directly. This study is designed to learn more about characteristics of entrepreneur

Compensation
You'll be paid $25 if you finish the study. Besides, you will have a one in five chance of receving additional money, althou also possible. In general, you should expect to make between $4 and $970 and $45 on average. If you do not finish the stud not earn money.

Confidentiality
The information that you give in the study and the decisions that you make will be handled confidentially. You will be ask provide the last four digits of your social security number, and your decisions will be recorded using that information. You not be used in any report, and we will obtain no information linking your name to the last four digits of your social security

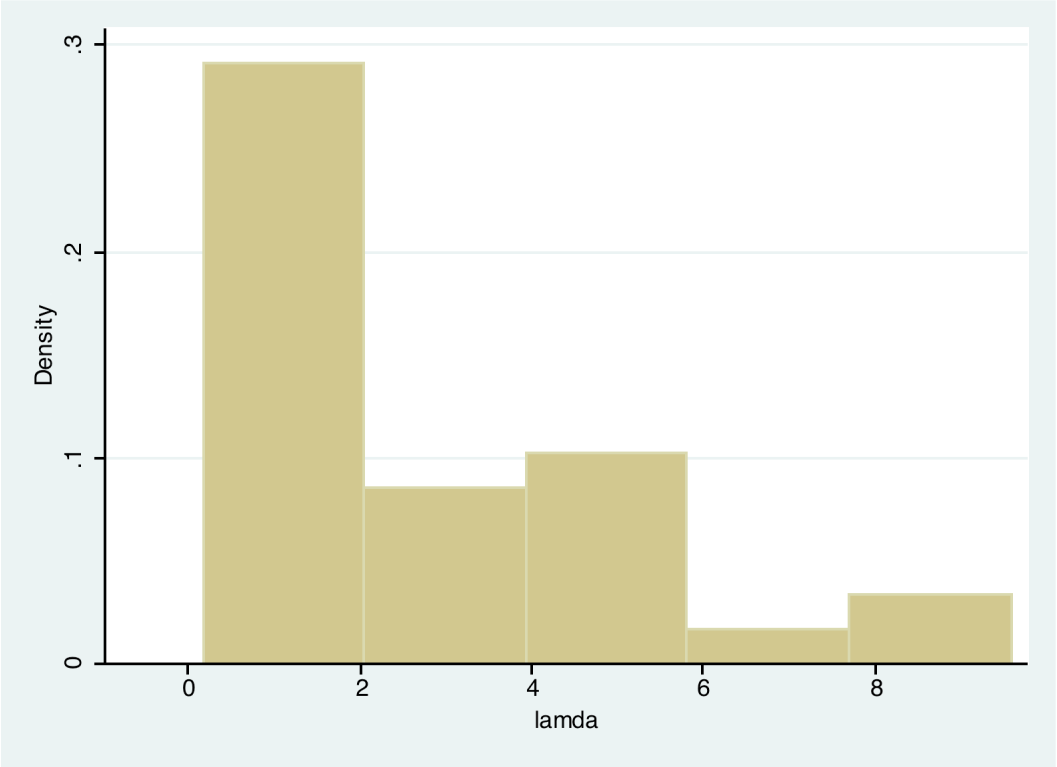
Certain offices and people other than the researchers may look at your decisions. Government agencies, Emory employees proper study conduct may look at your study records. These offices include the Emory Institutional Review Board and the Office of Research Compliance. Emory will keep any research records we produce private to the extent we are required to law. A study number rather than your name will be used on study records wherever possible. Your name and other facts th point to you will not appear when we present this study or publish its results. Study records can be opened by court order o in response to a subpoena or a request for production of documents unless a Certificate of Confidentiality is in place for this

Withdrawal from the Study
You have the right to leave a study at any time without penalty. This decision will not affect in any way your current or fut participation, or any other benefits to which you are otherwise entitled

Questions
If you have questions after participating in this study, please contact Dr. C. Monica Capra, Department of Economics, Emo University; Atlanta, GA 30322. Phone: 404-727-6387 or mcapra@learnlink.emory.edu. If you have questions about your ri research subject or if you have questions, concerns, or complaints about the research, you may contact the Emory Institutional R Board at 404-712-0720 or 877-503-9797 or irb@emory.edu.

Distribution of parameters

Lambda



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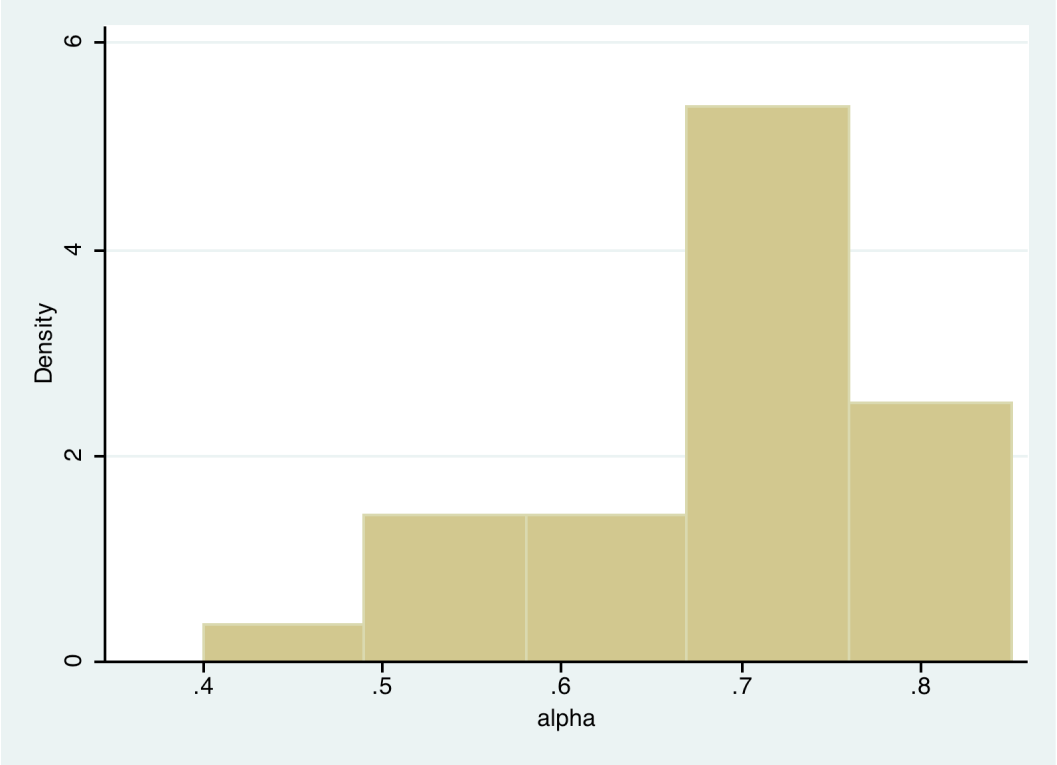
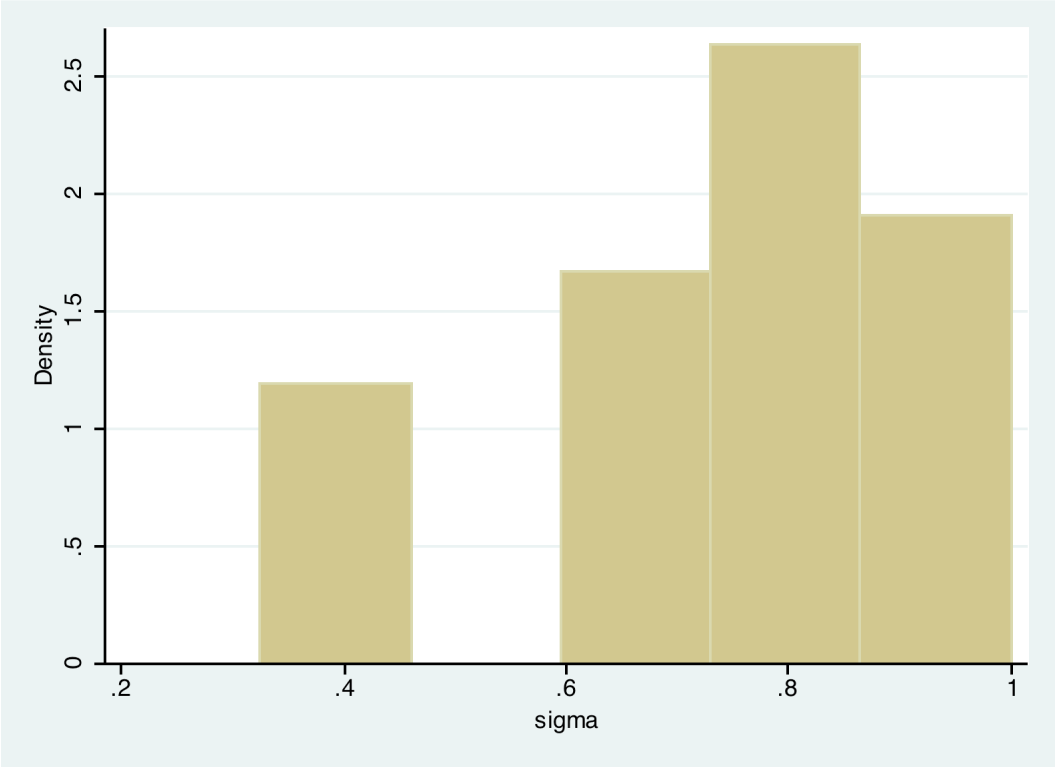


Sigma



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Consent

By proceeding with the survey, you are consenting.

Please note that by proceeding with the survey, you are consenting

*** You may contact me in the future for similar research studies**

- ◯ Yes
- ◯ No

Demographic Information

Would you like to learn about your characteristics as an entrepreneur? If so, click the box below. We would be happy to send you the results.

- ◯ YES - send me my characteristics
- ◯ NO - don't send me my characteristics

*** Age**

*** Sex**

*** Height (in inches)**

*** Weight (in pounds)**

*** Number of children**

*** Marital Status**

- ◯ Single
- ◯ Married
- ◯ Living with Partner

*** Race (please see note below)***

- ◯ American Indian or Alaska Native
- ◯ Asian
- ◯ Black or African American
- ◯ Hispanic or Latino
- ◯ Native Hawaiian or Other Pacific Islander
- ◯ White (non-Hispanic)

*** What is your highest degree?**

*** Area of Specialty? (ex: Economics, Engineering, Finance, Marketing, Management, Medicine & Biology, Math & Computer Science, etc)**

* In what country(s) were your parents born?

parent 1

parent 2

* In what country were you born?

- ◯ In the United States
- ◯ Other

If other, please specify

How long have you been living in the US (in years)?

*Hispanic or Latino- A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race.

American Indian or Alaska Native (not Hispanic or Latino)- A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

Asian (not Hispanic or Latino)- A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Black or African American (not Hispanic or Latino)- A person having origins in any of the Black racial groups of Africa.

Native Hawaiian or Other Pacific Islander (not Hispanic or Latino)- A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

White (not Hispanic or Latino)- A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

Behavioral

* **How many cigarettes per day do you smoke on average?**

* **Have you ever smoked?**

* **How many alcoholic beverages do you consume per week on average?**

Entrepreneur

*** Are you an entrepreneur?**

- ◯ Yes
- ◯ No

Business ownership

*** Do you currently own a business?**

- ◯ Yes
- ◯ No

Business Information

*** Did you start your business?**

- ◯ Yes, I started it
- ◯ No, someone else started it

*** How long has your business been in operation (in months)?**

*** How many people does your business employ (including yourself)?**

*** What is the net annual income of your business as a whole?**

- ◯ less than 10,000
- ◯ 10,000-50,000
- ◯ 50,000-100,000
- ◯ 100,000-500,000
- ◯ 500,000-1,000,000
- ◯ 1,000,000 or more

*** By how many percentage points do you expect your business to grow in the next three years?**

*** Regardless of the current economic context, would you say that you have attained the success you expected? Why?**

*** What type of business do you own?**

ex: consulting, financial planning, health services, legal services, lawn care, retail, restaurant, etc.

Chances of Success

*** What are the odds of YOUR business / business idea succeeding?**

- ◯ 1 out of 10
- ◯ 2 out of 10
- ◯ 3 out of 10
- ◯ 4 out of 10
- ◯ 5 out of 10
- ◯ 6 out of 10
- ◯ 7 out of 10
- ◯ 8 out of 10
- ◯ 9 out of 10
- ◯ 10 out of 10

*** What are the odds of any business like yours succeeding?**

- ◯ 1 out of 10
- ◯ 2 out of 10
- ◯ 3 out of 10
- ◯ 4 out of 10
- ◯ 5 out of 10
- ◯ 6 out of 10
- ◯ 7 out of 10
- ◯ 8 out of 10
- ◯ 9 out of 10
- ◯ 10 out of 10

Intro to main contents

You'll be directed to new contents of our survey, which includes making choices for 4 tasks and completing a series of characteristics related questions.

You will be paid $25 for finishing this study. In addition, there is a 4 in 5 chance of receiving additional money from your decisions in one of 4 tasks (Task 1, Task 2, Task 3, and Task 4). The chance that any one of these four tasks will count is the same and equal to 1 in 5. There is also a 1 in 5 chance of not getting additional money.

In the case that none of your decisions count towards your payment, you will receive $25.00. However, if your decisions in one of the four tasks happen to count, you can expect your earnings to be between $4 and $970 and $45, on average.

Task 1: Instructions

In this part, you will make one choice. Your choice and chance determine how much money you make. This task has ten questions similar to the one shown in the example below. In each question, we will offer you two plans: Plan A and Plan B. Then you will need to choose when you want to switch from Plan A to Plan B.

Note that one of ten questions will be randomly chosen to count for real money. For this chosen question, we will then draw a number between 1 and 10 to determine the number of the Ball and your payoffs.

The random process that determines which question counts and the number of the Ball has been validated by the World Chamber of Commerce and its President.

Example: Suppose Question #1 (shown below) is randomly selected among the 10 questions to count towards your payment.

Plan A for Question #1 provides earnings of $40 if the Ball Number 1, 2, or 3 is randomly drawn. If the Ball number 4, 5, 6, 7, 8 ,9, or 10 is drawn, the plan provides $10. Plan B for Question #1 provides earnings of $75 if the Ball Number 1 is randomly drawn, otherwise, the plan provides $5.

EXAMPLE:
- Suppose you choose Plan A for this question and the Ball number is 3, then you will make $40
- Suppose you choose Plan B for this question and the Ball number is 3, then you will make $5

	Plan A	Plan B
1	$40 if Balls No. 1-3 $10 if Balls No. 4-10	$75 if Ball No. 1 $5 if Balls No. 2-10

*** Make sure you understand the instructions, before pressing the "NEXT" button.**

- ◯ Yes, I understand
- ◯ No, I don't quite understand

TASK 1

TASK 1: Choose either Plan A or Plan B for each question 1 through 10.

	Plan A	Plan B
1	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$75 if Ball No. 1 \$5 if Balls No. 2-10
2	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$93 if Ball No. 1 \$5 if Balls No. 2-10
3	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$125 if Ball No. 1 \$5 if Balls No. 2-10
4	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$145 if Ball No. 1 \$5 if Balls No. 2-10
5	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$170 if Ball No. 1 \$5 if Balls No. 2-10
6	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$210 if Ball No. 1 \$5 if Balls No. 2-10
7	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$280 if Ball No. 1 \$5 if Balls No. 2-10
8	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$400 if Ball No. 1 \$5 if Balls No. 2-10
9	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$595 if Ball No. 1 \$5 if Balls No. 2-10
10	\$40 if Balls No. 1-3 \$10 if Balls No. 4-10	\$945 if Ball No. 1 \$5 if Balls No. 2-10

*** I choose plan A for questions 1 through _____. (choose none if you do not want to choose plan A for any of the questions). For all other questions, I choose B.**

Task 2

TASK 2: Similar to TASK 1, please choose either Plan A or Plan B for each question 11 through 20.

Note that one of 10 questions will be randomly chosen to count for real money. For this chosen question, we will then draw a number between 1 and 10 to determine the number of the Ball and your payoffs.

	Plan A	Plan B
11	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$54 if Ball No. 1-7 \$5 if Balls No. 8-10
12	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$56 if Ball No. 1-7 \$5 if Balls No. 8-10
13	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$58 if Ball No. 1-7 \$5 if Balls No. 8-10
14	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$60 if Ball No. 1-7 \$5 if Balls No. 8-10
15	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$62 if Ball No. 1-7 \$5 if Balls No. 8-10
16	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$65 if Ball No. 1-7 \$5 if Balls No. 8-10
17	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$68 if Ball No. 1-7 \$5 if Balls No. 8-10
18	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$72 if Ball No. 1-7 \$5 if Balls No. 8-10
19	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$83 if Ball No. 1-7 \$5 if Balls No. 8-10
20	\$40 if Balls No. 1-9 \$30 if Balls No. 10	\$100 if Ball No. 1-7 \$5 if Balls No. 8-10

*** I choose Plan A for questions 11 through _____. (choose none if you do not want to choose plan A for any of the questions). For all other questions, I choose B.**

Task 3

TASK 3: Please pay extra attention to this series because it is possible to lose money.
Any losses will be subtracted from your $25.00 participation fee.

Like previous tasks, please choose either Plan A or Plan B for each question 21 through 25.

Note that one of 5 questions will be randomly chosen to count for real money. For this chosen question, we will then draw a number between 1 and 10 to determine the number of the Ball and your payoffs.

	Plan A	Plan B
21	Receive $4 if Balls No. 1-5 Lose $4 if Balls No. 6-10	Receive $30 if Balls No. 1-5 Lose $21 if Balls No. 6-10
22	Receive $1 if Balls No. 1-5 Lose $4 if Balls No. 6-10	Receive $30 if Balls No. 1-5 Lose $21 if Balls No. 6-10
23	Receive $1 if Balls No. 1-5 Lose $4 if Balls No. 6-10	Receive $30 if Balls No. 1-5 Lose $16 if Balls No. 6-10
24	Receive $1 if Balls No. 1-5 Lose $8 if Balls No. 6-10	Receive $30 if Balls No. 1-5 Lose $16 if Balls No. 6-10
25	Receive $1 if Balls No. 1-5 Lose $8 if Balls No. 6-10	Receive $30 if Balls No. 1-5 Lose $14 if Balls No. 6-10

*** I choose plan A for questions 21 through _____. (choose none if you do not want to choose plan A for any of the questions). For all other questions, I choose B.**

Numbers

Answer the following questions to the best of your ability.

*** Imagine that we roll a fair, six-sided die 1,000 times. Out of 1,000 rolls, how many times do you think the die would come up even (2, 4, or 6)**

*** In the BIG BUCKS LOTTERY, the chances of winning a $10.00 prize are 1%. What is your best guess about how many people would win a $10.00 prize if 1,000 people each buy a single ticket from BIG BUCKS?**

*** In the ACME PUBLISHING SWEEPSTAKES, the chance of winning a car is 1 in 1,000. What percent of tickets of ACME PUBLISHING SWEEPSTAKES win a car?**

*** Which of the following numbers represents the biggest risk of getting a disease?**

- ◯ 1 in 1000
- ◯ 1 in 100
- ◯ 1 in 10

*** Which of the following represents the biggest risk of getting a disease?**

- ◯ 10%
- ◯ 1%
- ◯ 5%

*** If Person A's risk of getting a disease is 1% in ten years, and Person B's risk is double that of A's, what is B's risk?**

*** If Person A's chance of getting a disease is 1 in 100 in ten years, and Person B's risk is double that of A, what is B's risk?**

*** If the chance of getting a disease is 10%, how many people would be expected to get the disease out of 100?**

* **If the chance of getting a disease is 10%, how many people would be expected to get the disease out of 1000?**

* **If the chance of getting a disease is 20 out of 100, this would be the same as having a _____% chance of getting the disease.**

* **The chance of getting a viral infection is .0005. Out of 10,000 people, about how many of them are expected to get infected?**

* **Please estimate how well you believe you did in this question compared to other entrepreneurs.**

Mensa Quiz

For the following quiz, please try to do as well as you can.

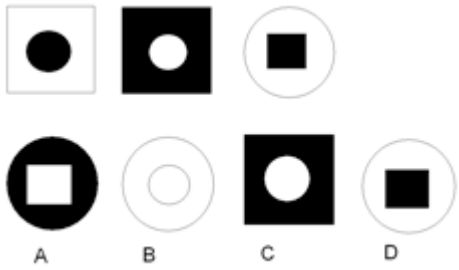
*** Which one of these numbers is least like the others?**

◯ 1 ◯ 3 ◯ 5 ◯ 7 ◯ 11 ◯ 13 ◯ 15

*** Two men, starting at the same point, walk in opposite directions for 4 meters, turn left and walk another 3 meters. What is the distance between them?**

◯ 2 ◯ 6 ◯ 10 ◯ 12.5 ◯ 14

*** You have 24 socks in a drawer, 6 each of brown, black, white, and red. How many socks must you take out of the drawer to be sure of having a matched pair (of any color)?**



*** Which lettered figure best completes the series above?**

◯ A ◯ B ◯ C ◯ D

*** Continue the following number series with the group of numbers that best continues the series.**
1 10 3 9 5 8 7 7 9 6 ? ?

◯ 11 5 ◯ 10 5 ◯ 10 4 ◯ 11 6

*** Please estimate how well you believe you did in this quiz compared to other entrepreneurs taking the quiz.**

Task 4: Instructions

TASK 4: There are 20 questions in this section numbered 1 through 20. Like in the previous part, in each question, we will offer you two plans: Plan A and Plan B. We would like you to choose either Plan A or Plan B for each question.

Plan A provides a secure payment "IN 30 DAYS". Plan B provides another secure payment "IN 90 DAYS". You need to choose which plan seems more appealing to you for each question.

If this task (Task 4) counts for you, one of the 20 questions will count towards your payment. We use a random number generator to select the question that counts. This random process has been validated by the World Chamber of Commerce and its President. Depending on the choices you make, "Pays in 30 days" means that a check will be sent to you in exactly 30 days. "Pays in 90 days" means that the check will be sent to you in exactly 90 days.

Note:
AR = Simple nominal rate
AER = Compound nominal rate (compounded daily)

In addition, according to Bankrate.com, current Money Market Account annual rates in Georgia are no more than 2%.

	Plan A "Pays in **30** days"	Plan B "Pays in **90** days"	AR	AER
1	$ 100.00	$ 100.33	1.99%	2.01%
2	$ 100.00	$ 100.84	4.99%	5.12%
3	$ 100.00	$ 101.34	7.99%	8.32%
4	$ 100.00	$ 102.02	11.99%	12.74%
5	$ 100.00	$ 102.70	15.99%	17.34%
6	$ 100.00	$ 103.39	19.99%	22.12%
7	$ 100.00	$ 104.25	24.99%	28.38%
8	$ 100.00	$ 105.12	29.99%	34.96%
9	$ 100.00	$ 106.00	34.99%	41.87%
10	$ 100.00	$ 106.89	39.99%	49.13%
11	$ 100.00	$ 107.96	45.99%	58.35%
12	$ 100.00	$ 109.04	51.99%	68.12%
13	$ 100.00	$ 110.14	57.99%	78.50%
14	$ 100.00	$ 111.24	63.99%	89.52%
15	$ 100.00	$ 112.55	70.99%	103.24%
16	$ 100.00	$ 113.87	77.99%	117.94%
17	$ 100.00	$ 115.20	84.99%	133.71%
18	$ 100.00	$ 116.74	92.99%	153.13%
19	$ 100.00	$ 118.30	100.99%	174.15%
20	$ 100.00	$ 120.09	109.99%	199.89%

*** I choose Plan A for question 1 through _____. (choose none if you do not want to select plan A for any of the questions). For all other questions, I choose B.**

Explain

*** In the space provided, please write an explanation as for why you made the switch from Option A to Option B**

*** Please check the explanation that best describes your choice**

- ◯ It is better to switch to Plan B earlier, because even if I want to buy something with it sooner, I can use money from my savings account.
- ◯ It is better to switch to Plan B earlier, because it is worth waiting for the additional money.
- ◯ It is better to switch to Plan B latter, because it is NOT worth waiting for the additinal money.
- ◯ It is better to switch to Plan B latter, because it is NOT worth waiting if I want to buy something sooner with that money.
- ◯ None of the above.

*** I based my decision entirely on the AR (annual rate) and AER (annual effective rate) provided**

◯ I agree totally ◯ I agree partially ◯ I disagree ◯ I do not know

Motivation

Read each item carefully. Using the scale below, please select the number that best describes why you are, or why you want to become an entrepreneur. Answer each item according to the following scale:

1-corresponds not at all
2-corresponds a very little
3-corresponds a little
4-corresponds moderately
5-corresponds enough
6-corresponds a lot
7-corresponds exactly

Why are you currently running you own business?

-OR-

Why are you looking to start your own business?

Because I think that it is interesting

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7

Because I am doing it for my own good.

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7

Because I am supposed to do it.

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7

There may be good reasons to do this activity, but personally I don't see any.

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7

Because I think this activity is pleasant.

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7

Because I think this activity is good for me.

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7

Because it is something that I have to do.

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7

I do this activity, but I am not sure if it is worth it.

◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5 ◯ 6 ◯ 7

Because this activity is fun.

1 2 3 4 5 6 7

By personal decision.

1 2 3 4 5 6 7

Because I don't have any choice.

1 2 3 4 5 6 7

I don't know; I don't see what this activity brings me.

1 2 3 4 5 6 7

Because I feel good when doing this activity.

1 2 3 4 5 6 7

Because I believe this activity is important for me.

1 2 3 4 5 6 7

Because I feel I have to do it.

1 2 3 4 5 6 7

I do this activity, but I am not sure it is a good thing to pursue it.

1 2 3 4 5 6 7

Attitudes 1

Please be as honest and accurate as you can throughout. Try not to let your response to one statement influence your responses to other statements. There are no "correct" or "incorrect" answers. Answer according to your own feelings, rather than how you think "most people" would answer.

In uncertain times, I usually expect the best.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

It's easy for me to relax.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

If something can go wrong for me, it will.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

I'm always optimistic about my future.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

I enjoy my friends a lot.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

It's important for me to keep busy.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

I hardly ever expect things to go my way.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

I don't get upset too easily.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

I rarely count on good things happening to me.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

Overall, I expect more good things to happen to me than bad.

- ◯ I agree a lot
- ◯ I agree a little
- ◯ I neither agree nor disagree
- ◯ I DISagree a little
- ◯ I DISagree a lot

Satisfaction

On a scale of 1 to 10, 10 being the most and 1 being the least, how satisfied are you with your LIFE right now?

- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5
- ◯ 6
- ◯ 7
- ◯ 8
- ◯ 9
- ◯ 10

On a scale of 1 to 10, 10 being the most and 1 being the least, how satisfied are you with your JOB right now?

- ◯ 1
- ◯ 2
- ◯ 3
- ◯ 4
- ◯ 5
- ◯ 6
- ◯ 7
- ◯ 8
- ◯ 9
- ◯ 10

Attitudes 2

Each item of this questionnaire is a statement that a person may either agree with or disagree with. For each item, indicate how much you agree or disagree with what the item says. Please respond to all the items; do not leave any blank. Choose only one response to each statement. Please be as accurate and honest as you can be. Respond to each item as if it were the only item. That is, don't worry about being "consistent" in your responses.

A person's family is the most important thing in life.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

Even if something bad is about to happen to me, I rarely experience fear or nervousness.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I go out of my way to get things I want.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

When I'm doing well at something I love to keep at it.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I'm always willing to try something new, if I think it will be fun.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

How I dress is important to me.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

When I get something I want, I feel excited and energized.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

Criticism or scolding hurts me quite a bit.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

When I want something, I usually go all-out to get it.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I will often do things for no other reason than that they might be fun.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

It's hard for me to find the time to do things such as get a haircut.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

If I see a chance to get something I want I move on it right away.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I feel pretty worried or upset when I think or know somebody is angry at me.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

When I see an opportunity for something I like I get excited right away.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I often act on the spur of the moment.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

If I think something unpleasant is going to happen I usually get pretty "worked up."

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I often wonder why people act the way they do.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

When good things happen to me, it affects me strongly.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I feel worried when I think I have done poorly at something important.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I crave excitement and new sensations.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

When I go after something I use a "no holds barred" approach.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I have very few fears compared to my friends.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

It would excite me to win a contest.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

I worry about making mistakes.

- ◯ very true for me
- ◯ somewhat true for me
- ◯ somewhat false for me
- ◯ very false for me

Mailing Address

*** Please enter below the mailing address to which we can send the check with your earnings. We will keep this information safe, and we will not share it with anyone.**

Address:

Address 2:

City/Town:

State:

ZIP/Postal Code:

Email Address:

Please read carefully

YOU HAVE NOW FINISHED THE SURVEY. THANK YOU!!

PAYMENTS

We will send you a payment of $25 for your participation.

In addition to the $25 participation fee, there is four in five chance that you will get additional payments for either of your decisions from Tasks 1, Task 2, Task 3 or Task 4.

If you are one of those people, we will calculate your total earnings from Tasks 1, 2, or 3 and write you a check for the total amount in US dollars. For Task 4, depending on your choice and chance, we will send you an additional check exactly in 30 days or 90 days from today.

PLEASE PRESS "DONE" BEFORE NAVIGATING TO ANOTHER SITE. THE SURVEY IS NOT FINISHED IF YOU DON'T PRESS "DONE". ON THE NEXT PAGE, YOU WILL BE DIRECTED TO A SITE THAT EXPLAINS HOW THE DRAWS OF THE RANDOM NUMBERS ARE DETERMINED.

You may use the space below to write questions, comment on the survey, or express concerns. You may also send us an e-mail at bjiang2@emory.edu