Juvenile Offenders' Risky Decision-Making Behavior

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Abstract

We examined the choices of 52 adolescents (18 years of age); 26 were enrolled in an alternative to incarceration program and 26 were university undergraduates. Respondents were presented with a gambling task and were shown two spinners, one offering a sure gain (or loss), the second offering a gamble (probabilities of the gamble included ½, 1/3 and ¼; magnitudes of the gamble included low, medium and high monetary amounts). Participants received 18 trials, nine framed as gains and nine framed as losses (each gain condition was analogous to a loss condition) and individuals were asked to report their confidence after each scenario. In the gain frame, respondents began with nothing and were offered a choice between a sure gain and a gamble offering the possibility of winning larger amounts or winning nothing. For the loss frame, individuals were given an endowment and could lose an amount for sure or take a chance and risk losing nothing or risk losing everything. In each corresponding gain and loss pair, the net sum that could be won was kept equal. In addition, respondents completed surveys on sensation seeking, behavioral inhibition and behavioral activation.

Data analysis was conducted both without and with the confidence ratings. In both regressions, delinquents scored significantly higher on sensation seeking in the gain frame, but not in the loss frame. In the first ANOVA, magnitude was a significant effect as was the interaction between magnitude and the population of the participant. Delinquents were more likely to choose the gamble regardless of the magnitude, while undergraduates picked the sure option at higher magnitudes. Also, a three way interaction was found between framing, probability and magnitude. The second ANOVA, replicated these findings and probability became a significant effect. Such results highlight the potential benefit of programs that work to enhance decision-making processes in order to prevent initial crime or potential recidivism.

Juvenile Offenders' Risky Decision-Making Practices

The Growth of Incarceration

The incarceration rate in the United States has been on the rise, with increases in the rates of both juvenile and adult offenders. According to the Bureau of Justice Statistics for 2005, nearly 2.2 million inmates are in the nation's prisons and jails and nearly 12% of black males in their late 20's are incarcerated (Thoma, 2005). The obvious racial discrepancy in prison populations and the growing rate at which people are incarcerated shed light on the reality that little is being done to develop successful prevention or rehabilitation programs for those at risk or involved in the system (Cullen & Gendreau, 2000). Presently, the focus is not on individual reformation, yet more than a half of a million people complete their prison sentence and return to society (The Sentencing Project, 2005).

Attempts have been made to reform both sentencing and correction policy. Such reforms however, have had little success, as evidenced by the increased rate of individuals incarcerated for nonviolent crimes including drug and property offenses (The Sentencing Project, 2002). Empirical research has evaluated potential causes and decision-making practices that may lead to criminal behavior and delinquency, including individual, family and community factors, yet a clear method to predict future criminality and violent tendencies has been unsubstantiated (Elliott, Ageton & Cantor, 1979; Farrington, 1998; Harper & McLanahan, 2004). Nevertheless, research suggests continuity between youth delinquency and later adult criminality (Fried & Reppucci, 2001). It is clear that if criminal mentality or causes of delinquency are better understood, the chance to take preventative measures would be more available and successful.

Criminal Decision-making

There has been much debate as to why some individuals commit crimes, while others do not. From the sociological perspective, the Anomie/Strain Perspective describes delinquency as the result of socially constructed pressures or stress (Elliott, Ageton & Cantor, 1979). When a limited number of opportunities are available in order to acquire conventional goals, the motivation to engage in delinquent behavior is activated (Cloward & Ohlin, 1960). From this perspective, three main factors contribute to the development of delinquent behavior: limited or blocked opportunities (creating a strain on the individual), alienation, and the seeking out of other groups and settings where delinquent behavior is acquired, fostered and reinforced through social learning (Cloward & Ohlin, 1960; Elliott & Voss, 1974). With the application of this theory, low socioeconomic youths and members of disadvantaged populations have higher concentrations of delinquent subcultures since they have less access to opportunities and resources (Cloward & Ohlin, 1960).

While Strain Theory assumes that an individual will only exhibit delinquent behavior if they do not have the necessary opportunities to achieve socially valued goals, Control Theories highlight the importance of an individual internalizing and accepting as their own, these socially valued objectives. Without a commitment to societal norms, delinquent behavior is likely to occur (Reiss, 1951). An example of this theory can be found when considering the societal belief that it is important to respect the police. Some individuals, particularly those who feel they have been mistreated by the police in the past, may not have a commitment to this value or societal norm. As a result, these individuals may become involved in events that defy this belief, such as resisting arrest or assaulting an officer. Within this framework, the variables of importance involve both inadequate socialization

(and therefore the inability to internalize societal norms) and integration into particular societal groups which foster external and social controls on behavior (Elliott, Ageton & Cantor, 1979).

A more comprehensive approach for explaining delinquency has combined both the Strain and Control Theories of delinquency. Entitled the Strain-Control Perspective, it is assumed that different youths experience varying levels of socialization at early ages, and as a result, the individual's level of commitment and integration into the societal group is influenced (Elliott, Ageton & Cantor, 1979). Therefore, the main focus rests on a youth's initial bonds and the strength of such relationships. Within this framework, "limited opportunities, failure to achieve valued goals, negative labeling experiences, and social disorganization at home and in the community are all experiences which may attenuate one's ties to the conventional social order and may thus be causal factors in the developmental sequence leading to delinquent behavior…" (Elliott, Ageton & Cantor, 1979, 11). This theory attempts to integrate varying causes of delinquency, stressing research that has shown the impact of family structure and community influence (i.e. parental divorce and discord, economic depression and unemployment) on delinquency (Glueck & Glueck, 1970; Harper & McLanahan, 2004; Rosen, 1970).

Another integrated attempt to explain delinquency focuses on the predictors or potential causes of male youth violence. Farrington (1998) argues that youth violence is an extension of childhood aggression. Therefore, he has categorized long-term predictors of youth violence by focusing on biology, family, community and individual factors. This general theory of causes presented by Farrington (1998) is based on a combination of numerous empirical studies. Accordingly, predictors of delinquency include low heart rate,

high impulsiveness and low intelligence, poor supervision, harsh discipline, a violent parent, large family size, a young mother, a broken family, peer delinquency, low socioeconomic status, urban residence and a high crime neighborhood (Farrington, 1998). In addition, immediate influences that have been suggested to influence criminality include factors that may be present at the times of violent, delinquent acts, including individual motives and actions.

An individual's focus on immediacy or the present situation has been examined in greater depth. One popular explanation has been that delinquents are less future oriented and pay less attention to the potential consequences of their actions when compared to peers that are law abiding. According to Fried and Repucci (2001), most theories that have analyzed judgment and decision-making have hypothesized that adolescent decision-making is hindered by cognitive deficiencies. However, Fried and Repucci (2001) argue that the understanding of consequences and pressures may have more of an impact than actual cognitive deficiencies, which was explored in their questionnaire, The Criminal Decision-Making Questionnaire (CDMQ). CDMQ incorporated a variety of scales to gain a more comprehensive understanding of factors that influence criminal behavior. Subjects watched a video and were asked at various points in the viewing to answer questions related to potential consequences, risk perception and peer influence. Similarly, four additional scales were conducted, including: Berndt's Vignettes of Peer Influence (which gave subjects hypothetical situations in order to measure resistance to peer influence, i.e. shoplifting), Benthin, Slovic and Severson's Scale of Risk Perception (which had subjects evaluate six risky behaviors to measure perceived levels of dangerousness, i.e. stealing) and the Kaufman Brief Intelligence Test and the Stanford Time Perspective Inventory (which measured views of long-term

consequences). Accordingly, they found that adolescents who were detained at the time of the interview, mentioned more future consequences (i.e. police contact, getting arrested and parental punishment) and were less likely to anticipate peer pressure than were nondetained youth (Fried & Repucci, 2001) .

Results from the previously mentioned study are difficult to interpret however, since 57.1% of members who were considered members of the nondetained group had prior involvement with the juvenile justice system. In addition, it is likely that results were highly skewed by recent experience with the justice system, since those currently in detention would be more knowledgeable of future consequences of criminal behavior since they were in the process of dealing with such repercussions. Nevertheless, similar conclusions about future orientation were also drawn by Wilson and Daly (2006), whose research suggests that youth offenders were not significantly different in discounting the future. Subjects were given measures to analyze the ability to postpone consequences (for example would you rather $x tomorrow or $y, z days from now) and the ability to foresee future milestones (where subjects were given a list of milestones and asked whether they already happened, would happen, or would never happen). When compared to a control group of a law abiding population, the criminal population was not found to be different in their future perspective. Therefore, the evidence about the association between criminality and future orientation is mixed.

Not only have researchers attempted to understand differences between incarcerated youth and law abiding controls, but also, who is most dangerous amongst a group of criminals (Kanz, 2006). Using the Self-Control Scale, as well as the Iowa Gambling Task, Kanz examined an incarcerated population's choice behavior in gambling situations. The

Iowa Gambling Task was used to simulate "real life decision-making." The task was performed on a computer with four decks of cards, with 60 cards in each deck. Individuals were asked to select one card from each of the four decks. After each selection, participants were told that they either won money, or that they won some money and lost some money (amounts were not given). The goal of the game was to win as much money as possible. Subjects were told they could win if they stayed away from the worst decks. There is a steep learning curve in which individuals learn to pick fewer cards from the disadvantageous decks.

This study, based on Self-Control Theory, is based on the idea that individuals who lack self-control also exhibit characteristics such as impulsivity, insensitivity, and short-sightedness. The Gambling Task is used as a measure of both "decision-making and insensitivity to future consequences" (Kanz, 2006, 5). Kanz (2006) found that criminal risk may be related to poor self control but not to performance on the Gambling Task. In addition, both decision-making and self control significantly accounted for the inmates' variance in risk (whether the inmate was in minimum, medium or maximum custody). Therefore, correctional practice, in assessing inmates' security risk and treatment options, would benefit from further examining self control and decision-making (Kanz, 2006).

While the previously mentioned research shed light on the factors that influence delinquency or predicting how dangerous a criminal may be when incarcerated, other researchers have explored the association in predicting repeated or habitual relapses in crime, known as recidivism. Developed by Wong & Gordon (2006), the Violence Risk Scale (VRS) was developed in order to assess and predict recidivism as well as to develop programs that include violence reduction interventions. Both static and dynamic variables were used to

assess each individual. Static variables focused on analyzing the individual's criminal history, such as their age when their first violent criminal conviction took place, the number of young offender convictions they accumulated, the violence that existed throughout their life span, their prior release failures or escapes, and their family background. Dynamic variables focused on criminal attitude, including interpersonal aggression, weapon use, insight into violence, violence cycle, impulsivity, and cognitive distortion. Accordingly, higher ratings on the static variables indicated higher levels of dysfunctional and anti-social behavior while dynamic variables were viewed as risk predictors that could be used as treatment targets. There were strong linear relationships between violent reconvictions and VRS total scores and VRS dynamic scores, with R^2 of .84 and .97, respectively. Similar strong linear relationships were obtained for nonviolent reconvictions and VRS total and VRS dynamic scores, with R^2 of .92 and .91, respectively.

The correlation of the mean of the 6 static variables with the mean of the 20 dynamic variables was .67 ($p < .001$). All correlations of VRS total score, VRS static score, and VRS dynamic score with presence or absence of violent, nonviolent, and all reconvictions for follow-up years of 1, 2, 3 and 4.4 were significant ($p <.001$, two-tailed). As a result, the VRS was shown to be a successful tool in assessing violent risk and a tool to guide intervention.

The VRS took into account the variable of recidivism in an adult population. In research conducted by Evans, Brown and Killian (2002), juvenile recidivism was also studied. They examined decision-making after incarcerated youth have been released from detention and related factors contributing to juvenile recidivism (Evans, Brown & Killian, 2002). Survey data was taken from two Nevada youth detention facilities looking at demographics, youth characteristics, decision-making skills and post detention likelihood to

succeed. The decision-making scale, Generating Options and Considering Consequences, focused on understanding the individual's sense of control over decision-making. Key items included "generating options, considering consequences, evaluating decisions and decision-making efficacy" (Evans, Brown & Killian, 2002, 558).

The abovementioned decision-making capacity was later analyzed with the Post-Detention Likelihood to Succeed Scale (PDLSS), in order to asses a detainee's potential for success. Questions such as, "After leaving here, how likely do you think you will…?" aimed to evaluate how the individual's behavior and motivations might have changed after the incarceration. The PDLSS is based on four main philosophies: "youth who reoffend or use substances are more likely to be delinquent, youth who reenter an antisocial network are more likely to be delinquent, youth who reduce conflict with others are less likely to be delinquent, and youth who are involved in prosocial activities are less likely to be delinquent" (Evans, Brown & Killian, 2002, 558-59).

Results indicated that youth who scored higher on levels of decision-making also scored higher on post detention success. Such results demonstrate the need to develop interventions that enhance adolescent decision-making abilities which would have a potential impact on school retention, responsibility and reduced levels of recidivism (Evans, Brown & Killian, 2002). In addition, the numerous factors that have been empirically associated with criminal behavior shed light on the true complexity that exists when it comes to explaining criminal behavior.

Problem Behavior Theory

In order to explain variations that occur between individuals and across groups, the Problem Behavior Theory has organized a framework that contains both social and

psychological influences. Rather than focusing on biology, medicine or genetics to explore behavior, Problem Behavior Theory relies more heavily on environmental characteristics. Such variables include psychological, social and behavioral characteristics in addition to characteristics of the present environment (Jessor, 1987). While most research that sought to demonstrate the existence of this model focused on adolescent drinking behavior, the framework has shown to provide valuable insight into evaluating other risk behaviors such as marijuana use, early sexual behavior, risky driving and delinquent type behavior (Costa, Jessor, Donovan & Fortenberry, 1995; Donovan, Jessor & Costa, 1991; Jessor, 1987).

Donovan and Jessor (1985) conducted three separate studies to examine the relationship between problem behavior and conventional behavior (behavior that conforms to societal norms i.e. church attendance and school performance). More specifically, they examined the relationship between adolescent problem behaviors and a single, common factor, unconventionality in adolescence. In the first study, which was longitudinal, four measures of problem behavior were included: times drunk, frequency of marijuana use, frequency of sexual experience and general deviant behavior. The correlations among the four abovementioned variables were significant except for two correlations in the 4th Year data for women. In addition, correlations between the problem behavior measures and the measures of conventional behavior were, for the most part, found in the negative direction. In the second study, results of the first study were confirmed, problem behavior measures and conventional behavioral measures, and between conventional behavior measures were statistically significant for both men and women. The third study further generalized the abovementioned results by confirming the analysis and evidence for Problem-Behavior Theory.

Three main systems are involved in Problem-Behavior Theory including the Personality System, the Perceived Environment System and the Behavior System. The three systems are further categorized by explanatory variables, including background, social-psychological and social behavior variables (Jessor, 1987). The behavior that results, termed proneness within this framework, is generated depending on the interaction of present variables. Interestingly, psychosocial risk and psychosocial proneness are viewed as one of the same. Therefore, the explanatory variables can cause two main functions, that of either instigating a behavior or controlling against it. All of these variables, as a result, are synonymous with psychosocial risk factors for problem behavior (Jessor, 1987). As defined by Jessor (1987), proneness is a dynamic state that assists in determining the likelihood of either normative transgression or problem behavior. Acknowledging that not all wrongdoing can be deemed problematic, problem behavior, within this context, is defined as behavior that deviates from both the social and legal norms of society (Jessor, 1987). The research literature on predicting criminality and associated factors has been informative, nevertheless, research has not been cumulative or proceeded in a fashion as to rule out previous theories and hypotheses.

Behavioral Activation and Behavioral Inhibition

Besides acknowledging social factors, understanding the underlying cognitive and personality structure of delinquent behavior will be extremely informative in regards to policy and rehabilitation. There have been several proposed constructs purported to influence juvenile delinquency. Two general motivational systems, behavioral inhibition and behavioral activation, were introduced by Gray after conducting research almost entirely on animals. Both systems influence and perhaps help explain both behavior (such as

impulsivity and delaying gratification) and affect (Carver & White, 1994). According to Gray (1987a, 1990), behavioral inhibition is the neurophysiology basis of anxiety, while behavioral activation is the neurophysiological basis of impulsivity.

Defined as an aversive motivational system, the Behavioral Inhibition System (BIS) has been associated with controlling the experience of anxiety (Gray, 1972, 1990). According to Gray, the BIS is sensitive to punishment, nonreward and novelty. As a result, when behavior has the potential of leading to negative or painful outcomes, this system is potentially activated as a mechanism to inhibit the behavior. Therefore, activation of the BIS allows for the inhibition of movement towards particular goals (Carver & White, 1994). Similarly, Gray (1987, 1990) also found that the activation of the BIS leads to the experience of negative feelings, including fear, anxiety, frustration and sadness. As a result, Carver and White (1994) predicted that individuals who are prone to anxiety, in other words, likely to score high on the BIS scale, may also exhibit behavior or demonstrate lifestyle characteristics that seek to avoid anxiety-prone situations.

On the other hand, the Behavioral Activation System (also known as the Behavioral Approach System and BAS) is believed to influence control over appetitive motivation (Fowles, 1980; Gary, 1981, 1987a, 1990). Unlike the BIS, activation of the BAS is sensitive to rewards and nonpunishment, as well as to escape from punishment. In addition, it also allows for the initiation of movement towards goals. Further demonstrating the differences that exist between the two systems, the BAS is associated with positive feelings of hope, elation and happiness (Gray, 1977, 1981, 1990). As a result, sensitivity to the BAS is related to proneness to engage in goal directed behavior and to experience positive feelings when exposed to the possibility of rewards.

In two separate, self report scales designed by Carver and White (1994), the BIS scale was used as a means to measure how concerned an individual was with the chance that a bad event might occur and how sensitive the person would be if the proposed event did take place. Unlike scales used to measure individual levels of anxiety, the BIS scale asks individuals to reflect on how much anxiety they would be likely to experience rather than how often they experience these feelings of anxiety. The opportunity that an individual may experience an anxiety producing environment is extremely variable. As a result, Carver and White (1994) predict that individuals who are prone to anxiety, in other words, likely to score high on the BIS scale, may also exhibit behavior or demonstrate lifestyle characteristics that seek to avoid anxiety-prone situations.

While the measurement of anxiety and harm avoidance are the main focus of the BIS scale, the BAS scale seeks to more thoroughly measure three subcategories, reward responsiveness, drive and fun seeking. As a result, the BAS scale is correlated with measurements of extraversion, positive affectivity and positive temperament (Carver & White, 1994).

Originally thought to function as two independent systems (Gray, 1990), it has been suggested that certain conditions may contribute to the BIS and the BAS working interdependently and as a result, dually influencing behavior (Kambouropoulous & Staiger, 2004; Smillie & Jackson, 2005). Although possible that these two systems work at the same time, and may possibly be in conflict in certain situations, the outcomes of each system activation varies. In a study conducted by Coplan, Wilson, Frohlick and Zelenski (2006), it was found that among children (6-14 years of age), BIS scores and BAS scores were associated with socio-emotional well being. Children who scored higher on the BIS scale

were significantly, positively more likely to have socio-emotional difficulties. On the other hand, BAS scores were either unrelated or significantly, negatively associated with maladjustment in terms of depression, positive and negative affect and social anxiety (Coplan, et. al, 2006).

When the relationship between the BIS and the BAS was further analyzed, an interesting result is displayed when punishments and rewards were present. While individuals high in behavioral inhibition reacted with increased levels of nervousness when punishment was anticipated, those high in behavioral activation exhibited higher levels of happiness when a reward was anticipated (Carver & White, 1994; Jorm, Christensen, Henderson, Jacomb, Korten & Rodgers, 1999).

Individuals found to be low on behavioral inhibition may also exhibit a decreased ability to maintain behavioral regulation, which has been suggested to impact the likelihood of criminality. In a study conducted by Pulkkinen (1996), individuals were studied based on two paradigms, including proactive (annoying act towards a target) and reactive aggression (self-defense), and antisocial and prosocial behavior. Proactively aggressive boys were shown to be prone to externalizing conflict and criminality in adulthood. On the other hand, proactively aggressive girls were more likely to internalize problems and become neurotic adults. Therefore, when observing a particular population, the combinations of high and low behavioral inhibition and behavioral activation are inevitable (Carver & White, 1994). Such analysis conducted by Pulkkinen (1996) demonstrates the potential for examing further associations between behavioral inhibition, behavioral activation and juvenile delinquency.

Sensation Seeking

According to Zuckerman (1971), there exists individual variability in the optimal

levels of stimulation or arousal in the environment. Individuals categorized as low sensation seekers are more highly aroused and exhibit an increased anxiety response to dangerous activities. This heightened reaction suggests an attempt to potentially avoid activities involving such threatening or frightful stimuli in order to minimize this increased response (Lissek et al., 2005). On the other hand, when high sensation seekers experience the same dangerous activity as low sensation seekers, high sensation seekers get less aroused and experience lower levels of anxiety. As a result, high sensation seekers may be involved in more dangerous behavior because they are less impacted by such an event. Such reaction or likelihood of increased response is typically measured using Zuckerman's Sensation Seeking Scale (Zuckerman, 1971).

This self report personality test helps to assess how attracted an individual is to dangerous behaviors including, intoxicants, unsafe sex and unpredictable situations (Wilson & Daly, 2006). Within this scale, four subscales exist that represent four modes (thrill and adventure seeking, experience seeking, disinhibition and boredom susceptibility) of an individual's inner personality structure (Knust & Stewart, 2002).

In research conducted by Wilson and Daly (2006), juvenile offenders scored higher on levels of sensation seeking and no sex differences were found among the offender population. In comparison, the student control group scored lower on sensation seeking and sex differences were pronounced, with males scoring higher than females. These findings replicate the findings suggested by Zuckerman (1994), in that sensation seeking predicted criminal risk (for example, shoplifting, vandalism or selling drugs) more strongly than did other factors such as substance use.

While sensation seeking is best defined by seeking varied and novel experiences regardless of the risk involved, impulsivity focuses more on the tendency to enter into these situations without significant levels of planning or thoughts about potential consequences (Zuckermann & Kuhlman, 2000). As a result of the significant correlation between these two factors, Zuckermann (1994b) has coined a new supertrait, impulsive sensation seeking. This new supertrait takes into account that a possible explanation for risky behavior comes from the individual's environment. As suggested by Zuckerman (1994), individuals who are from lower socioeconomic classes do not have the same access to outlets for their behavior (both prosocial and antisocial). As a result, one's environment creates the outlet for sensation seeking. Not surprising, a large proportion of juvenile offenders come from low socio-economic backgrounds and communities. Similarly, delinquent behavior has been viewed as a reflection of one's sensation seeking tendencies (Deery & Fildes, 1999; Newcomb & McGee, 1991) and sensation seeking has been correlated with both delinquency and creativity in different people (Zuckerman, 1994). Therefore, understanding the environment in which juvenile offenders live and their background may help to explain their risk taking.

Framing Effects

As previously mentioned, the environment plays a role in what opportunities individuals are provided which may contribute to displayed levels of sensation seeking. In a similar manner, the context in which decisions are elicited has the potential to facilitate changes in decision-making practices. A framing effect occurs when the preference for a risky decision depends on the way in which a task is described, or framed (Wang, 1996). In some contexts, framing effects have been shown to have a powerful and large impact while in others, such effects are found to be much more variable and unpredictable (Wang, 1996).

Nevertheless, according to Reyna and Brainerd (1991), the study of framing effects contributes to research on decision-making since they illustrate inconsistency of choices. This is important because consistency is one of the fundamental criteria for judging whether decisions are rational.

The best way to demonstrate the potential impact of framing effects can be illustrated using a standard example of the task, entitled the Asian disease problem. Subjects were provided with two alternative programs to fight an Asian disease that is expected to kill 600 people. In each frame, subjects choose between two competing alternatives. In the gain frame, Program A would save 200 people while Program B would provide a gamble in which there is a 1/3 probability that 600 people would be saved and a 2/3 probability that no people will be saved. In the loss frame, Program C would lead to 400 people dying and Program D would have a 1/3 probability that nobody would die and a 2/3 probability that 600 people would die. Although the net outcome (or expected value) was the same in each frame, it was found that people preferred the sure option in the gain frame, but the gamble in the loss frame (Reyna & Brainerd, 1991; Tversky & Kahneman, 1981, 1986).

More specifically, if a task is described in terms of gains, different preferences for risk are shown than if a task is described in terms of losses even when the decision-making task is objectively identical (for example, ensuring net gains to be equivalent) (Reyna & Ellis, 1994). According to research conducted by Reyna and Brainerd (1991) and Reyna and Ellis (1994), framing effects increase during the developmental periods of childhood and adolescence. In the study conducted by Reyna and Ellis (1994), children were asked to play a game, “Pick the One You Want,” where they were shown a spinner of varying probabilities (1/2, 1/3, 1/4) and asked which spinner they would prefer in both gain and loss frames. In

the gain frame, children win a number of prizes, on the other hand, in the loss frame, children were given an endowment and could loss a number of prizes. Prizes were made visible by placing bouncy balls directly on the spinner.

Framing effects increase with age due to the fact that, contrary to the standard Piagetian notion, intuitive reasoning increases, not decreases, during development. Therefore, adults basing their responses on a more intuitive reasoning process are more likely to exhibit framing effects than children, who rely on a more quantitative process. This idea is supported by their findings that younger children rely on quantitative differences and did not exhibit framing effects while framing effects emerged with age (Reyna & Ellis, 1994).

It was found by Reyna and Ellis (1994) that pre-kindergarteners picked the sure option 28% of the time and were consistent across frames. Second graders' results indicated an interaction between frame and risk, with reverse framing effects taking place at the highest risks. Lastly, fifth graders showed traditional framing effects. Fuzzy-trace Theory predicts that children's decision-making utilizes more precise and quantitative reasoning than adults. Therefore, younger children are less likely to use gist memory representations in decision-making. Most specifically, Fuzzy-trace Theory argues that reasoning depends more on qualitative, gist representations than on exact memory during development (Reyna, 1996).

Fuzzy-trace Theory

Fuzzy-trace theory, a dual process theory of memory, implies two alternative pathways for memory representations, distinguishing analytic, precise (verbatim) representations from more qualitative, intuitive (gist) representations (Reyna & Lloyd, 2006; Reyna, Lloyd, & Brainerd, 2003). With the presence of two such processes which are retrieved in parallel, variability exists in how individuals exhibit and demonstrate reasoning.

Reyna and Brainerd (1991) agree that reasoning depends on simplified representations of information to which we are exposed or made familiar (Reyna & Brainerd, 1991).

Under gist extraction, framing effects are demonstrated when equivalent outcomes are framed as either positive or negative (Reyna & Brainerd, 1991). Interestingly, selective processing occurs, such as in cases when the chance to win nothing is not demonstrated to the participant (i.e. with an empty bag), and framing effects decline. As a result, Reyna and Brainerd (1991) suggest that qualitative patterns are successful in competing with quantitative information when it comes to the decision-making process.

Unlike traditional theory of cognitive development, fuzzy-trace theory predicts that as children age, their reasoning process progresses from computational thinking to intuitive thinking (Reyna & Ellis, 1994). Therefore, the unique nature of Fuzzy-trace Theory is highlighted since it suggests that with age comes more developed intuition (reliance on gist representations), which supports more mature reasoning (Reyna & Lloyd, 2006). Since children are more likely to rely on computational skills to reason than are adults, the reasoning process is likely to rely less on exact memory but more on qualitative gist (Reyna & Ellis, 1994; Brainerd & Reyna, 1992; Reyna, 1992).

When evaluating this reasoning process, three major assumptions must be taken into account. First, both verbatim and gist accounts are encoded for any form of meaningful stimulus. Second, due to the preference for fuzzy-processing, individuals rely on the least precise gist representations. Last, as experience increases, there is an increased propensity to rely on fuzzy memory representations (Reyna & Lloyd, 2006).

Knowledge and experience are known to affect gist memory, while exhibiting no influence over verbatim memories (Reyna, 1996). Unlike verbatim recollections that rely on

explicit statements, numbers, or phrases, gist memory is defined as a "meaning" memory (Reyna, 1996). As a result of the meanings elicited, unconscious memory processes are consequently involved (Reyna, 1996). While this dual-process theory of memory has been studied across age ranges, genders, and backgrounds, such theory has not been implemented when researching juvenile offender's decision-making processes.

According to dual-process theories of memory, reasoning involves the use of alternative methods of processing (Reyna & Lloyd, 2006). Fuzzy trace theory contains four major principles that offer additional explanations of framing effects. These include, pattern extraction, fuzzy to verbatim continua of representations, the fuzzy processing preference and a hierarchy of gist (task calibration) (Reyna & Brainerd, 1991). According to Reyna and Brainerd (1991), "…pattern extraction refers to the idea that people extract global patterns in information, and they do so in parallel with the encoding of verbatim information. A problem or decision, therefore, is mentally represented at differing levels of specificity. These multiple representations, or fuzzy-to-verbatim continua, provide the reasoner with processing options" (251). These available options, however, are not all deemed equivalent by the reasoner and as a result, individuals have demonstrated preferences for fuzzy-processing and information that is represented as gist-like as possible (depending on the task at hand). In cases when the gist-based processing is a feasible option, "the lowest level of gist that differentiates between response alternatives is selected. That is, the multiple representations available in a task can be ordered according to a hierarchy of gist, and gist-based reasoning is predicted to operate at the vaguest level in the hierarchy that permits discrimination" (Reyna & Brainerd, 1991, 251).

This Study

The current study addresses the issue of how individuals participating in an alternative to incarceration program, differ with respect to their preferences and their perception of risk on gambling tasks when compared to a control population not convicted of crime. These framing tasks were chosen because they have been shown to differentiate levels of qualitative, or gist-based thinking in children and adults, which have been contrasted with alternative patterns of choice that signal quantitative trading off of risks and benefits. The latter type of thinking has been associated with greater risk taking. However, little experimental research has been conducted with adolescents or with adjudicated populations. Therefore, we investigated how adjudicated youth respond to framing problems, including the so-called "standard gamble" (the gain frame version of the task), used in economics to assess risk aversion. In addition, these choices were be related to individual difference measures known to be associated with making risky decisions; behavioral activation, behavioral inhibition, and sensation seeking (Horvath & Zuckerman, 1993; Peters, 2000;).

We hypothesized that participants involved in The Fortune Society, a government funded alternative to incarceration program located in New York City, would report higher levels of behavioral activation and sensation seeking, and lower levels of behavioral inhibition, relative to the control group. As a result, they would also show less pronounced levels of risk aversion for gains relative to the control group, and not exhibit the standard framing effect.

Method

Participants. The participants were 26, eighteen-year-olds (5 females and 21 males),

mandated to the Fortune Society, an outpatient, alternative to incarceration program located in New York City. Instead of completing a prison sentence, individuals at the alternative to incarceration program completed a mandated, 6 month program (depending on the individual's compliance with the program). Individuals did not live at the Fortune facility, instead they maintained their freedom to arrive on time for the program in the morning, and left after they had completed their schedule. Schedules included group sessions such as discussions on anger management, parenting classes, legal advice and personal growth.

Participation in this study was completely voluntary, and participants were assured that their information would not be identifiable. In addition, they were notified that if they chose not to participate, or to withdraw, their relationship with Cornell University and The Fortune Society would not be affected. Participants' caseworkers were informed that they may not suggest or force individuals to participate in the study, in order to eliminate any possibility of coercion. It was clarified prior to obtaining consent that the participant would not receive any money or form of compensation (See Appendix part 1).

In addition, 26 eighteen-year-old (5 females and 21 males) Cornell Undergraduates participated in the same study, with the same procedure and guidelines. Students were recruited on campus at dining facilities and dormitories.

Apparatus. The spinners used were 9 inches in diameter and were divided into varying proportions of red and blue, either ½ red and ½ blue, 1/3 red and ¾ blue, or ¼ red and ¾ blue (See Appendix part 5), to represent a gamble. For each of the three probabilities (1/2, 1/3 and ¼), there were three corresponding monetary gambles (low, medium and high). In addition, one spinner was painted completely red, indicating a sure gain or sure loss depending on the framing scenario. Fake money was also placed on the spinners to

demonstrate the potential win or potential loss. After being presented with different gamble scenarios, participants were given a confidence scale showing seven faces numbered from 1) happy (extremely confident) to 7) unhappy (extremely unconfident). These scores were later recoded so that 7 corresponded to extremely confident and 1 corresponded to extremely unconfident. After each gamble scenario, the participant was asked how confident they were with their decision by picking a face that corresponded to their confidence feeling (See Appendix part 3). A sample task of a gamble scenario and confidence scale (using the 1/5 proportion) was conducted before each participant began the official task.

Upon completion of the gambling task, participants answered a survey containing three scales; a Sensation-seeking Scale, a Behavioral Inhibition Scale and a Behavioral Activation Scale.

Procedure. Participants were presented with a game entitled, "Pick the One You Want." Instructions were read aloud to participants, "Today's experiment is about how adults make decisions. You are going to see several options and be asked to choose which you prefer. You are also going to rate the degree to which you prefer this option." Instructions continued, "You will be shown 2 Spinners. You will be given additional information. You will be asked to indicate which spinner you prefer. There is no time limit. Choose when you are ready."

When presented with the experimental trial, two spinners were shown to a participant demonstrating a hypothetical gamble in which the participant had the option to choose between Spinner A, a sure gain or loss, or Spinner B which had a variable proportion ratio for loss and gains depending on the trial. Spinner A was colored only one color, red, corresponding to the sure outcome and was placed on the participant's right hand side.

Spinner B was represented with two colors, sliced in varying proportions, corresponding to particular probabilities and was placed on the participant's left hand side. For example, "Which spinner would you like to choose? If you pick spinner A, you spin the spinner and win $1. If you pick spinner B you spin the spinner and you take a chance. If the spinner stops on red then you win $5. If the spinner stops on blue, you win nothing." The examiner sat directly across from the participant, and a two-inch high cardboard barrier separated the spinners.

Each participant was required to make nine choices that involved hypothetically winning prizes (gain frame) and nine choices that involved hypothetically losing prizes (loss frame) (See Appendix part 2). Each frame was presented in blocks, and presentations were counterbalanced across subjects. Thus, nine gain problems were presented before the nine loss problems for [30] of subjects and nine loss problems were presented before the nine gain problems for [22] of subjects]. Participants were not allowed to spin the spinners or to find out whether or not they won or lost in order to prevent participants from changing their decision-making process due to experience with the outcomes (winning or losing hypothetical prizes). Next, the participant was asked how confident they felt about their choice. Subjects did not complete one gamble scenario, or pick one spinner for real; each scenario was hypothetical.

After the task was completed, the participants were administered a survey containing measures of various traits associated with risky decision-making including behavioral activation, behavioral inhibition and sensation seeking (See Appendix part 4). Upon completion of the study, the participants were debriefed and thanked for their participation.

All scales were read a loud to the participants in order to ensure that reading level was not a factor in answer choices on the scales.

Methodology was similar to the procedure described in Reyna and Ellis (1994), with a few modifications. First, money was utilized instead of bouncing balls. Second, the endowment in the loss frame was not placed in the hands of the participants and money was not taken directly away from them. This scenario however, was displayed on the spinner. Lastly, empty bags were not placed on the part of the spinner that represented winning nothing or losing nothing.

Results

Within subject factors, 2 Frames (gain and loss) x 3 Probabilities (1/2, 1/3, and ¼) x 3 Magnitudes (low, medium and high), and between subject factors, 2 Populations, delinquent or undergraduate, were placed in an analysis of variance (ANOVA). The dependent variable was whether or not a participant chose a gamble or sure option when presented with a gambling task.

Table 1 presents information regarding the ANOVA conducted when confidence measures were not taken into account. Table 1.2 displays the analysis from the Multivariate Tests. According to the choice analysis (how likely the participant was to pick the gamble), magnitude of the gamble had a significant main effect, $F(2, 49) = 10.296$, $p < .001$. In addition, magnitude and population interacted, $F(2, 49) = 12.013$, $p < .001$, as is shown in Figure 1, as did frame, probability and magnitude, $F(4, 47) = 3.862$, $p < .01$, which is also displayed in Figure 2 and Figure 3. A marginally significant interaction was found between the probability of the gamble and magnitude, $F(4, 47) = 2.446$, $p < .06$. Probability was also

found marginally significant, $F(2, 49) = 2.587$, $p=.100$, which could be the result of a power issue.

The mean choice score at low magnitudes ($M=.686$, $SE=.037$) and medium magnitudes ($M=.654$, $SE=.040$) was significantly higher than the mean choice score at higher magnitudes ($M=.487$, $SE=.039$) as is shown in Table 2.5. Therefore, this analysis suggests that as the stakes of the gamble increased, subjects became more likely to pick the sure option than the gamble. Similarly, the magnitude and delinquent interaction demonstrates two additional findings as is shown in Table 2.10. At higher magnitudes, undergraduates became more likely to chose the sure option over the gamble. For undergraduates, the mean choice score at low magnitudes ($M=.737$, $SE=.052$) and medium magnitudes ($M=.654$, $SE=.654$) were significantly higher than the mean choice scores at high magnitudes ($M=.321$, $SE=.321$). On the other hand, for the delinquent population, the mean choice scores at low magnitudes ($M=.635$, $SE=.635$), medium magnitudes ($M=.654$, $SE=.654$) and higher magnitudes ($M=.654$, $SE=.654$) were not statistically significant. Therefore, this analysis suggests that the delinquent population did not distinguish the gambling scenarios based on the magnitude of the risk while undergraduates demonstrated this trend.

The mean choice scores in the frame, probability and magnitude interaction exhibit a pattern violation as is shown in Table 2.15. In the gain frame and loss frame, across the three probabilities, as the magnitude increased, the mean choice scores declined or the mean scores did not significantly change. However, this pattern was violated in the gain frame, the 1/3 probability when the mean choice score increased from low ($M=.635$, $SE=.068$) to medium magnitudes ($M=.712$, $SE=.064$) and declined again at higher magnitudes ($M=.558$, $SE=.068$). Although probability was not significant, the mean choice scores in probability suggest that

as the probability declined from ½ to 1/3 to ¼ the risk of the gamble increased and subjects became more likely to pick the sure option.

An additional analysis of variance was conducted on the same variables mentioned above, in addition to the subject's signed preference ratings (confidence ratings after the gambling scenarios). Signed preference rating were obtained by reverse coding the signed preferences ratings from (1-7) to (7-1), and then multiplying each rating by +1 for sure choices and by -1 for gamble choices. Therefore, a measure of preference included a measure of preference range from +7 (strongest preference for the sure option) to -7 (strongest preference for the gamble). Therefore, scores closest to zero indicated the least level of confidence while scores closer to +7 and -7 indicated the highest level of confidence.

According to this second analysis of variance shown in Table 3, magnitude remained significant, $F(2, 49) = 11.200$, $p < .001$ as well as the interaction between magnitude and delinquent, $F(2, 49) = 10.673$, $p < .001$. In addition, the interaction between frame, probability and magnitude remained significant, $F(4, 47) = 3.779$, $p = .010$. Probability, which was previously marginally significant became significant, $F(49, 2) = 3.369$, $p = .043$. However, the interaction between probability and magnitude was no longer marginally significant, $F(4, 47) = 1.888$, $p = .128$. The change in significance scores as well as F values, indicates the impact that confidence ratings had on analysis.

Figures 4, 5, 6, 7, 8, 9 and 10 demonstrate the estimated marginal means of confidence ratings. Results indicate that as risk increased, participants remained more likely to chose the gamble, but became less confident in doing so as is seen in Figure 4. In a similar manner, Figure 5 shows that as magnitude increased, individuals became more likely to pick the sure option, but were less confident in doing so. Figure 6 demonstrates the difference

between the populations, showing that as the magnitude increased, undergraduates became less likely to pick the gamble, and were nearly as confident in their decisions involving high magnitudes as the were in their decisions involving low magnitudes, even though in low magnitudes, undergraduates were more likely to pick the gamble. On the other hand, the delinquent population's confidence rating remained constant. Additional relationships between confidence scores and frame, probability and magnitude are displayed in Figures 8, 9 and 10.

Regression analysis was also conducted in order to analyze the interactions between behavioral inhibition, behavioral activation, sensation seeking and subject group (delinquent and undergraduate). In the first regression, conducted without the preference ratings as is displayed in Table 5, behavioral inhibition and behavioral activation were not significant, however, sensation seeking significantly predicted subjects choices, $\beta = .440$, $t(51) = 2.649$, $p = .011$ while the population of participants was only marginally significant, $\beta = .270$, $t(51) = 1.931$, $p = .060$. When separate regressions were conducted for each frame, sensation seeking significantly predicted subjects choices in the gain frame, $\beta = .518$, $t(51) = 3.216$, $p = .002$ while the population of participants remained marginally significant as is shown in Table 6. In the gain frame, the combination of sensation seeking, behavioral inhibition, behavioral activation and the population of participants also explained a significant proportion of variance in choices, $R^2 = .216$, $F(4, 51) = 3.244$, $p = .020$. When analyzing the loss frame, no scale measure was marginally significant or significant which is displayed in Table 7.

As seen in Table 8, when taking into account the preference scale for the abovementioned regression, sensation seeking was the only variable that significantly

predicted subject choices across both frames, $\beta = -.387$, $t(51) = -2.260$, $p = .028$. When looking at each frame separately, in the gain frame shown in Table 9, sensation seeking was the only variable that significantly predicted subject choices, $\beta = -.478$, $t(51) = -2.890$, $p = .006$. No scale measurement was significant in the loss frame as is shown in Table 10.

Discussion

Our results reveal several similarities and differences between adolescents who are in an alternative to incarceration program and same aged Cornell undergraduates. While all participants chose the gamble more often than the sure option, interactions were obtained among the factors (frame, magnitude and probability) and were not necessarily consistent across populations.

Our analysis revealed that while Fortune participants consistently picked the gamble at the same rate across magnitudes, Cornell undergraduates were less likely to pick the gamble at higher magnitudes than were Fortune participants, as shown in Figure 1. We explain this by appealing to the idea that the delinquent population is unable to distinguish between risks since they remain just as likely to pick the gamble across all magnitudes. Therefore, when the magnitude of the gamble increases, the delinquent population did not view these scenarios as gambles that involved a greater level of risk even though more money was at stake, instead they categorized all magnitudes as equivalent. It is possible however, that individuals in the alternative to incarceration program are perhaps savvier than the undergraduate group, since insurance actuaries also exhibit similar consistency patterns across frames and across magnitudes and do not exhibit framing effects.

While more difficult to understand, the three way interaction between frame, probability and magnitude also demonstrates some interesting relationships, as is shown in

Figure 2 and Figure 3. Across both the gain and loss frames, subjects were less likely to choose the gamble, which may indicate that the magnitude of the gamble may override every other component involved in the gambling scenario. The ability for magnitude to be a key component in determining whether or not an individual chooses the gamble is further supported by the significance of the main effect of magnitude in both the initial and secondary ANOVA. In higher magnitude gambles, when the probability of the gamble declined from ½ to 1/3, individuals became less likely to choose the gamble, but from the 1/3 to ¼ probability, the chance that the individual would select the gamble increased. It appears as though this 1/3 probability, in addition to the rise in potential gain, tempts the participant to go for the gamble over the sure option. However, low magnitudes demonstrate the exact opposite relationship.

The abovementioned three way interaction displayed similar patterns across both the gain and loss frames, as is shown in Figure 2 and Figure 3. Similarity across frames was not necessarily the case however, when analyzing the three scales that were given to subjects after the 18 gambling scenarios. While behavioral inhibition and behavioral activation were not found to be significant correlates of whether or not the participant chose the gamble, sensation seeking was found to have significance.

Previous research has shown that sensation seeking is important to adolescent risky decision-making by arguing that high sensation seekers may actively seek environments which are more stimulating and dangerous, while low sensation seekers may avoid such situations and environments (Zuckerman, 1971). As was described by Zuckerman (1994), sensation seeking was predictive of criminal risk. However, the present study found that sensation seeking only displayed a significant correlation in the gain frame, rather than in the

loss frame. Therefore, tapping into sensation seeking may only occur when thinking about gambles in terms of gains, which accentuate the benefits of the options. In addition, everyone was taking the risk in the loss frame. This finding is important because it may provide a mechanism for how sensation seeking interacts with information in order to produce risky behavior by orienting the adolescent to the benefits, regardless of the risks. In addition, the wording of the gain frame, or perhaps the notion that this frame is more analogous to the way risk is framed and expressed in real life experiences, may tap better into sensation seeking than does the loss frame. The same mechanism however, does not appear to be activated in the loss frame, when behavior orients adolescents to the risks rather than the benefits.

The explanation that the gain frame better taps into sensation seeking can further be evidenced by how individuals are usually exposed to risk. The delinquent population may be more likely to consistently pick the gamble, across magnitudes and across probabilities, due to their past experiences with risk. These individuals may have had experience with risk that has resulted in positive outcomes. For example, a majority of individuals involved in the alternative to incarceration program were there due to drug related offenses. If in the past, they have been able to make a satisfying amount of money for several years by selling drugs, and they only got caught once, perhaps they do not view the risk associated with selling drugs to be negative or even a risk at all. Instead, they may view the risk as a positive, demonstrating the idea that risk does not impact them in the same way.

The question as to how the gambling scenarios impact the participants is essential to this study. It is possible that participants from the delinquent population may already be in the loss frame of mind. In other words, they already have less to lose. Along the same line,

the delinquent population may just prefer the gamble overall, no matter of the magnitude, probability or frame. As a result, the possibility of losing a few dollars may impact them differently than undergraduates who seem to think more quantitatively at certain levels of the gamble, and think more intuitively at other levels.

Future research should look at the potential impact that larger magnitudes could have on decision-making behavior to analyze whether or not the patterns shown in this study would continue into higher magnitudes. Although using undergraduates may not provide the best control group, conclusions from the study are nevertheless effective in demonstrating the need for further research. Better understanding of how members of the delinquent population categorize risk would shed tremendous insight into their decision-making behavior. While this study had greater male participation, future research could analyze female participants exclusively (since males have been associated with higher sensation seeking and riskier behavior). When such risk behavior is better understood, more concrete and effective rehabilitation and alternative to incarceration programs could be instated to prevent initial incarceration as well as to prevent possible future recidivism. Providing individuals with insight into how they make decisions will allow them to be more critical of their own decision-making processes and will help them to better evaluate their options and consequences of their decisions.

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Appendix

1. Consent Forms
2. Gambling Scenarios
3. Confidence Scale
4. BIS, BAS and SS Scales
5. Sample of what spinners look like
6. Tables
7. Author's Note
8. Figures

Risk and Decision-Making in Adolescents-Cornell Adult Consent

You are invited to take part in a research study of how adolescents make decisions. We are asking you to take part because of your age. Please read this form carefully, ask any questions you may have before agreeing to take part in the study.

What the study is about: The purpose of this study is to learn how adolescents make decisions. You must be at least 18 years old and attending Cornell University in order to take part in this study.

What we will ask you to do: If you agree to be in this study, we will play a game either on the computer or on paper, about decision making. A series of choices will be presented in which the number of imaginary prizes will change and the chances of winning or losing those prizes will also change. In addition, you will tell us how confident you are with your decisions. Lastly, we will have you complete a survey asking for your attitudes and feelings about yourself and what you like and don't like. The study will take less than one hour to complete.

Risks and benefits: The risks involved with being in this study are no more than you might experience during regular daily activities. There are no direct benefits to you. However, you will be helping us learn more about how people make decisions.

Taking part is voluntary: Taking part in this study is completely voluntary. You may withdraw from the study at anytime. If you decide not to take part or to skip some of the questions, it will not affect your current or future relationship with Cornell University.

Your answers will be confidential. The records of this study will be kept private. Your name will not be linked to your answers. In any sort of report we make public we will not include any information that will make it possible to identify you by a third party. Research records will be kept in a locked file for at least three (3) years; only the researchers will have access to the records. Data may be used for educational purposes and shown to students, trainees and others anonymously but you will not be identifiable by a third party.

If you have questions: The researcher conducting this study is Janine Stanisz. Please ask any questions you have now. If you have questions later, you may contact Janine Staniz at jms296@cornell.edu or at 607-254-1172. You can reach Steven Estrada, Team Leader, or Professor Valerie Reyna, Principle Investigator at sme27@cornell.edu or at 607-254-1172. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the University Committee on Human Subjects (UCHS) at 607-255-5138 or access their website at http://www.osp.cornell.edu/Compliance/UCHS/homepageUCHS.htm.

You will be given a copy of this form to keep for your records.

Statement of Consent: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

Your name _____

Your Signature _____ Date _____

Risk and Decision-Making- Parental Consent

Your child is invited to be in a research study about how adolescents make decisions involving risk. We are asking that your child take part because your child is in the age group we want to study. We ask that you read this form and ask any questions you may have before agreeing to allow your child to take part in this study.

The study: The purpose of this study is to find out how adolescents make decisions involving risk. If you agree to allow your child to take part, your child will be asked to complete a computer version or a paper copy version of tasks involving risky decision-making. A series of choices will be presented in which the number of hypothetical prizes will vary and the chances of winning or losing those prizes will also vary. After completing these tasks, your child will be asked to rate how confident they are with their decisions. Lastly, we will ask them to complete a survey assessing their attitudes and feelings about themselves and what they like and don't like. The study will take less than one hour to complete.

Risks and benefits: I do not anticipate any risks to your child participating in this study other than those encountered in day-to-day life. There will be no direct benefits. However, you will be helping us learn more about how people make decisions.

Confidentiality: The records of this study will be kept private. If any sort of report were made public, we will not include any information that will make it possible to identify your child. It will not be possible to figure out your child's answers. Information will be kept securely for at least three (3) years and the data will be kept securely throughout. Data may be used for educational purposes and shown to students, trainees and others anonymously but

your child will not be identifiable by a third party. Since you have received this through the internet, please be aware that there is a chance your answers could be read by a third party.

Voluntary Participation: Your child's participation in this study is completely voluntary. Your child may skip any questions he or she doesn't feel comfortable answering. Your decision whether or not to allow your child to take part will not affect your current or future relationship with The Fortune Society or the legal system. If you decide to allow your child to take part, your child is free to not do the survey or to skip any questions. You are free to withdraw your child at any time without affecting your relationship with The Fortune Society or Cornell University.

The person who will be interacting with your child is Janine Stanisz. You may reach her at 607-254-1172 or jms296@cornell.edu. You could also reach Steven Estrada, Team Leader, or Professor Valerie Reyna, Principle Investigator, at 607-254-1172 or sme27@cornell.edu. Please feel free to ask any questions you have now, or at any point in the future. If you have any questions or concerns about your child's rights as a research subject, you may contact the Cornell University Committee on Human Subjects (UCHS) at 607-255-5138, or you may access their website at http://www.osp.cornell.edu/Compliance/UCHS/homepageUCHS.htm. You will be given a copy of this consent form for your records.

Please PRINT your child's name, your name and sign below if you give consent for your child to participate in this study.

Your child's name (printed): _____

Your name (printed): _____

Your signature _____ Date _____

Risk and Decision-Making in Adolescents- Fortune Adolescent Assent

You are invited to participate in a research study of how adolescents make decisions. We are asking you to take part because of your age. Please read this form carefully while I read it aloud to you. Please ask any questions you may have before agreeing to participate.

What the study is about: The purpose of this study is to learn how adolescents make decisions. You must be attending the Fortune Society in order to take part in this study.

What we will ask you to do: We have received permission from your parent/guardian for you to participate in this study. If you agree to be in this study, we will play a game on the computer or on paper, about decision-making. A series of choices will be presented in which the number of imaginary prizes will change and the chances of winning or losing those prizes will also change. In addition, you will tell us how confident you are with your decisions. Lastly, we will have you complete a survey asking for your attitudes and feelings about yourself and what you like and don't like. The study will take less than one hour to complete.

Risks and benefits: I do not anticipate any risks to you participating in this study other than those encountered in day-to-day life. There are no direct benefits to you. However, you will be helping us learn more about how people make decisions.

Taking part is voluntary: Taking part in this study is completely voluntary. You may stop at anytime. If you decide not to participate or to skip some of the questions, it will not affect your current or future relationship with Cornell University, the Fortune Society, or your parole status. If you decide to take part, you can stop at anytime.

Your answers will be confidential. The records of this study will be kept private. Your name will not be linked to the answers you give during the study. In any sort of report we make public we will not include any information that will make it possible to identify you. Research records will be kept in a locked file for at least three (3) years; only the researchers will have access to the records. Data may be used for educational purposes and shown to students, trainees and others anonymously but you will not be identifiable by a third party.

If you have questions: The researcher conducting this study is Janine Stanisz. Please ask any questions you have now. If you have questions later, you may contact Janine Staniz at jms296@cornell.edu or at 607-254-1172. You can reach Steven Estrada, Team Leader, or Professor Valerie Reyna, Principle Investigator at sme27@cornell.edu or at 607-254-1172. If you have any questions or concerns regarding your rights as a subject in this study, you may contact the University Committee on Human Subjects (UCHS) at 607-255-5138 or access their website at http://www.osp.cornell.edu/Compliance/UCHS/homepageUCHS.htm.

You will be given a copy of this form to keep for your records.

Statement of Consent: I have read the above information, and have received answers to any questions I asked. I consent to take part in the study.

Your name: _____

Your Signature _____ Date _____

GAIN FRAME: Pretend you have a chance to win money.

___	____	____	You have a choice. If you pick this side, you win $1 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $2, if the spinner lands on blue, you win nothing. What do you want to do? Win $1 for sure, or take a chance and maybe win $2, maybe win nothing? (1/2)
___	____	____	You have a choice. If you pick this side, you win $4 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $8, if the spinner lands on blue, you win nothing. What do you want to do? Win $4 for sure, or take a chance and maybe win $8, maybe win nothing? (1/2)
___	____	____	You have a choice. If you pick this side, you win $30 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $60, if the spinner lands on blue, you win nothing. What do you want to do? Win $30 for sure, or take a chance and maybe win $60, maybe win nothing? (1/2)
___	____	____	You have a choice. If you pick this side, you win $1 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $3, if the spinner lands on blue, you win nothing. What do you want to do? Win $1 for sure, or take a chance and maybe win $3, maybe win nothing? (1/3)
___	____	____	You have a choice. If you pick this side, you win $4 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $12, if the spinner lands on blue, you win nothing. What do you want to do? Win $4 for sure, or take a chance and maybe win $12, maybe win nothing? (1/3)
___	____	____	You have a choice. If you pick this side, you win $30 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $90, if the spinner lands on blue, you win nothing. What do you want to do? Win $30 for sure, or take a chance and maybe win $90, maybe win nothing? (1/3)
___	____	____	You have a choice. If you pick this side, you win $1 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $4, if the spinner lands on blue, you win nothing. What do you want to do? Win $1 for sure, or take a chance and maybe win $4, maybe win nothing? (1/4)
___	____	____	You have a choice. If you pick this side, you win $4 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $16, if the spinner lands on blue, you win nothing. What do you want to do? Win $4 for sure, or take a chance and maybe win $16, maybe win nothing? (1/4)
___	____	____	You have a choice. If you pick this side, you win $30 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $120, if the spinner lands on blue, you win nothing. What do you want to do? Win $30 for sure, or take a chance and maybe win $120, maybe win nothing? (1/4)

LOSS FRAME: Pretend you have a chance to win money.

___	___	____	Pretend I gave you $2. Now you have $2. You have a choice. If you pick this side, you give me back $1 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $2. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $1 for sure, or maybe give back $2, maybe give back nothing. (1/2)
___	___	____	Pretend I gave you $8. Now you have $8. You have a choice. If you pick this side, you give me back $4 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $8. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $4 for sure, or maybe give back $8, maybe give back nothing. (1/2)
___	___	____	Pretend I gave you $60. Now you have $60. You have a choice. If you pick this side, you give me back $30 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $60. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $30 for sure, or maybe give back $60, maybe give back nothing. (1/2)
___	___	____	Pretend I gave you $3. Now you have $3. You have a choice. If you pick this side, you give me back $2 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $3. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $2 for sure, or maybe give back 3, maybe give back nothing. (1/3)
___	___	____	Pretend I gave you $12. Now you have $12. You have a choice. If you pick this side, you give me back $8 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $12. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $8 for sure, or maybe give back $12, maybe give back nothing. (1/3)
___	___	____	Pretend I gave you $90. Now you have $90. You have a choice. If you pick this side, you give me back $60 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $90. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $60 for sure, or maybe give back $90, maybe give back nothing. (1/3)
___	___	____	Pretend I gave you $4. Now you have $4. You have a choice. If you pick this side, you give me back $3 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $4. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $3 for sure, or maybe give back $4, maybe give back nothing. (1/4)
___	___	____	Pretend I gave you $16. Now you have $16. You have a choice. If you pick this side, you give me back $12 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $16. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $12 for sure, or maybe give back $16, maybe give back nothing. (1/4)
___	___	____	Pretend I gave you $120. Now you have $120. You have a choice. If you pick this side, you give me back $90 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $120. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $90 for sure, or maybe give back $120, maybe give back nothing. (1/4)

Which face best reflects your feelings about your choice?

1 2 3 4 5 6 7

Survey

After each statement, please select which response best reflects your opinion by circling one of the following options: strongly disagree, disagree, neutral, agree or strongly agree. You may skip any statements that you are uncomfortable answering:

SS

1. I would like to explore strange places.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

2. I get restless when I spend too much time at home.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

3. I like to do frightening things.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

4. I like wild parties.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

5. I would like to take off on a trip with no pre-planned routes or timetables.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

6. I prefer friends who are excitingly unpredictable.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

7. I would like to try bungee jumping.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

8. I would love to have new and exciting experiences, even if they are illegal.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

BIS

1. If I think something unpleasant is going to happen I usually get pretty “worked up.”

   Strongly Disagree Disagree Neutral Agree Strongly Agree

2. I worry about making mistakes.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

3. Criticism or scolding hurts me quite a bit.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

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

   Strongly Disagree Disagree Neutral Agree Strongly Agree

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

   Strongly Disagree Disagree Neutral Agree Strongly Agree

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

   Strongly Disagree Disagree Neutral Agree Strongly Agree

7. I have very few fears compared to my friends.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

BAS

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

   Strongly Disagree Disagree Neutral Agree Strongly Agree

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

   Strongly Disagree Disagree Neutral Agree Strongly Agree

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

   Strongly Disagree Disagree Neutral Agree Strongly Agree

4. It would excite me to win a contest.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

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

Strongly Disagree Disagree Neutral Agree Strongly Agree

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

   Strongly Disagree Disagree Neutral Agree Strongly Agree

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

   Strongly Disagree Disagree Neutral Agree Strongly Agree

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

   Strongly Disagree Disagree Neutral Agree Strongly Agree

9. When I go after something I use a “no hold barred” approach.

   Strongly Disagree Disagree Neutral Agree Strongly Agree

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

    Strongly Disagree Disagree Neutral Agree Strongly Agree

11. I crave excitement and new sensations.

    Strongly Disagree Disagree Neutral Agree Strongly Agree

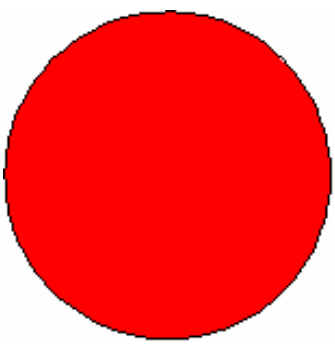
12. I’m always willing to try something new if I think it will be fun.

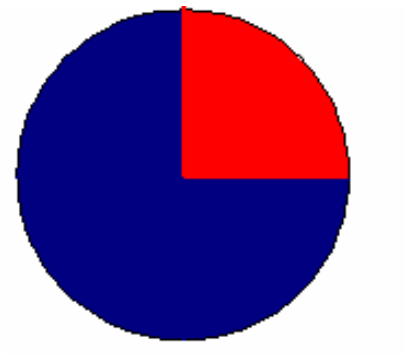
    Strongly Disagree Disagree Neutral Agree Strongly Agree

13. I often act on the spur of the moment.

    Strongly Disagree Disagree Neutral Agree Strongly Agree

Example





Gain Frame:

You have a choice. If you pick this side, you win $4 for sure. If you pick this side, you take a chance. If the spinner were to land on red, you win $16, if the spinner lands on blue, you win nothing. What do you want to do? Win $4 for sure, or take a chance and maybe win $16, maybe win nothing?

Loss Frame:

Pretend I gave you $16. Now you have $16. You have a choice. If you pick this side, you give me back $12 for sure. If you pick this side, you take a chance. If the spinner lands on blue, you give me back $16. If the spinner lands on red, you give me back nothing. What do you want to do? Give back $12 for sure, or maybe give back $16, maybe give back nothing.

Author's Note

Janine Stanisz, Department of Human Development, Cornell University.

I would like to thank Professor Valerie Reyna, for having faith in me as a researcher, and taking the risk in working with me after I had only recently joined her lab. Her assistance and support in project design, execution and analysis has inspired me as a researcher. I would also like to thank Steven Estrada for working so many extra hours with me in order to make sure my study was completed and that I have a finished product that I am truly proud of, he was a great teacher.

This project would not have been possible without the help of The Fortune Society, particularly Rosa Chieco, Maria Perez and Peggy Arroyo. I would like to thank all the clients at Fortune for inspiring me to learn more about the prison system and prison population. My time at Fortune was a life altering experience.

In addition, I would like to thank Professor Marianella Casasola for her continuous support and for being the backbone of the Human Development Honors Thesis Program. Also, I would like to thank my fellow thesis writers, who helped give feedback and positive encouragement.

Correspondence concerning this manuscript should be addressed to Janine Stanisz, Department of Human Development, Cornell University, B55 MVR Hall, Ithaca, NY 14853. Electronic mail can be sent to [jms296@cornell.edu].

Table 1

ANOVA without confidence ratings taken into account:

Explanation of variables:

Frame: 1=gain, 2=loss

Prob (Probability): 1=1/2, 2=1/3, 3=1/4

Mag (Magnitude): 1=low, 2=medium, 3=high

Ghalfwin1/Ghalfwin4/Ghalfwin30= Gain frame, ½ prob, sure win of $ 1/4/30

Gthirdwin1/Gthirdwin4/Gthirdwin30= Gain frame, 1/3 prob, sure win of $ 1/4/30

Gfourthwin1/Gfourthwin4/Gfourthwin30= Gain frame, ¼ prob, sure win of $ 1/4/30

Lhalfwin1/Lhalfwin4/Lhalfwin30= Loss frame, ½ prob, sure win of $ 1/4/30

Lthirdwin1/Lthirdwin4/Lthirdwin30= Loss frame, 1/3 prob, sure win of $ 1/4/30

Lfourthwin1/Lfourthwin4/Lfourthwin30= Loss frame, ¼ prob, sure win of $ 1/4/30

Cornell= undergraduate population

Fortune=delinquent population

Table 1.1

Within-Subjects Factors

Measure: MEASURE_1

frame	prob	mag	Dependent Variable
1	1	1	Ghalfwin1
		2	Ghalfwin4
		3	Ghalfwin30
	2	1	Gthirdwin1
		2	Gthirdwin4
		3	Gthirdwin30
	3	1	Gfourthwin1
		2	Gfourthwin4
		3	Gfourthwin30
2	1	1	Lhalf2
		2	Lhalf8
		3	Lhalf60
	2	1	Lthird3
		2	Lthird2
		3	Lthird90
	3	1	Lfourth4
		2	Lfourth16
		3	Lfourth120

Between-Subjects Factors

		Value Label	N
0=cornell; 1=fortune	.00	cornell	26
	1.00	fortune	26

Table 1.2

Multivariate Tests[b]

Effect		Value	F	Hypothesis df	Error df	Sig.
frame	Pillai's Trace	.009	.449[a]	1.000	50.000	.506
	Wilks' Lambda	.991	.449[a]	1.000	50.000	.506
	Hotelling's Trace	.009	.449[a]	1.000	50.000	.506
	Roy's Largest Root	.009	.449[a]	1.000	50.000	.506
frame * Delinquen	Pillai's Trace	.000	.000[a]	1.000	50.000	1.000
	Wilks' Lambda	1.000	.000[a]	1.000	50.000	1.000
	Hotelling's Trace	.000	.000[a]	1.000	50.000	1.000
	Roy's Largest Root	.000	.000[a]	1.000	50.000	1.000
prob	Pillai's Trace	.090	2.419[a]	2.000	49.000	.100
	Wilks' Lambda	.910	2.419[a]	2.000	49.000	.100
	Hotelling's Trace	.099	2.419[a]	2.000	49.000	.100
	Roy's Largest Root	.099	2.419[a]	2.000	49.000	.100
prob * Delinquen	Pillai's Trace	.019	.479[a]	2.000	49.000	.622
	Wilks' Lambda	.981	.479[a]	2.000	49.000	.622
	Hotelling's Trace	.020	.479[a]	2.000	49.000	.622
	Roy's Largest Root	.020	.479[a]	2.000	49.000	.622
mag	Pillai's Trace	.296	10.296[a]	2.000	49.000	.000
	Wilks' Lambda	.704	10.296[a]	2.000	49.000	.000
	Hotelling's Trace	.420	10.296[a]	2.000	49.000	.000
	Roy's Largest Root	.420	10.296[a]	2.000	49.000	.000
mag * Delinquen	Pillai's Trace	.329	12.013[a]	2.000	49.000	.000
	Wilks' Lambda	.671	12.013[a]	2.000	49.000	.000
	Hotelling's Trace	.490	12.013[a]	2.000	49.000	.000
	Roy's Largest Root	.490	12.013[a]	2.000	49.000	.000
frame * prob	Pillai's Trace	.052	1.331[a]	2.000	49.000	.274
	Wilks' Lambda	.948	1.331[a]	2.000	49.000	.274
	Hotelling's Trace	.054	1.331[a]	2.000	49.000	.274
	Roy's Largest Root	.054	1.331[a]	2.000	49.000	.274
frame * prob * Delinquen	Pillai's Trace	.010	.240[a]	2.000	49.000	.787
	Wilks' Lambda	.990	.240[a]	2.000	49.000	.787
	Hotelling's Trace	.010	.240[a]	2.000	49.000	.787
	Roy's Largest Root	.010	.240[a]	2.000	49.000	.787
frame * mag	Pillai's Trace	.005	.111[a]	2.000	49.000	.895
	Wilks' Lambda	.995	.111[a]	2.000	49.000	.895
	Hotelling's Trace	.005	.111[a]	2.000	49.000	.895
	Roy's Largest Root	.005	.111[a]	2.000	49.000	.895
frame * mag * Delinquen	Pillai's Trace	.025	.619[a]	2.000	49.000	.543
	Wilks' Lambda	.975	.619[a]	2.000	49.000	.543
	Hotelling's Trace	.025	.619[a]	2.000	49.000	.543
	Roy's Largest Root	.025	.619[a]	2.000	49.000	.543
prob * mag	Pillai's Trace	.172	2.446[a]	4.000	47.000	.059
	Wilks' Lambda	.828	2.446[a]	4.000	47.000	.059
	Hotelling's Trace	.208	2.446[a]	4.000	47.000	.059
	Roy's Largest Root	.208	2.446[a]	4.000	47.000	.059
prob * mag * Delinquen	Pillai's Trace	.080	1.023[a]	4.000	47.000	.405
	Wilks' Lambda	.920	1.023[a]	4.000	47.000	.405
	Hotelling's Trace	.087	1.023[a]	4.000	47.000	.405
	Roy's Largest Root	.087	1.023[a]	4.000	47.000	.405
frame * prob * mag	Pillai's Trace	.247	3.862[a]	4.000	47.000	.009
	Wilks' Lambda	.753	3.862[a]	4.000	47.000	.009
	Hotelling's Trace	.329	3.862[a]	4.000	47.000	.009
	Roy's Largest Root	.329	3.862[a]	4.000	47.000	.009
frame * prob * mag * Delinquen	Pillai's Trace	.099	1.297[a]	4.000	47.000	.285
	Wilks' Lambda	.901	1.297[a]	4.000	47.000	.285
	Hotelling's Trace	.110	1.297[a]	4.000	47.000	.285
	Roy's Largest Root	.110	1.297[a]	4.000	47.000	.285

a. Exact statistic

b.
Design: Intercept+Delinquen
Within Subjects Design: frame+prob+mag+frame*prob+frame*mag+prob*mag+frame*prob*mag

Table 1.3

Mauchly's Test of Sphericity[b]

Measure: MEASURE_1

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[a]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
frame	1.000	.000	0	.	1.000	1.000	1.000
prob	.996	.196	2	.907	.996	1.000	.500
mag	.910	4.619	2	.099	.917	.970	.500
frame * prob	.924	3.886	2	.143	.929	.983	.500
frame * mag	.920	4.100	2	.129	.926	.979	.500
prob * mag	.827	9.216	9	.418	.923	1.000	.250
frame * prob * mag	.820	9.637	9	.381	.915	1.000	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

b.

Design: Intercept+Delinquen
Within Subjects Design: frame+prob+mag+frame*prob+frame*mag+prob*mag+frame*prob*mag

Table 1.4

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
frame	Sphericity Assumed	.107	1	.107	.449	.506
	Greenhouse-Geisser	.107	1.000	.107	.449	.506
	Huynh-Feldt	.107	1.000	.107	.449	.506
	Lower-bound	.107	1.000	.107	.449	.506
frame * Delinquen	Sphericity Assumed	.000	1	.000	.000	1.000
	Greenhouse-Geisser	.000	1.000	.000	.000	1.000
	Huynh-Feldt	.000	1.000	.000	.000	1.000
	Lower-bound	.000	1.000	.000	.000	1.000
Error(frame)	Sphericity Assumed	11.893	50	.238		
	Greenhouse-Geisser	11.893	50.000	.238		
	Huynh-Feldt	11.893	50.000	.238		
	Lower-bound	11.893	50.000	.238		
prob	Sphericity Assumed	1.122	2	.561	2.587	.080
	Greenhouse-Geisser	1.122	1.992	.563	2.587	.080
	Huynh-Feldt	1.122	2.000	.561	2.587	.080
	Lower-bound	1.122	1.000	1.122	2.587	.114
prob * Delinquen	Sphericity Assumed	.199	2	.099	.458	.634
	Greenhouse-Geisser	.199	1.992	.100	.458	.633
	Huynh-Feldt	.199	2.000	.099	.458	.634
	Lower-bound	.199	1.000	.199	.458	.502
Error(prob)	Sphericity Assumed	21.679	100	.217		
	Greenhouse-Geisser	21.679	99.603	.218		
	Huynh-Feldt	21.679	100.000	.217		
	Lower-bound	21.679	50.000	.434		
mag	Sphericity Assumed	7.103	2	3.551	13.421	.000
	Greenhouse-Geisser	7.103	1.835	3.871	13.421	.000
	Huynh-Feldt	7.103	1.940	3.662	13.421	.000
	Lower-bound	7.103	1.000	7.103	13.421	.001
mag * Delinquen	Sphericity Assumed	8.103	2	4.051	15.310	.000
	Greenhouse-Geisser	8.103	1.835	4.416	15.310	.000
	Huynh-Feldt	8.103	1.940	4.178	15.310	.000
	Lower-bound	8.103	1.000	8.103	15.310	.000
Error(mag)	Sphericity Assumed	26.462	100	.265		
	Greenhouse-Geisser	26.462	91.747	.288		
	Huynh-Feldt	26.462	96.975	.273		
	Lower-bound	26.462	50.000	.529		
frame * prob	Sphericity Assumed	.643	2	.322	1.643	.199
	Greenhouse-Geisser	.643	1.858	.346	1.643	.201
	Huynh-Feldt	.643	1.966	.327	1.643	.199
	Lower-bound	.643	1.000	.643	1.643	.206
frame * prob * Delinquen	Sphericity Assumed	.122	2	.061	.311	.733
	Greenhouse-Geisser	.122	1.858	.066	.311	.717
	Huynh-Feldt	.122	1.966	.062	.311	.730
	Lower-bound	.122	1.000	.122	.311	.579

Table 1.5

Tests of Within-Subjects Effects

Measure: MEASURE_1

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Error(frame*prob)	Sphericity Assumed	19.568	100	.196		
	Greenhouse-Geisser	19.568	92.915	.211		
	Huynh-Feldt	19.568	98.285	.199		
	Lower-bound	19.568	50.000	.391		
frame * mag	Sphericity Assumed	.034	2	.017	.082	.921
	Greenhouse-Geisser	.034	1.851	.018	.082	.908
	Huynh-Feldt	.034	1.958	.017	.082	.918
	Lower-bound	.034	1.000	.034	.082	.775
frame * mag * Delinquen	Sphericity Assumed	.231	2	.115	.556	.575
	Greenhouse-Geisser	.231	1.851	.125	.556	.562
	Huynh-Feldt	.231	1.958	.118	.556	.571
	Lower-bound	.231	1.000	.231	.556	.459
Error(frame*mag)	Sphericity Assumed	20.735	100	.207		
	Greenhouse-Geisser	20.735	92.569	.224		
	Huynh-Feldt	20.735	97.897	.212		
	Lower-bound	20.735	50.000	.415		
prob * mag	Sphericity Assumed	1.372	4	.343	2.187	.072
	Greenhouse-Geisser	1.372	3.694	.371	2.187	.077
	Huynh-Feldt	1.372	4.000	.343	2.187	.072
	Lower-bound	1.372	1.000	1.372	2.187	.145
prob * mag * Delinquen	Sphericity Assumed	.603	4	.151	.961	.430
	Greenhouse-Geisser	.603	3.694	.163	.961	.426
	Huynh-Feldt	.603	4.000	.151	.961	.430
	Lower-bound	.603	1.000	.603	.961	.332
Error(prob*mag)	Sphericity Assumed	31.359	200	.157		
	Greenhouse-Geisser	31.359	184.684	.170		
	Huynh-Feldt	31.359	200.000	.157		
	Lower-bound	31.359	50.000	.627		
frame * prob * mag	Sphericity Assumed	1.658	4	.415	3.374	.011
	Greenhouse-Geisser	1.658	3.660	.453	3.374	.013
	Huynh-Feldt	1.658	4.000	.415	3.374	.011
	Lower-bound	1.658	1.000	1.658	3.374	.072
frame * prob * mag * Delinquen	Sphericity Assumed	.436	4	.109	.887	.473
	Greenhouse-Geisser	.436	3.660	.119	.887	.466
	Huynh-Feldt	.436	4.000	.109	.887	.473
	Lower-bound	.436	1.000	.436	.887	.351
Error(frame*prob*mag)	Sphericity Assumed	24.573	200	.123		
	Greenhouse-Geisser	24.573	183.012	.134		
	Huynh-Feldt	24.573	200.000	.123		
	Lower-bound	24.573	50.000	.491		

Table 1.6

Tests of Within-Subjects Contrasts

Measure: MEASURE_1

Source	frame	prob	mag	Type III Sum of Squares	df	Mean Square	F	Sig.
frame	Linear			.107	1	.107	.449	.506
frame * Delinquen	Linear			.000	1	.000	.000	1.000
Error(frame)	Linear			11.893	50	.238		
prob		Linear		.641	1	.641	2.828	.099
		Quadratic		.481	1	.481	2.323	.134
prob * Delinquen		Linear		.026	1	.026	.113	.738
		Quadratic		.173	1	.173	.836	.365
Error(prob)		Linear		11.333	50	.227		
		Quadratic		10.346	50	.207		
mag			Linear	6.160	1	6.160	20.181	.000
			Quadratic	.942	1	.942	4.207	.046
mag * Delinquen			Linear	7.410	1	7.410	24.276	.000
			Quadratic	.692	1	.692	3.091	.085
Error(mag)			Linear	15.263	50	.305		
			Quadratic	11.199	50	.224		
frame * prob	Linear	Linear		.641	1	.641	2.688	.107
		Quadratic		.002	1	.002	.014	.906
frame * prob * Delinquen	Linear	Linear		.103	1	.103	.430	.515
		Quadratic		.019	1	.019	.126	.724
Error(frame*prob)	Linear	Linear		11.923	50	.238		
		Quadratic		7.645	50	.153		
frame * mag	Linear		Linear	.000	1	.000	.000	1.000
			Quadratic	.034	1	.034	.224	.638
frame * mag * Delinquen	Linear		Linear	.058	1	.058	.220	.641
			Quadratic	.173	1	.173	1.135	.292
Error(frame*mag)	Linear		Linear	13.109	50	.262		
			Quadratic	7.626	50	.153		
prob * mag		Linear	Linear	.118	1	.118	.621	.434
			Quadratic	.039	1	.039	.248	.621
		Quadratic	Linear	1.097	1	1.097	9.441	.003
			Quadratic	.118	1	.118	.722	.399
prob * mag * Delinquen		Linear	Linear	.022	1	.022	.114	.737
			Quadratic	.424	1	.424	2.679	.108
		Quadratic	Linear	.135	1	.135	1.166	.286
			Quadratic	.022	1	.022	.133	.717
Error(prob*mag)		Linear	Linear	9.486	50	.190		
			Quadratic	7.912	50	.158		
		Quadratic	Linear	5.809	50	.116		
			Quadratic	8.152	50	.163		
frame * prob * mag	Linear	Linear	Linear	.060	1	.060	.542	.465
			Quadratic	.135	1	.135	.790	.378
		Quadratic	Linear	.873	1	.873	9.734	.003
			Quadratic	.590	1	.590	4.937	.031
frame * prob * mag * Delinquen	Linear	Linear	Linear	.022	1	.022	.195	.661
			Quadratic	.001	1	.001	.005	.946
		Quadratic	Linear	.353	1	.353	3.942	.053
			Quadratic	.060	1	.060	.503	.482
Error(frame*prob*mag)	Linear	Linear	Linear	5.543	50	.111		
			Quadratic	8.572	50	.171		
		Quadratic	Linear	4.482	50	.090		
			Quadratic	5.975	50	.119		

Table 1.7

Tests of Between-Subjects Effects

Measure: MEASURE_1
Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	347.115	1	347.115	398.983	.000
Delinquen	1.385	1	1.385	1.592	.213
Error	43.500	50	.870		

Table 2: Estimated Marginal Means for the ANOVA conducted without confidence scores

Table 2.1:

1. Grand Mean

Measure: MEASURE_1

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
.609	.030	.548	.670

Table 2.2

2. 0=cornell; 1=fortune

Measure: MEASURE_1

0=cornell; 1=fortune	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
cornell	.571	.043	.484	.657
fortune	.647	.043	.561	.734

Table 2.3

3. frame

Measure: MEASURE_1

frame	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	.620	.034	.550	.689
2	.598	.034	.529	.667

Table 2.4

4. prob

Measure: MEASURE_1

prob	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	.657	.037	.582	.732
2	.577	.036	.506	.648
3	.593	.039	.515	.671

Table 2.5

5. mag

Measure: MEASURE_1

mag	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	.686	.037	.612	.760
2	.654	.040	.573	.735
3	.487	.039	.410	.565

Table 2.6

6. 0=cornell; 1=fortune * frame

Measure: MEASURE_1

0=cornell; 1=fortune	frame	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
cornell	1	.581	.049	.483	.679
	2	.560	.049	.462	.657
fortune	1	.658	.049	.560	.756
	2	.637	.049	.539	.734

Table 2.7

7. 0=cornell; 1=fortune * prob

Measure: MEASURE_1

0=cornell; 1=fortune	prob	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
cornell	1	.615	.053	.509	.722
	2	.558	.050	.457	.659
	3	.538	.055	.428	.649
fortune	1	.699	.053	.592	.805
	2	.596	.050	.495	.697
	3	.647	.055	.537	.758

Table 2.8

8. frame * prob

Measure: MEASURE_1

frame	prob	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	1	.635	.046	.543	.726
	2	.590	.042	.506	.674
	3	.635	.042	.550	.719
2	1	.679	.047	.585	.774
	2	.564	.047	.471	.658
	3	.551	.049	.453	.649

Table 2.9

9. 0=cornell; 1=fortune * frame * prob

Measure: MEASURE_1

0=cornell; 1=fortune	frame	prob	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
cornell	1	1	.577	.065	.447	.707
		2	.577	.059	.458	.696
		3	.590	.060	.470	.709
	2	1	.654	.066	.520	.787
		2	.538	.066	.406	.671
		3	.487	.069	.348	.626
fortune	1	1	.692	.065	.562	.822
		2	.603	.059	.483	.722
		3	.679	.060	.560	.799
	2	1	.705	.066	.572	.839
		2	.590	.066	.457	.722
		3	.615	.069	.477	.754

Table 2.10

10. 0=cornell; 1=fortune * mag

Measure: MEASURE_1

0=cornell; 1=fortune	mag	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
cornell	1	.737	.052	.632	.842
	2	.654	.057	.539	.768
	3	.321	.055	.211	.430
fortune	1	.635	.052	.529	.740
	2	.654	.057	.539	.768
	3	.654	.055	.544	.764

Table 2.11

11. frame * mag

Measure: MEASURE_1

frame	mag	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	1	.692	.046	.601	.784
	2	.673	.050	.572	.774
	3	.494	.045	.404	.583
2	1	.679	.046	.588	.771
	2	.635	.045	.543	.726
	3	.481	.049	.382	.580

Table 2.12

12. 0=cornell; 1=fortune * frame * mag

Measure: MEASURE_1

0=cornell; 1=fortune	frame	mag	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
cornell	1	1	.744	.064	.614	.873
		2	.692	.071	.550	.835
		3	.308	.063	.181	.435
	2	1	.731	.065	.601	.860
		2	.615	.064	.486	.744
		3	.333	.070	.194	.473
fortune	1	1	.641	.064	.512	.770
		2	.654	.071	.511	.796
		3	.679	.063	.552	.807
	2	1	.628	.065	.499	.758
		2	.654	.064	.525	.783
		3	.628	.070	.488	.768

Table 2.13

13. prob * mag

Measure: MEASURE_1

prob	mag	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	1	.721	.045	.632	.811
	2	.702	.050	.601	.803
	3	.548	.050	.448	.648
2	1	.702	.047	.608	.796
	2	.644	.052	.539	.749
	3	.385	.051	.282	.487
3	1	.635	.055	.523	.746
	2	.615	.054	.507	.724
	3	.529	.056	.417	.641

Table 2.14

14. 0=cornell; 1=fortune * prob * mag

Measure: MEASURE_1

0=cornell; 1=fortune	prob	mag	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
cornell	1	1	.750	.063	.623	.877
		2	.731	.071	.588	.874
		3	.365	.070	.225	.506
	2	1	.788	.066	.655	.922
		2	.673	.074	.524	.822
		3	.212	.072	.067	.356
	3	1	.673	.078	.516	.830
		2	.558	.077	.404	.712
		3	.385	.079	.226	.543
fortune	1	1	.692	.063	.566	.819
		2	.673	.071	.530	.816
		3	.731	.070	.590	.872
	2	1	.615	.066	.482	.749
		2	.615	.074	.467	.764
		3	.558	.072	.413	.702
	3	1	.596	.078	.439	.754
		2	.673	.077	.519	.827
		3	.673	.079	.514	.832

Table 2.15

15. frame * prob * mag

Measure: MEASURE_1

frame	prob	mag	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
1	1	1	.654	.067	.519	.789
		2	.692	.065	.562	.823
		3	.558	.064	.430	.685
	2	1	.788	.055	.679	.898
		2	.615	.069	.478	.753
		3	.365	.061	.243	.488
	3	1	.635	.068	.498	.771
		2	.712	.064	.583	.840
		3	.558	.068	.422	.693
2	1	1	.788	.057	.674	.903
		2	.712	.064	.583	.840
		3	.538	.067	.404	.673
	2	1	.615	.069	.478	.753
		2	.673	.066	.540	.806
		3	.404	.067	.270	.538
	3	1	.635	.068	.499	.770
		2	.519	.069	.380	.658
		3	.500	.067	.365	.635

Table 2.16

16. 0=cornell; 1=fortune * frame * prob * mag

Measure: MEASURE_1

0=cornell; 1=fortune	frame	prob	mag	Mean	Std. Error	95% Confidence Interval	
						Lower Bound	Upper Bound
cornell	1	1	1	.654	.095	.463	.845
			2	.731	.092	.546	.916
			3	.346	.090	.166	.527
		2	1	.923	.077	.768	1.078
			2	.654	.097	.459	.849
			3	.154	.087	-.020	.328
		3	1	.654	.096	.461	.847
			2	.692	.091	.510	.874
			3	.423	.096	.231	.615
	2	1	1	.846	.081	.684	1.009
			2	.731	.091	.549	.913
			3	.385	.095	.194	.575
		2	1	.654	.097	.459	.849
			2	.692	.094	.504	.881
			3	.269	.094	.080	.459
		3	1	.692	.096	.500	.884
			2	.423	.098	.226	.620
			3	.346	.095	.155	.537
fortune	1	1	1	.654	.095	.463	.845
			2	.654	.092	.469	.839
			3	.769	.090	.589	.950
		2	1	.654	.077	.499	.809
			2	.577	.097	.382	.772
			3	.577	.087	.403	.751
		3	1	.615	.096	.422	.809
			2	.731	.091	.549	.913
			3	.692	.096	.500	.884
	2	1	1	.731	.081	.568	.893
			2	.692	.091	.510	.874
			3	.692	.095	.502	.883
		2	1	.577	.097	.382	.772
			2	.654	.094	.466	.842
			3	.538	.094	.349	.728
		3	1	.577	.096	.385	.769
			2	.615	.098	.418	.812
			3	.654	.095	.463	.845

Table 3: ANOVA with confidence ratings taken into account:

Explanation of variables:
Frame: 1=gain, 2=loss
Prob (Probability): 1=1/2, 2=1/3, 3=1/4
Mag (Magnitude): 1=low, 2=medium, 3=high
Newc(1-9)=self confidence rating in the gain frame; Gain frame, ½ prob, sure win of $ 1/4/30, Gain frame, 1/3 prob, sure win of $ 1/4/30, Gain frame, ¼ prob, sure win of $ 1/4/30
Newc(10-18)= self confidence rating in the loss frame; Loss frame, ½ prob, sure win of $ 1/4/30, Loss frame, 1/3 prob, sure win of $ 1/4/30, Loss frame, ¼ prob, sure win of $ 1/4/30

Cornell= undergraduate population
Fortune=delinquent population

Table 3.1

Within-Subjects Factors

Measure: Conf

frame	prob	mag	Dependent Variable
1	1	1	newc1
		2	newc2
		3	newc3
	2	1	newc4
		2	newc5
		3	newc6
	3	1	newc7
		2	newc8
		3	newc9
2	1	1	newc10
		2	newc11
		3	newc12
	2	1	newc13
		2	newc14
		3	newc15
	3	1	newc16
		2	newc17
		3	newc18

Between-Subjects Factors

		Value Label	N
0=cornell; 1=fortune	.00	cornell	26
	1.00	fortune	26

Table 3.2

Multivariate Tests[b]

Effect		Value	F	Hypothesis df	Error df	Sig.
frame	Pillai's Trace	.010	.502[a]	1.000	50.000	.482
	Wilks' Lambda	.990	.502[a]	1.000	50.000	.482
	Hotelling's Trace	.010	.502[a]	1.000	50.000	.482
	Roy's Largest Root	.010	.502[a]	1.000	50.000	.482
frame * Delinquen	Pillai's Trace	.003	.143[a]	1.000	50.000	.707
	Wilks' Lambda	.997	.143[a]	1.000	50.000	.707
	Hotelling's Trace	.003	.143[a]	1.000	50.000	.707
	Roy's Largest Root	.003	.143[a]	1.000	50.000	.707
prob	Pillai's Trace	.121	3.369[a]	2.000	49.000	.043
	Wilks' Lambda	.879	3.369[a]	2.000	49.000	.043
	Hotelling's Trace	.138	3.369[a]	2.000	49.000	.043
	Roy's Largest Root	.138	3.369[a]	2.000	49.000	.043
prob * Delinquen	Pillai's Trace	.031	.794[a]	2.000	49.000	.458
	Wilks' Lambda	.969	.794[a]	2.000	49.000	.458
	Hotelling's Trace	.032	.794[a]	2.000	49.000	.458
	Roy's Largest Root	.032	.794[a]	2.000	49.000	.458
mag	Pillai's Trace	.314	11.200[a]	2.000	49.000	.000
	Wilks' Lambda	.686	11.200[a]	2.000	49.000	.000
	Hotelling's Trace	.457	11.200[a]	2.000	49.000	.000
	Roy's Largest Root	.457	11.200[a]	2.000	49.000	.000
mag * Delinquen	Pillai's Trace	.303	10.673[a]	2.000	49.000	.000
	Wilks' Lambda	.697	10.673[a]	2.000	49.000	.000
	Hotelling's Trace	.436	10.673[a]	2.000	49.000	.000
	Roy's Largest Root	.436	10.673[a]	2.000	49.000	.000
frame * prob	Pillai's Trace	.036	.917[a]	2.000	49.000	.406
	Wilks' Lambda	.964	.917[a]	2.000	49.000	.406
	Hotelling's Trace	.037	.917[a]	2.000	49.000	.406
	Roy's Largest Root	.037	.917[a]	2.000	49.000	.406
frame * prob * Delinquen	Pillai's Trace	.016	.398[a]	2.000	49.000	.674
	Wilks' Lambda	.984	.398[a]	2.000	49.000	.674
	Hotelling's Trace	.016	.398[a]	2.000	49.000	.674
	Roy's Largest Root	.016	.398[a]	2.000	49.000	.674
frame * mag	Pillai's Trace	.006	.154[a]	2.000	49.000	.857
	Wilks' Lambda	.994	.154[a]	2.000	49.000	.857
	Hotelling's Trace	.006	.154[a]	2.000	49.000	.857
	Roy's Largest Root	.006	.154[a]	2.000	49.000	.857
frame * mag * Delinquen	Pillai's Trace	.033	.840[a]	2.000	49.000	.438
	Wilks' Lambda	.967	.840[a]	2.000	49.000	.438
	Hotelling's Trace	.034	.840[a]	2.000	49.000	.438
	Roy's Largest Root	.034	.840[a]	2.000	49.000	.438

Table 3.3

Multivariate Tests[b]

Effect		Value	F	Hypothesis df	Error df	Sig.
prob * mag	Pillai's Trace	.138	1.888[a]	4.000	47.000	.128
	Wilks' Lambda	.862	1.888[a]	4.000	47.000	.128
	Hotelling's Trace	.161	1.888[a]	4.000	47.000	.128
	Roy's Largest Root	.161	1.888[a]	4.000	47.000	.128
prob * mag * Delinquen	Pillai's Trace	.118	1.572[a]	4.000	47.000	.197
	Wilks' Lambda	.882	1.572[a]	4.000	47.000	.197
	Hotelling's Trace	.134	1.572[a]	4.000	47.000	.197
	Roy's Largest Root	.134	1.572[a]	4.000	47.000	.197
frame * prob * mag	Pillai's Trace	.243	3.779[a]	4.000	47.000	.010
	Wilks' Lambda	.757	3.779[a]	4.000	47.000	.010
	Hotelling's Trace	.322	3.779[a]	4.000	47.000	.010
	Roy's Largest Root	.322	3.779[a]	4.000	47.000	.010
frame * prob * mag * Delinquen	Pillai's Trace	.078	.995[a]	4.000	47.000	.420
	Wilks' Lambda	.922	.995[a]	4.000	47.000	.420
	Hotelling's Trace	.085	.995[a]	4.000	47.000	.420
	Roy's Largest Root	.085	.995[a]	4.000	47.000	.420

a. Exact statistic

b.
Design: Intercept+Delinquen
Within Subjects Design: frame+prob+mag+frame*prob+frame*mag+prob*mag+frame*prob*mag

Table 3.4

Mauchly's Test of Sphericity[b]

Measure: Conf

					Epsilon[a]		
Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
frame	1.000	.000	0	.	1.000	1.000	1.000
prob	.991	.426	2	.808	.991	1.000	.500
mag	.879	6.331	2	.042	.892	.941	.500
frame * prob	.862	7.297	2	.026	.878	.926	.500
frame * mag	.949	2.541	2	.281	.952	1.000	.500
prob * mag	.791	11.372	9	.251	.905	1.000	.250
frame * prob * mag	.844	8.212	9	.513	.924	1.000	.250

Tests the null hypothesis that the error covariance matrix of the orthonormalized transformed dependent variables is proportional to an identity matrix.

a. May be used to adjust the degrees of freedom for the averaged tests of significance. Corrected tests are displayed in the Tests of Within-Subjects Effects table.

b.
Design: Intercept+Delinquen
Within Subjects Design: frame+prob+mag+frame*prob+frame*mag+prob*mag+frame*prob*mag

Table 3.5

Tests of Within-Subjects Effects

Measure: Conf

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
frame	Sphericity Assumed	15.385	1	15.385	.502	.482
	Greenhouse-Geisser	15.385	1.000	15.385	.502	.482
	Huynh-Feldt	15.385	1.000	15.385	.502	.482
	Lower-bound	15.385	1.000	15.385	.502	.482
frame * Delinquen	Sphericity Assumed	4.376	1	4.376	.143	.707
	Greenhouse-Geisser	4.376	1.000	4.376	.143	.707
	Huynh-Feldt	4.376	1.000	4.376	.143	.707
	Lower-bound	4.376	1.000	4.376	.143	.707
Error(frame)	Sphericity Assumed	1531.128	50	30.623		
	Greenhouse-Geisser	1531.128	50.000	30.623		
	Huynh-Feldt	1531.128	50.000	30.623		
	Lower-bound	1531.128	50.000	30.623		
prob	Sphericity Assumed	204.795	2	102.397	3.751	.027
	Greenhouse-Geisser	204.795	1.983	103.284	3.751	.027
	Huynh-Feldt	204.795	2.000	102.397	3.751	.027
	Lower-bound	204.795	1.000	204.795	3.751	.058
prob * Delinquen	Sphericity Assumed	40.778	2	20.389	.747	.476
	Greenhouse-Geisser	40.778	1.983	20.565	.747	.475
	Huynh-Feldt	40.778	2.000	20.389	.747	.476
	Lower-bound	40.778	1.000	40.778	.747	.392
Error(prob)	Sphericity Assumed	2729.872	100	27.299		
	Greenhouse-Geisser	2729.872	99.142	27.535		
	Huynh-Feldt	2729.872	100.000	27.299		
	Lower-bound	2729.872	50.000	54.597		
mag	Sphericity Assumed	1001.096	2	500.548	15.336	.000
	Greenhouse-Geisser	1001.096	1.784	561.213	15.336	.000
	Huynh-Feldt	1001.096	1.882	531.844	15.336	.000
	Lower-bound	1001.096	1.000	1001.096	15.336	.000
mag * Delinquen	Sphericity Assumed	942.823	2	471.411	14.443	.000
	Greenhouse-Geisser	942.823	1.784	528.545	14.443	.000
	Huynh-Feldt	942.823	1.882	500.885	14.443	.000
	Lower-bound	942.823	1.000	942.823	14.443	.000

Table 3.6

Tests of Within-Subjects Effects

Measure: Conf

Source		Type III Sum of Squares	df	Mean Square	F	Sig.
Error(mag)	Sphericity Assumed	3263.859	100	32.639		
	Greenhouse-Geisser	3263.859	89.190	36.594		
	Huynh-Feldt	3263.859	94.116	34.679		
	Lower-bound	3263.859	50.000	65.277		
frame * prob	Sphericity Assumed	57.872	2	28.936	1.251	.291
	Greenhouse-Geisser	57.872	1.757	32.940	1.251	.288
	Huynh-Feldt	57.872	1.852	31.244	1.251	.289
	Lower-bound	57.872	1.000	57.872	1.251	.269
frame * prob * Delinquen	Sphericity Assumed	21.470	2	10.735	.464	.630
	Greenhouse-Geisser	21.470	1.757	12.220	.464	.605
	Huynh-Feldt	21.470	1.852	11.591	.464	.615
	Lower-bound	21.470	1.000	21.470	.464	.499
Error(frame*prob)	Sphericity Assumed	2312.769	100	23.128		
	Greenhouse-Geisser	2312.769	87.846	26.328		
	Huynh-Feldt	2312.769	92.614	24.972		
	Lower-bound	2312.769	50.000	46.255		
frame * mag	Sphericity Assumed	5.788	2	2.894	.124	.884
	Greenhouse-Geisser	5.788	1.904	3.041	.124	.874
	Huynh-Feldt	5.788	2.000	2.894	.124	.884
	Lower-bound	5.788	1.000	5.788	.124	.726
frame * mag * Delinquen	Sphericity Assumed	37.976	2	18.988	.813	.446
	Greenhouse-Geisser	37.976	1.904	19.948	.813	.441
	Huynh-Feldt	37.976	2.000	18.988	.813	.446
	Lower-bound	37.976	1.000	37.976	.813	.371
Error(frame*mag)	Sphericity Assumed	2334.679	100	23.347		
	Greenhouse-Geisser	2334.679	95.189	24.527		
	Huynh-Feldt	2334.679	100.000	23.347		
	Lower-bound	2334.679	50.000	46.694		
prob * mag	Sphericity Assumed	156.994	4	39.248	2.013	.094
	Greenhouse-Geisser	156.994	3.619	43.380	2.013	.101
	Huynh-Feldt	156.994	4.000	39.248	2.013	.094
	Lower-bound	156.994	1.000	156.994	2.013	.162
prob * mag * Delinquen	Sphericity Assumed	96.806	4	24.201	1.241	.295
	Greenhouse-Geisser	96.806	3.619	26.749	1.241	.296
	Huynh-Feldt	96.806	4.000	24.201	1.241	.295
	Lower-bound	96.806	1.000	96.806	1.241	.271
Error(prob*mag)	Sphericity Assumed	3899.090	200	19.495		
	Greenhouse-Geisser	3899.090	180.950	21.548		
	Huynh-Feldt	3899.090	200.000	19.495		
	Lower-bound	3899.090	50.000	77.982		
frame * prob * mag	Sphericity Assumed	198.724	4	49.681	3.237	.013
	Greenhouse-Geisser	198.724	3.698	53.740	3.237	.016
	Huynh-Feldt	198.724	4.000	49.681	3.237	.013
	Lower-bound	198.724	1.000	198.724	3.237	.078
frame * prob * mag * Delinquen	Sphericity Assumed	46.870	4	11.717	.763	.550
	Greenhouse-Geisser	46.870	3.698	12.675	.763	.541
	Huynh-Feldt	46.870	4.000	11.717	.763	.550
	Lower-bound	46.870	1.000	46.870	.763	.386
Error(frame*prob*mag)	Sphericity Assumed	3069.962	200	15.350		
	Greenhouse-Geisser	3069.962	184.894	16.604		
	Huynh-Feldt	3069.962	200.000	15.350		
	Lower-bound	3069.962	50.000	61.399		

Table 3.7

Tests of Within-Subjects Contrasts

Measure: Conf

Source	frame	prob	mag	Type III Sum of Squares	df	Mean Square	F	Sig.
frame	Linear			15.385	1	15.385	.502	.482
frame * Delinquen	Linear			4.376	1	4.376	.143	.707
Error(frame)	Linear			1531.128	50	30.623		
prob		Linear		142.314	1	142.314	4.958	.030
		Quadratic		62.481	1	62.481	2.413	.127
prob * Delinquen		Linear		1.256	1	1.256	.044	.835
		Quadratic		39.521	1	39.521	1.526	.222
Error(prob)		Linear		1435.096	50	28.702		
		Quadratic		1294.776	50	25.896		
mag			Linear	887.077	1	887.077	21.963	.000
			Quadratic	114.019	1	114.019	4.581	.037
mag * Delinquen			Linear	868.103	1	868.103	21.493	.000
			Quadratic	74.720	1	74.720	3.002	.089
Error(mag)			Linear	2019.487	50	40.390		
			Quadratic	1244.372	50	24.887		
frame * prob	Linear	Linear		57.853	1	57.853	1.851	.180
		Quadratic		.019	1	.019	.001	.972
frame * prob * Delinquen	Linear	Linear		14.769	1	14.769	.473	.495
		Quadratic		6.701	1	6.701	.446	.507
Error(frame*prob)	Linear	Linear		1562.378	50	31.248		
		Quadratic		750.391	50	15.008		
frame * mag	Linear		Linear	.231	1	.231	.008	.929
			Quadratic	5.558	1	5.558	.307	.582
frame * mag * Delinquen	Linear		Linear	18.692	1	18.692	.654	.423
			Quadratic	19.284	1	19.284	1.066	.307
Error(frame*mag)	Linear		Linear	1429.744	50	28.595		
			Quadratic	904.936	50	18.099		
prob * mag		Linear	Linear	38.772	1	38.772	1.591	.213
			Quadratic	.232	1	.232	.012	.914
		Quadratic	Linear	112.680	1	112.680	7.552	.008
			Quadratic	5.310	1	5.310	.277	.601
prob * mag * Delinquen		Linear	Linear	1.752	1	1.752	.072	.790
			Quadratic	57.982	1	57.982	2.972	.091
		Quadratic	Linear	37.039	1	37.039	2.483	.121
			Quadratic	.032	1	.032	.002	.967
Error(prob*mag)		Linear	Linear	1218.601	50	24.372		
			Quadratic	975.495	50	19.510		
		Quadratic	Linear	745.989	50	14.920		
			Quadratic	959.005	50	19.180		
frame * prob * mag	Linear	Linear	Linear	4.868	1	4.868	.307	.582
			Quadratic	16.385	1	16.385	.828	.367
		Quadratic	Linear	98.719	1	98.719	8.591	.005
			Quadratic	78.752	1	78.752	5.517	.023
frame * prob * mag * Delinquen	Linear	Linear	Linear	4.445	1	4.445	.280	.599
			Quadratic	.065	1	.065	.003	.955
		Quadratic	Linear	30.469	1	30.469	2.652	.110
			Quadratic	11.891	1	11.891	.833	.366
Error(frame*prob*mag)	Linear	Linear	Linear	792.813	50	15.856		
			Quadratic	988.925	50	19.778		
		Quadratic	Linear	574.521	50	11.490		
			Quadratic	713.704	50	14.274		

Table 3.8

Tests of Between-Subjects Effects

Measure: Conf
Transformed Variable: Average

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Intercept	1009.385	1	1009.385	6.923	.011
Delinquen	65.709	1	65.709	.451	.505
Error	7289.795	50	145.796		

Table 4

Estimated Marginal Means for the ANOVA conducted without confidence scores
Table 4.1

1. Grand Mean

Measure: Conf

Mean	Std. Error	95% Confidence Interval	
		Lower Bound	Upper Bound
-1.038	.395	-1.831	-.246

Table 4.2

2. 0=cornell; 1=fortune

Estimates

Measure: Conf

0=cornell; 1=fortune	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
cornell	-.774	.558	-1.895	.348
fortune	-1.303	.558	-2.424	-.182

Table 4.3

3. frame

Estimates

Measure: Conf

frame	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	-1.167	.433	-2.037	-.296
2	-.910	.435	-1.784	-.037

Table 4.4

4. prob

Estimates

Measure: Conf

prob	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	-1.699	.477	-2.657	-.740
2	-.673	.456	-1.589	.242
3	-.744	.455	-1.657	.170

Table 4.5

5. mag

Estimates

Measure: Conf

mag	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	-1.984	.465	-2.917	-1.051
2	-1.532	.490	-2.516	-.548
3	.401	.470	-.543	1.344

Table 4.6

6. 0=cornell; 1=fortune * frame

Measure: Conf

0=cornell; 1=fortune	frame	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
cornell	1	-.833	.613	-2.064	.398
	2	-.714	.615	-1.949	.522
fortune	1	-1.500	.613	-2.731	-.269
	2	-1.107	.615	-2.342	.129

Table 4.7

7. 0=cornell; 1=fortune * prob

Measure: Conf

0=cornell; 1=fortune	prob	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
cornell	1	-1.333	.675	-2.689	.022
	2	-.699	.645	-1.993	.596
	3	-.288	.643	-1.581	1.004
fortune	1	-2.064	.675	-3.419	-.709
	2	-.647	.645	-1.942	.647
	3	-1.199	.643	-2.491	.094

Table 4.8

8. frame * prob

Measure: Conf

frame	prob	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	1	-1.519	.568	-2.660	-.378
	2	-.808	.525	-1.862	.246
	3	-1.173	.487	-2.152	-.194
2	1	-1.878	.584	-3.052	-.704
	2	-.538	.542	-1.626	.549
	3	-.314	.554	-1.427	.799

Table 4.9

9. 0=cornell; 1=fortune * frame * prob

Measure: Conf

0=cornell; 1=fortune	frame	prob	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
cornell	1	1	-.872	.803	-2.485	.742
		2	-.885	.742	-2.375	.606
		3	-.744	.689	-2.128	.641
	2	1	-1.795	.826	-3.455	-.135
		2	-.513	.766	-2.051	1.026
		3	.167	.784	-1.408	1.741
fortune	1	1	-2.167	.803	-3.780	-.553
		2	-.731	.742	-2.221	.760
		3	-1.603	.689	-2.987	-.218
	2	1	-1.962	.826	-3.621	-.302
		2	-.564	.766	-2.103	.974
		3	-.795	.784	-2.369	.780

Table 4.10

10. 0=cornell; 1=fortune * mag

Measure: Conf

0=cornell; 1=fortune	mag	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
cornell	1	-2.699	.657	-4.018	-1.379
	2	-1.667	.693	-3.058	-.275
	3	2.045	.664	.710	3.379
fortune	1	-1.269	.657	-2.589	.050
	2	-1.397	.693	-2.789	-.006
	3	-1.244	.664	-2.578	.091

Table 4.11

11. frame * mag

Measure: Conf

frame	mag	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	1	-2.077	.552	-3.187	-.967
	2	-1.769	.603	-2.980	-.559
	3	.346	.515	-.689	1.381
2	1	-1.891	.543	-2.981	-.801
	2	-1.295	.529	-2.357	-.233
	3	.455	.584	-.717	1.627

Table 4.12

12. 0=cornell; 1=fortune * frame * mag

Measure: Conf

0=cornell; 1=fortune	frame	mag	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
cornell	1	1	-2.795	.781	-4.364	-1.226
		2	-2.038	.852	-3.751	-.326
		3	2.333	.729	.870	3.797
	2	1	-2.603	.768	-4.144	-1.061
		2	-1.295	.747	-2.796	.207
		3	1.756	.825	.098	3.414
fortune	1	1	-1.359	.781	-2.928	.210
		2	-1.500	.852	-3.212	.212
		3	-1.641	.729	-3.105	-.177
	2	1	-1.179	.768	-2.721	.362
		2	-1.295	.747	-2.796	.207
		3	-.846	.825	-2.504	.812

Table 4.13

13. prob * mag

Measure: Conf

prob	mag	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
1	1	-2.673	.560	-3.799	-1.547
	2	-2.144	.607	-3.363	-.926
	3	-.279	.603	-1.489	.932
2	1	-2.144	.566	-3.280	-1.008
	2	-1.317	.626	-2.575	-.060
	3	1.442	.622	.192	2.693
3	1	-1.135	.630	-2.400	.131
	2	-1.135	.591	-2.322	.053
	3	.038	.643	-1.253	1.330

Table 4.14

14. 0=cornell; 1=fortune * prob * mag

Measure: Conf

0=cornell; 1=fortune	prob	mag	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
cornell	1	1	-2.962	.793	-4.553	-1.370
		2	-2.615	.858	-4.338	-.892
		3	1.577	.852	-.135	3.289
	2	1	-3.500	.800	-5.106	-1.894
		2	-1.731	.885	-3.509	.048
		3	3.135	.880	1.366	4.903
	3	1	-1.635	.891	-3.425	.155
		2	-.654	.836	-2.333	1.025
		3	1.423	.909	-.403	3.249
fortune	1	1	-2.385	.793	-3.977	-.793
		2	-1.673	.858	-3.396	.050
		3	-2.135	.852	-3.846	-.423
	2	1	-.788	.800	-2.395	.818
		2	-.904	.885	-2.682	.875
		3	-.250	.880	-2.018	1.518
	3	1	-.635	.891	-2.425	1.155
		2	-1.615	.836	-3.295	.064
		3	-1.346	.909	-3.172	.480

Table 4.15

15. frame * prob * mag

Measure: Conf

frame	prob	mag	Mean	Std. Error	95% Confidence Interval	
					Lower Bound	Upper Bound
1	1	1	-2.038	.809	-3.663	-.414
		2	-2.135	.773	-3.687	-.582
		3	-.385	.757	-1.906	1.136
	2	1	-3.096	.664	-4.431	-1.761
		2	-.981	.808	-2.604	.643
		3	1.654	.707	.234	3.074
	3	1	-1.096	.762	-2.627	.435
		2	-2.192	.704	-3.605	-.779
		3	-.231	.781	-1.800	1.339
2	1	1	-3.308	.719	-4.751	-1.864
		2	-2.154	.756	-3.672	-.636
		3	-.173	.771	-1.722	1.376
	2	1	-1.192	.755	-2.709	.324
		2	-1.654	.716	-3.093	-.215
		3	1.231	.761	-.298	2.759
	3	1	-1.173	.743	-2.666	.320
		2	-.077	.754	-1.591	1.437
		3	.308	.770	-1.240	1.855

Table 4.16

16. 0=cornell; 1=fortune * frame * prob * mag

Measure: Conf

0=cornell; 1=fortune	frame	prob	mag	Mean	Std. Error	95% Confidence Interval	
						Lower Bound	Upper Bound
cornell	1	1	1	-2.000	1.143	-4.297	.297
			2	-2.654	1.093	-4.850	-.458
			3	2.038	1.071	-.113	4.190
		2	1	-5.000	.940	-6.888	-3.112
			2	-1.423	1.143	-3.719	.873
			3	3.769	1.000	1.761	5.777
		3	1	-1.385	1.078	-3.549	.780
			2	-2.038	.995	-4.037	-.040
			3	1.192	1.105	-1.028	3.412
	2	1	1	-3.923	1.017	-5.965	-1.881
			2	-2.577	1.069	-4.724	-.430
			3	1.115	1.091	-1.076	3.307
		2	1	-2.000	1.068	-4.145	.145
			2	-2.038	1.013	-4.073	-.004
			3	2.500	1.076	.339	4.661
		3	1	-1.885	1.051	-3.996	.227
			2	.731	1.066	-1.411	2.872
			3	1.654	1.089	-.534	3.842
fortune	1	1	1	-2.077	1.143	-4.374	.220
			2	-1.615	1.093	-3.811	.581
			3	-2.808	1.071	-4.959	-.657
		2	1	-1.192	.940	-3.080	.695
			2	-.538	1.143	-2.835	1.758
			3	-.462	1.000	-2.469	1.546
		3	1	-.808	1.078	-2.973	1.357
			2	-2.346	.995	-4.345	-.348
			3	-1.654	1.105	-3.874	.566
	2	1	1	-2.692	1.017	-4.734	-.651
			2	-1.731	1.069	-3.878	.416
			3	-1.462	1.091	-3.653	.730
		2	1	-.385	1.068	-2.529	1.760
			2	-1.269	1.013	-3.304	.765
			3	-.038	1.076	-2.200	2.123
		3	1	-.462	1.051	-2.573	1.650
			2	-.885	1.066	-3.026	1.257
			3	-1.038	1.089	-3.227	1.150

Table 5

Regression was conducted to examine whether or not the choice of selecting the gamble was predicted by sensation seeking, behavioral inhibition, behavioral activation and subject population across both frames

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	0=cornell; 1=fortune, Behavioral Inhibition, Sensation Seeking, Behavioral Activation[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: GambleScoreTotal

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.407[a]	.166	.095	3.78657

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	134.034	4	33.508	2.337	.069[a]
	Residual	673.890	47	14.338		
	Total	807.923	51			

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

b. Dependent Variable: GambleScoreTotal

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	9.876	1.071		9.218	.000
	SensationSeeking	.348	.131	.440	2.649	.011
	BehavioralInhibition	.018	.179	.014	.100	.921
	BehavioralActivation	-.085	.095	-.151	-.892	.377
	0=cornell; 1=fortune	2.130	1.103	.270	1.931	.060

a. Dependent Variable: GambleScoreTotal

Table 6

Regression was conducted to examine whether or not the choice of selecting the gamble was predicted by sensation seeking, behavioral inhibition, behavioral activation and subject population, specifically in the gain frame.

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: GambleScoreGain

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.465[a]	.216	.149	2.06923

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	55.451	4	13.863	3.238	.020[a]
	Residual	201.241	47	4.282		
	Total	256.692	51			

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

b. Dependent Variable: GambleScoreGain

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.907	.585		8.381	.000
	SensationSeeking	.231	.072	.518	3.216	.002
	BehavioralInhibition	.015	.098	.020	.150	.881
	BehavioralActivation	-.051	.052	-.160	-.972	.336
	0=cornell; 1=fortune	1.181	.603	.266	1.960	.056

a. Dependent Variable: GambleScoreGain

Table 7

Regression was conducted to examine whether or not the choice of selecting the gamble was predicted by sensation seeking, behavioral inhibition, behavioral activation and subject population, specifically in the loss frame.

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	0=cornell; 1=fortune, Behavioral Inhibition, Sensation Seeking, Behavioral Activation[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: GambleScoreLoss

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.267[a]	.071	-.008	2.24166

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.131	4	4.533	.902	.470[a]
	Residual	236.176	47	5.025		
	Total	254.308	51			

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

b. Dependent Variable: GambleScoreLoss

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.969	.634		7.834	.000
	SensationSeeking	.117	.078	.264	1.506	.139
	BehavioralInhibition	.003	.106	.004	.030	.976
	BehavioralActivation	-.034	.056	-.109	-.610	.545
	0=cornell; 1=fortune	.948	.653	.214	1.452	.153

a. Dependent Variable: GambleScoreLoss

Table 8

Regression was conducted to examine whether or not the choice of selecting the gamble was predicted by sensation seeking, behavioral inhibition, behavioral activation and subject population across both frames, taking into account confidence ratings

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	0=cornell; 1=fortune, Behavioral Inhibition, Sensation Seeking, Behavioral Activation[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: totconf

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.333[a]	.111	.035	50.04378

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14693.224	4	3673.306	1.467	.227[a]
	Residual	117705.9	47	2504.380		
	Total	132399.1	51			

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

b. Dependent Variable: totconf

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-9.831	14.160		-.694	.491		
	SensationSeeking	-3.927	1.738	-.387	-2.260	.028	.644	1.554
	BehavioralInhibition	-.655	2.362	-.040	-.277	.783	.915	1.092
	BehavioralActivation	1.115	1.256	.155	.887	.379	.619	1.616
	0=cornell; 1=fortune	-18.310	14.577	-.181	-1.256	.215	.907	1.103

a. Dependent Variable: totconf

Table 9

Regression was conducted to examine whether or not the choice of selecting the gamble was predicted by sensation seeking, behavioral inhibition, behavioral activation and subject population specifically in the gain frame

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	0=cornell; 1=fortune, Behavioral Inhibition, Sensation Seeking, Behavioral Activation[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: gainconf

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.416[a]	.173	.103	26.52803

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6935.395	4	1733.849	2.464	.058[a]
	Residual	33075.605	47	703.736		
	Total	40011.000	51			

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

b. Dependent Variable: gainconf

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-3.726	7.506		-.496	.622		
	SensationSeeking	-2.662	.921	-.478	-2.890	.006	.644	1.554
	BehavioralInhibition	-.324	1.252	-.036	-.259	.797	.915	1.092
	BehavioralActivation	.620	.666	.157	.930	.357	.619	1.616
	0=cornell; 1=fortune	-11.743	7.727	-.212	-1.520	.135	.907	1.103

a. Dependent Variable: gainconf

Table 10:

Regression was conducted to examine whether or not the choice of selecting the gamble was predicted by sensation seeking, behavioral inhibition, behavioral activation and subject population specifically in the loss frame

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	0=cornell; 1=fortune, Behavioral Inhibition, Sensation Seeking, Behavioral Activation[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: lossconf

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.194[a]	.038	-.044	28.62107

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1507.298	4	376.825	.460	.765[a]
	Residual	38500.779	47	819.166		
	Total	40008.077	51			

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, SensationSeeking, BehavioralActivation

b. Dependent Variable: lossconf

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-6.105	8.098		-.754	.455		
	SensationSeeking	-1.265	.994	-.227	-1.273	.209	.644	1.554
	BehavioralInhibition	-.331	1.351	-.037	-.245	.807	.915	1.092
	BehavioralActivation	.495	.718	.125	.689	.494	.619	1.616
	0=cornell; 1=fortune	-6.567	8.337	-.118	-.788	.435	.907	1.103

a. Dependent Variable: lossconf

Table 11

Demonstrates the multicoliniarity

Descriptive Statistics

	Mean	Std. Deviation	N
gainconf	-10.5000	28.00945	52
BehavioralInhibition	2.4038	3.10129	52
BehavioralActivation	10.2115	7.09138	52
0=cornell; 1=fortune	.5000	.50488	52
SensationSeeking	2.4231	5.02678	52

Correlations

		gainconf	Behavioral Inhibition	Behavioral Activation	0=cornell; 1=fortune	Sensation Seeking
Pearson Correlation	gainconf	1.000	-.019	-.129	-.108	-.356
	BehavioralInhibition	-.019	1.000	.258	-.069	.081
	BehavioralActivation	-.129	.258	1.000	.079	.545
	0=cornell; 1=fortune	-.108	-.069	.079	1.000	-.185
	SensationSeeking	-.356	.081	.545	-.185	1.000
Sig. (1-tailed)	gainconf	.	.446	.180	.223	.005
	BehavioralInhibition	.446	.	.032	.314	.285
	BehavioralActivation	.180	.032	.	.288	.000
	0=cornell; 1=fortune	.223	.314	.288	.	.094
	SensationSeeking	.005	.285	.000	.094	.
N	gainconf	52	52	52	52	52
	BehavioralInhibition	52	52	52	52	52
	BehavioralActivation	52	52	52	52	52
	0=cornell; 1=fortune	52	52	52	52	52
	SensationSeeking	52	52	52	52	52

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	0=cornell; 1=fortune, Behavioral Inhibition, Behavioral Activation[a]	.	Enter
2	Sensation Seeking[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: gainconf

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.163[a]	.026	-.034	28.48736	.026	.434	3	48	.729
2	.416[b]	.173	.103	26.52803	.147	8.352	1	47	.006

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, BehavioralActivation

b. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, BehavioralActivation, SensationSeeking

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1057.571	3	352.524	.434	.729[a]
	Residual	38953.429	48	811.530		
	Total	40011.000	51			
2	Regression	6935.395	4	1733.849	2.464	.058[b]
	Residual	33075.605	47	703.736		
	Total	40011.000	51			

a. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, BehavioralActivation

b. Predictors: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, BehavioralActivation, SensationSeeking

c. Dependent Variable: gainconf

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-2.939	8.055		-.365	.717		
	BehavioralInhibition	.052	1.337	.006	.039	.969	.925	1.081
	BehavioralActivation	-.487	.585	-.123	-.831	.410	.924	1.082
	0=cornell; 1=fortune	-5.435	7.960	-.098	-.683	.498	.985	1.015
2	(Constant)	-3.726	7.506		-.496	.622		
	BehavioralInhibition	-.324	1.252	-.036	-.259	.797	.915	1.092
	BehavioralActivation	.620	.666	.157	.930	.357	.619	1.616
	0=cornell; 1=fortune	-11.743	7.727	-.212	-1.520	.135	.907	1.103
	SensationSeeking	-2.662	.921	-.478	-2.890	.006	.644	1.554

a. Dependent Variable: gainconf

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	SensationSeeking	-.478[a]	-2.890	.006	-.388	.644	1.554	.619

a. Predictors in the Model: (Constant), 0=cornell; 1=fortune, BehavioralInhibition, BehavioralActivation

b. Dependent Variable: gainconf

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	Behavioral Inhibition	Behavioral Activation	0=cornell; 1=fortune	Sensation Seeking
1	1	2.910	1.000	.02	.04	.03	.04	
	2	.609	2.185	.00	.53	.00	.34	
	3	.319	3.019	.06	.43	.35	.48	
	4	.162	4.242	.91	.01	.62	.14	
2	1	3.213	1.000	.02	.03	.02	.02	.02
	2	.849	1.945	.01	.00	.00	.17	.39
	3	.580	2.353	.00	.71	.00	.15	.06
	4	.221	3.813	.43	.24	.08	.65	.25
	5	.136	4.860	.54	.02	.90	.00	.28

a. Dependent Variable: gainconf

Table 12

There were no significant differences between subject populations on the three scales

Descriptive Statistics

	Mean	Std. Deviation	N
gainconf	-10.5000	28.00945	52
SensationSeeking	2.4231	5.02678	52
BehavioralInhibition	2.4038	3.10129	52
BehavioralActivation	10.2115	7.09138	52
0=cornell; 1=fortune	.5000	.50488	52

Correlations

		gainconf	Sensation Seeking	Behavioral Inhibition	Behavioral Activation	0=cornell; 1=fortune
Pearson Correlation	gainconf	1.000	-.356	-.019	-.129	-.108
	SensationSeeking	-.356	1.000	.081	.545	-.185
	BehavioralInhibition	-.019	.081	1.000	.258	-.069
	BehavioralActivation	-.129	.545	.258	1.000	.079
	0=cornell; 1=fortune	-.108	-.185	-.069	.079	1.000
Sig. (1-tailed)	gainconf	.	.005	.446	.180	.223
	SensationSeeking	.005	.	.285	.000	.094
	BehavioralInhibition	.446	.285	.	.032	.314
	BehavioralActivation	.180	.000	.032	.	.288
	0=cornell; 1=fortune	.223	.094	.314	.288	.
N	gainconf	52	52	52	52	52
	SensationSeeking	52	52	52	52	52
	BehavioralInhibition	52	52	52	52	52
	BehavioralActivation	52	52	52	52	52
	0=cornell; 1=fortune	52	52	52	52	52

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Sensation Seeking[a]	.	Enter
2	Behavioral Inhibition, 0=cornell; 1=fortune, Behavioral Activation[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: gainconf

Model Summary

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.356[a]	.127	.109	26.43536	.127	7.254	1	50	.010
2	.416[b]	.173	.103	26.52803	.047	.884	3	47	.456

a. Predictors: (Constant), SensationSeeking

b. Predictors: (Constant), SensationSeeking, BehavioralInhibition, 0=cornell; 1=fortune, BehavioralActivation

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5069.586	1	5069.586	7.254	.010[a]
	Residual	34941.414	50	698.828		
	Total	40011.000	51			
2	Regression	6935.395	4	1733.849	2.464	.058[b]
	Residual	33075.605	47	703.736		
	Total	40011.000	51			

a. Predictors: (Constant), SensationSeeking

b. Predictors: (Constant), SensationSeeking, BehavioralInhibition, 0=cornell; 1=fortune, BehavioralActivation

c. Dependent Variable: gainconf

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-5.694	4.077		-1.397	.169		
	SensationSeeking	-1.983	.736	-.356	-2.693	.010	1.000	1.000
2	(Constant)	-3.726	7.506		-.496	.622		
	SensationSeeking	-2.662	.921	-.478	-2.890	.006	.644	1.554
	BehavioralInhibition	-.324	1.252	-.036	-.259	.797	.915	1.092
	BehavioralActivation	.620	.666	.157	.930	.357	.619	1.616
	0=cornell; 1=fortune	-11.743	7.727	-.212	-1.520	.135	.907	1.103

a. Dependent Variable: gainconf

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics		
						Tolerance	VIF	Minimum Tolerance
1	BehavioralInhibition	.009[a]	.071	.944	.010	.993	1.007	.993
	BehavioralActivation	.092[a]	.578	.566	.082	.703	1.422	.703
	0=cornell; 1=fortune	-.180[a]	-1.352	.183	-.190	.966	1.036	.966

a. Predictors in the Model: (Constant), SensationSeeking

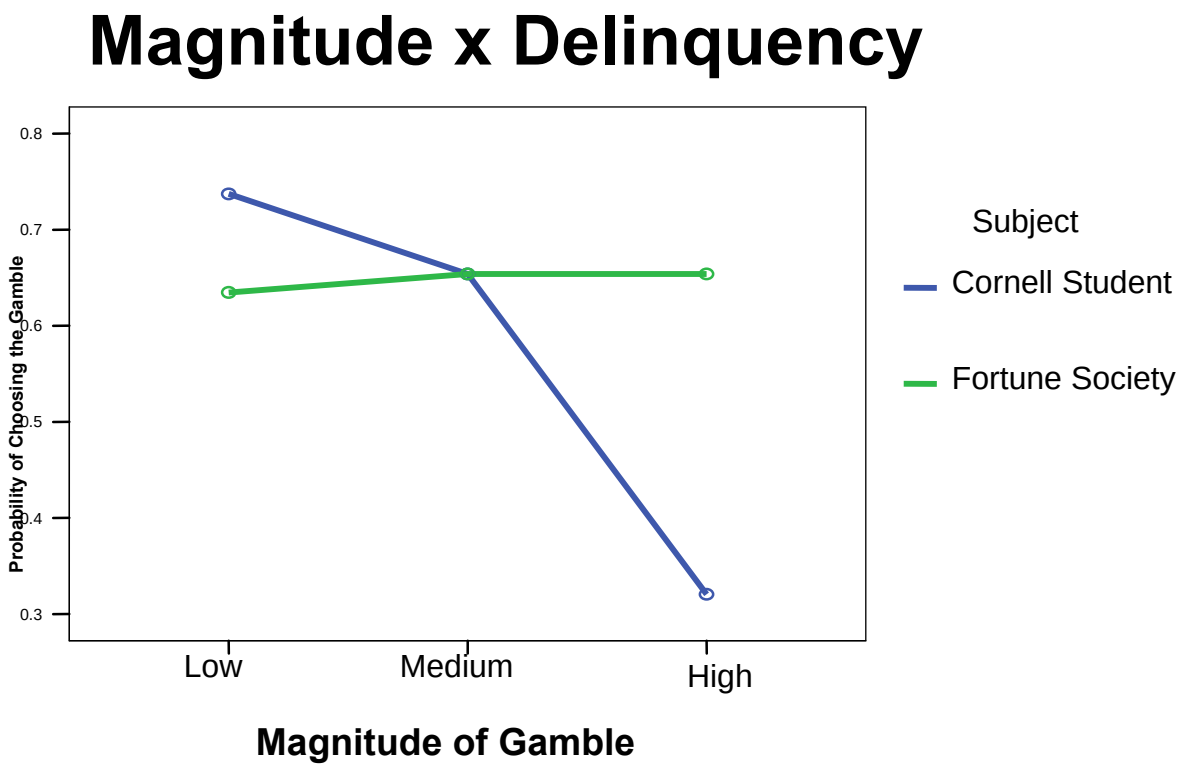
b. Dependent Variable: gainconf

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	Sensation Seeking	Behavioral Inhibition	Behavioral Activation	0=cornell; 1=fortune
1	1	1.438	1.000	.28	.28			
	2	.562	1.599	.72	.72			
2	1	3.213	1.000	.02	.02	.03	.02	.02
	2	.849	1.945	.01	.39	.00	.00	.17
	3	.580	2.353	.00	.06	.71	.00	.15
	4	.221	3.813	.43	.25	.24	.08	.65
	5	.136	4.860	.54	.28	.02	.90	.00

a. Dependent Variable: gainconf

Figure 1:


Magnitude x Delinquency
Probability of Choosing the Gamble
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0.7
0.6
0.5
0.4
0.3
Low
Medium
High
Magnitude of Gamble
Subject
Cornell Student
Fortune Society

Figure 2:

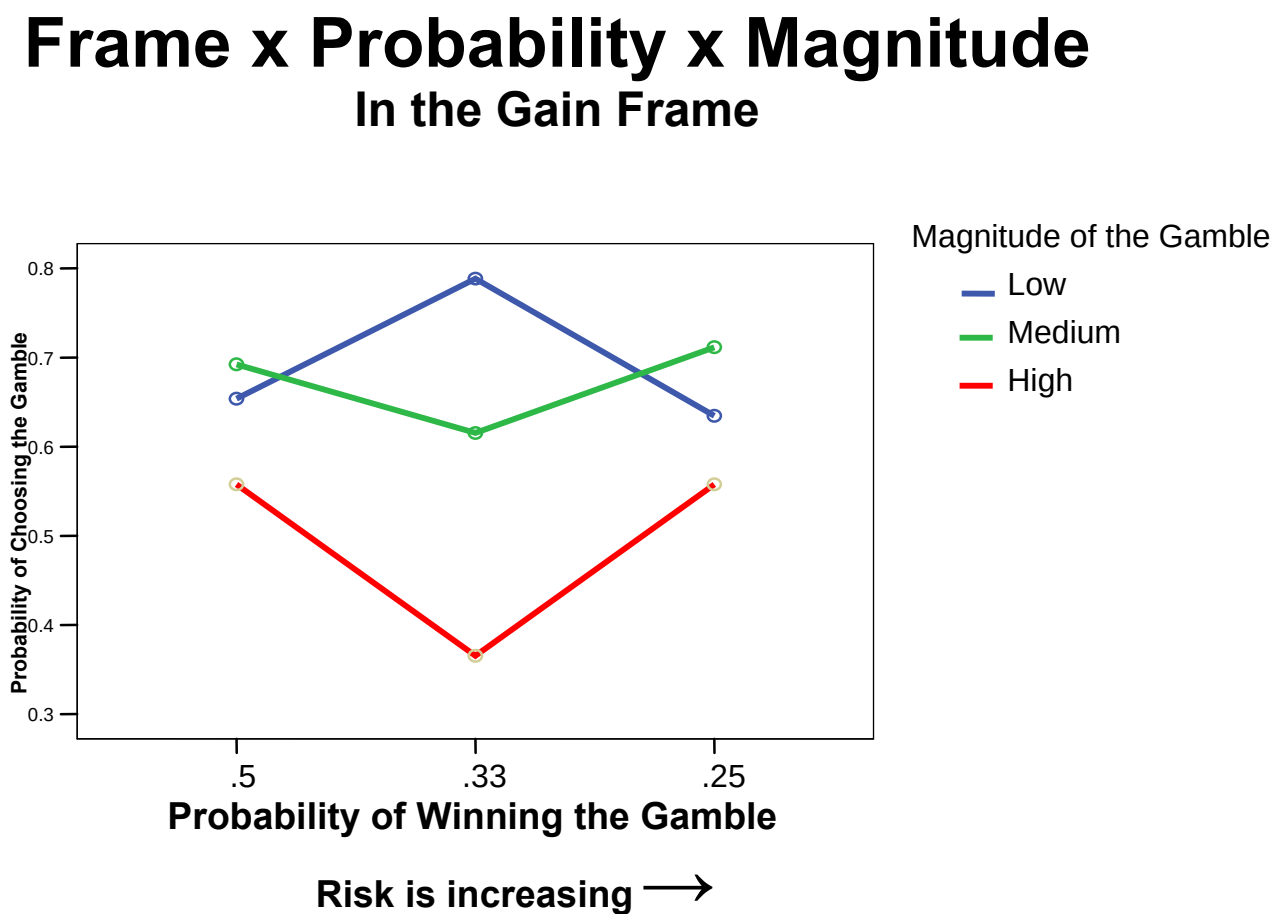

Frame x Probability x Magnitude
In the Gain Frame
Probability of Choosing the Gamble
0.8
0.7
0.6
0.5
0.4
0.3
.5
.33
.25
Probability of Winning the Gamble
Risk is increasing ⟶
Magnitude of the Gamble
Low
Medium
High

Figure 3:

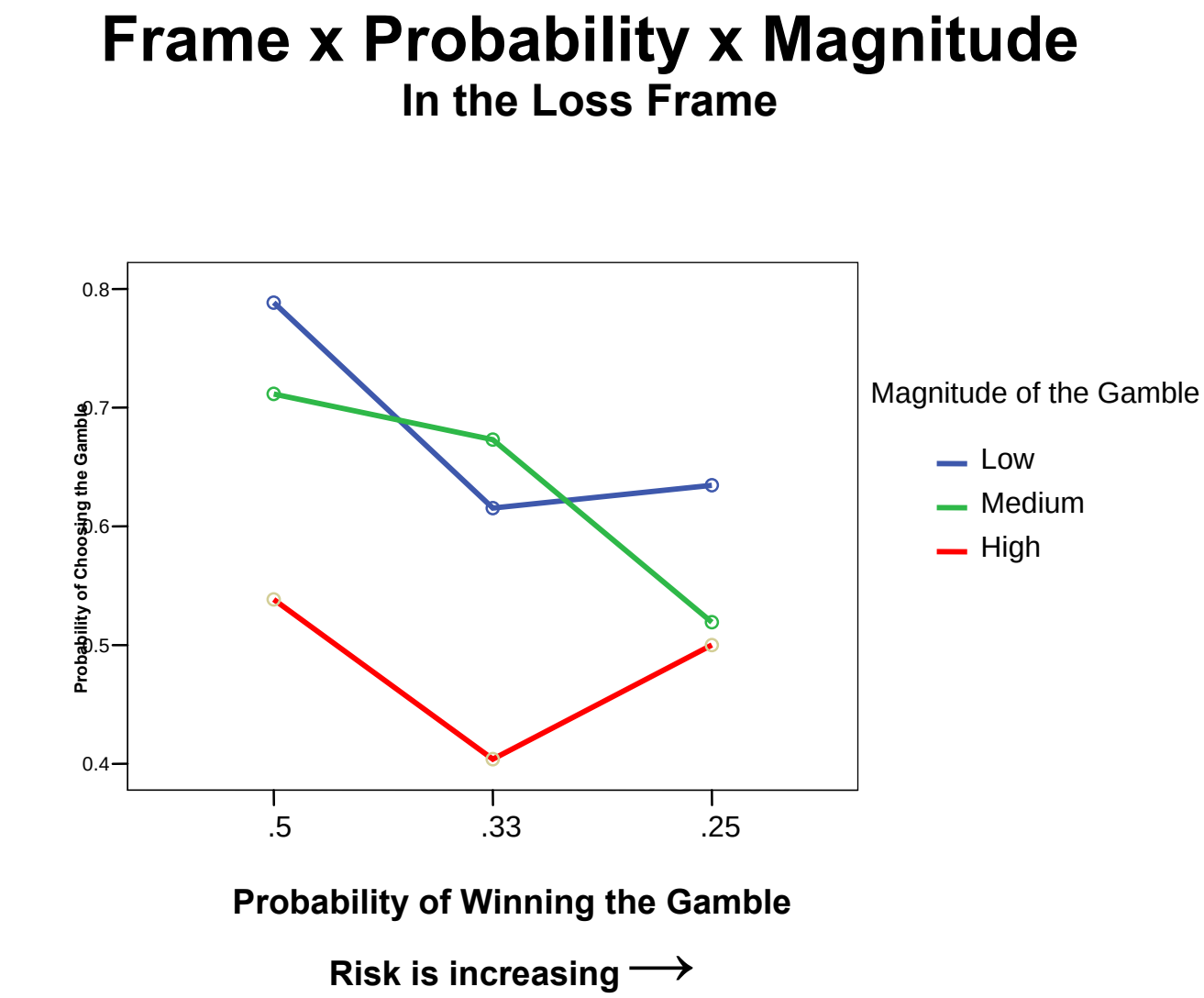
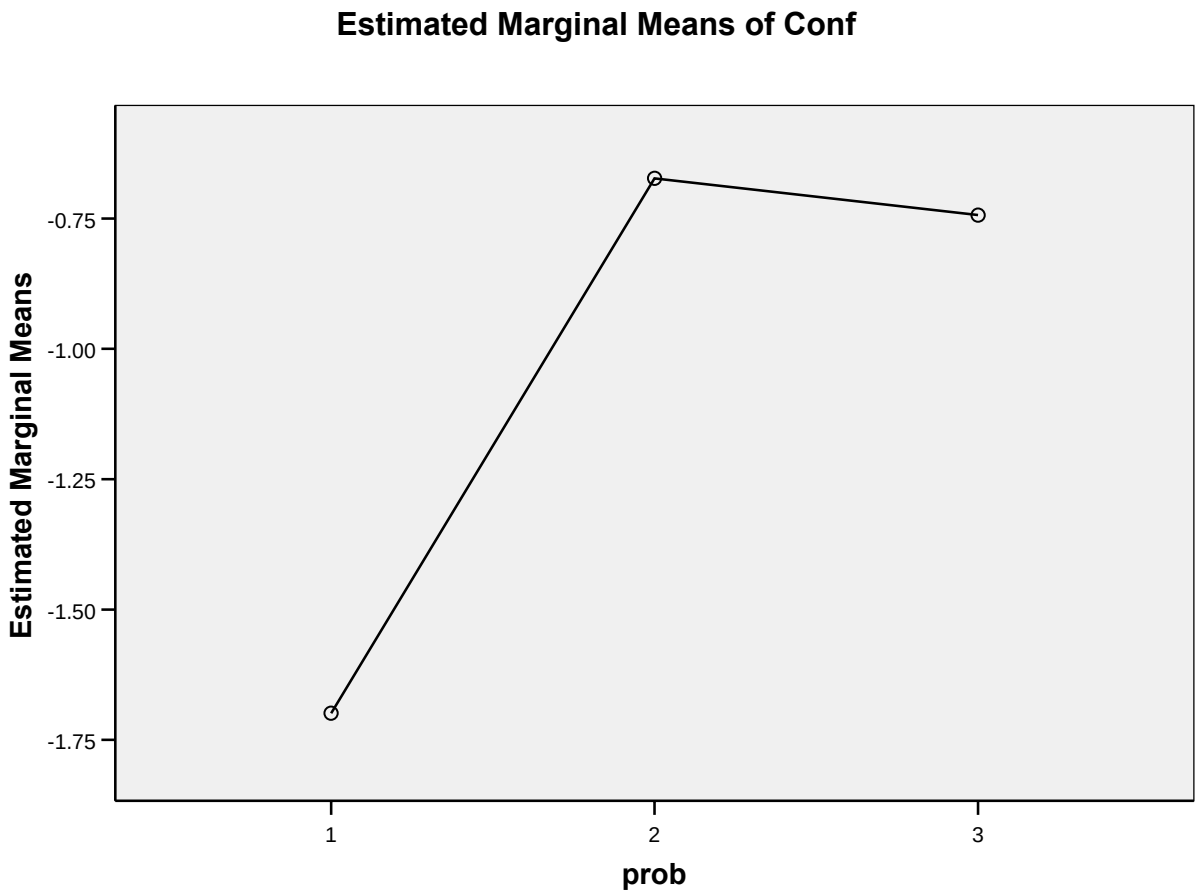

Frame x Probability x Magnitude
In the Loss Frame
Probability of Choosing the Gamble
0.8
0.7
0.6
0.5
0.4
.5
.33
.25
Probability of Winning the Gamble
Risk is increasing ⟶
Magnitude of the Gamble
Low
Medium
High

Figure 4:


Estimated Marginal Means of Conf
Estimated Marginal Means
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-1.00
-1.25
-1.50
-1.75
1
2
3
prob

Figure 5:

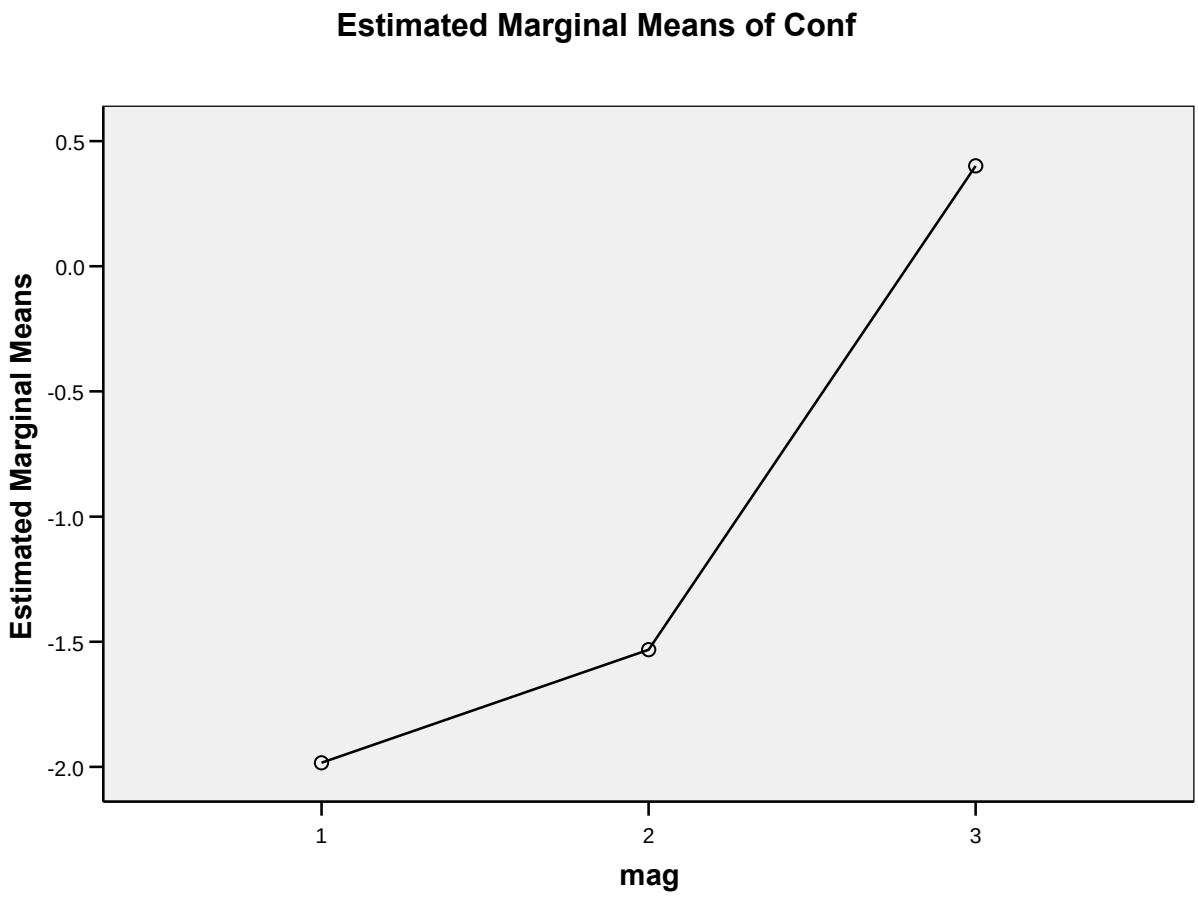
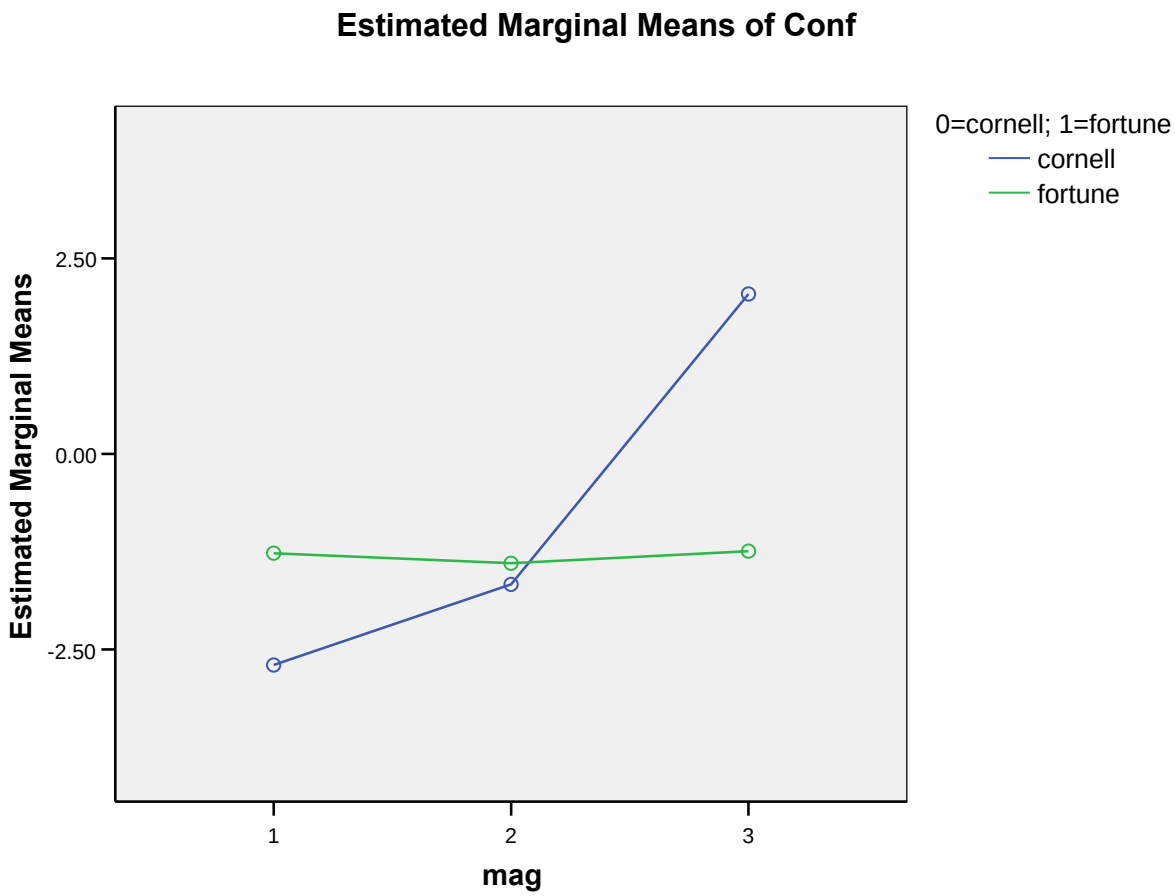

Estimated Marginal Means of Conf
Estimated Marginal Means
0.5
0.0
-0.5
-1.0
-1.5
-2.0
1
2
3
mag

Figure 6:



mag * prob * frame

Figure 7:

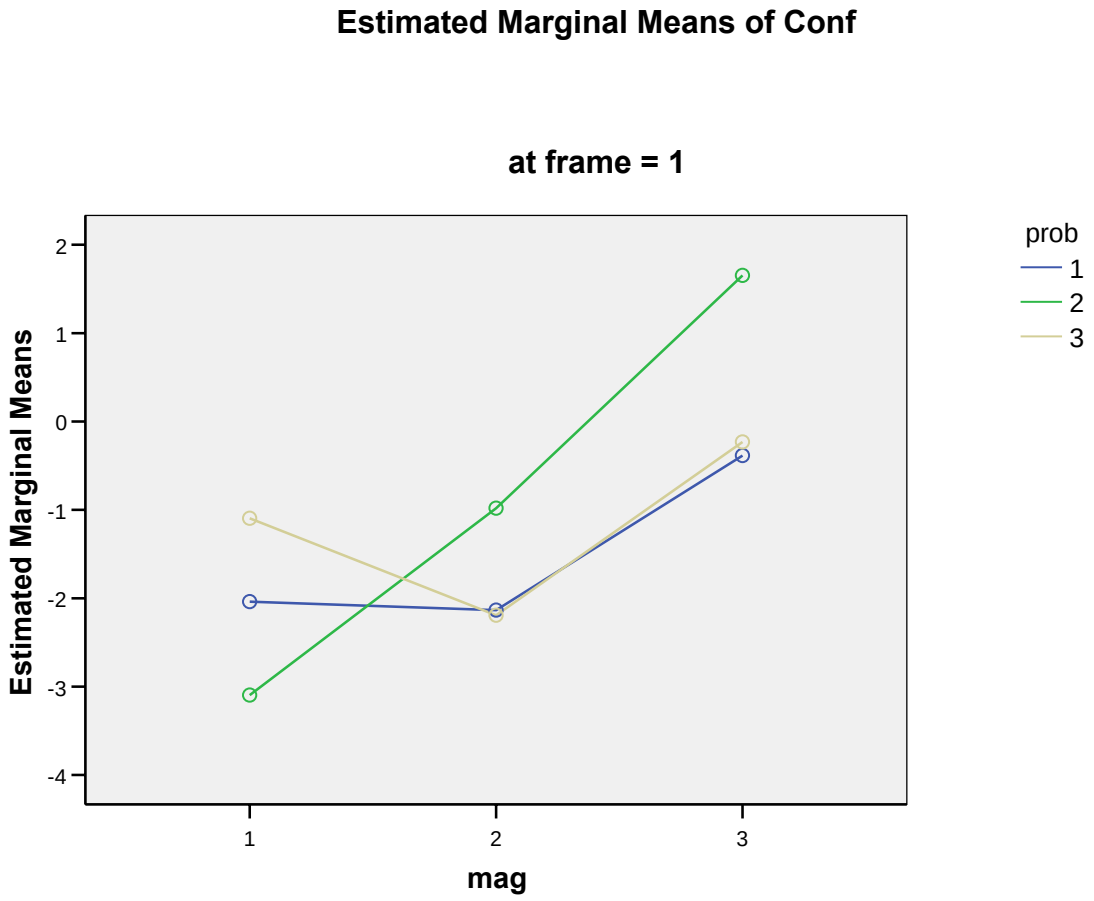
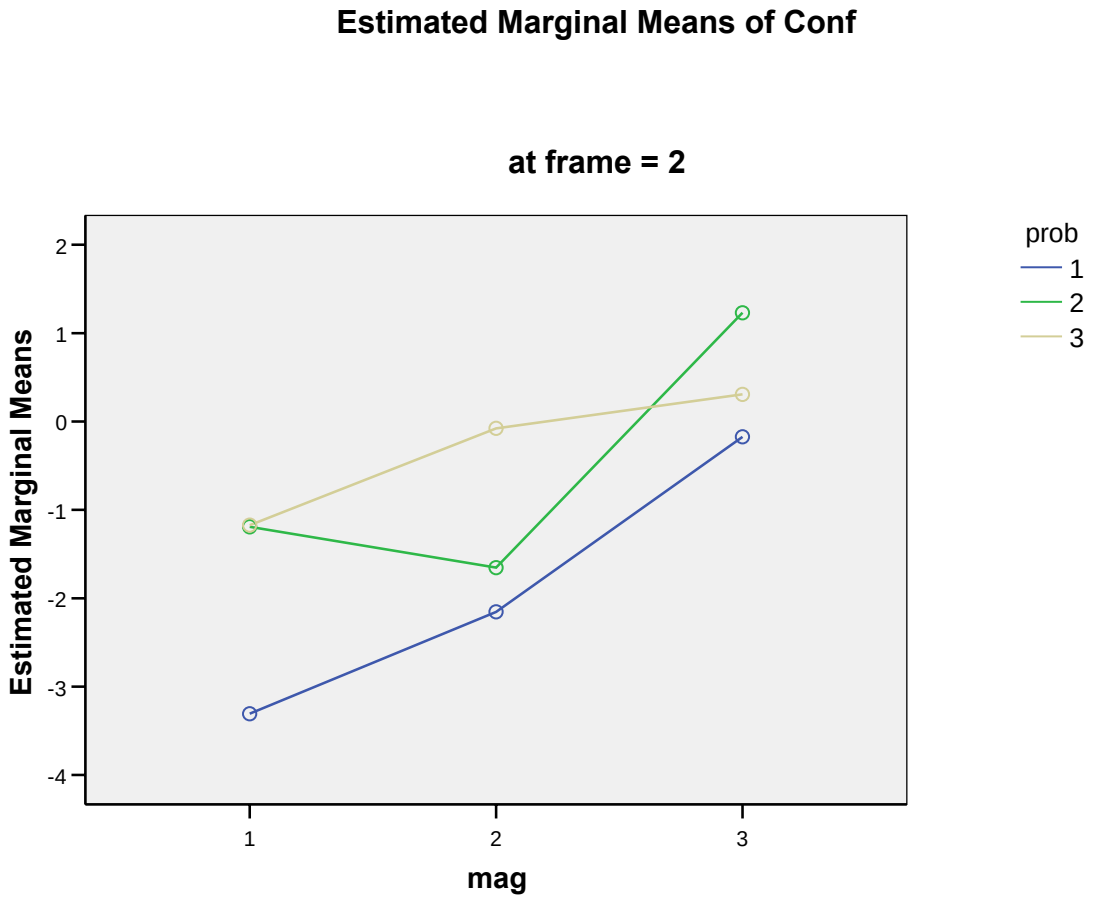

Estimated Marginal Means of Conf
at frame = 1
Estimated Marginal Means
2
1
0
-1
-2
-3
-4
1
2
3
mag
prob
1
2
3

Figure 8:



prob * mag * frame

Figure 9:

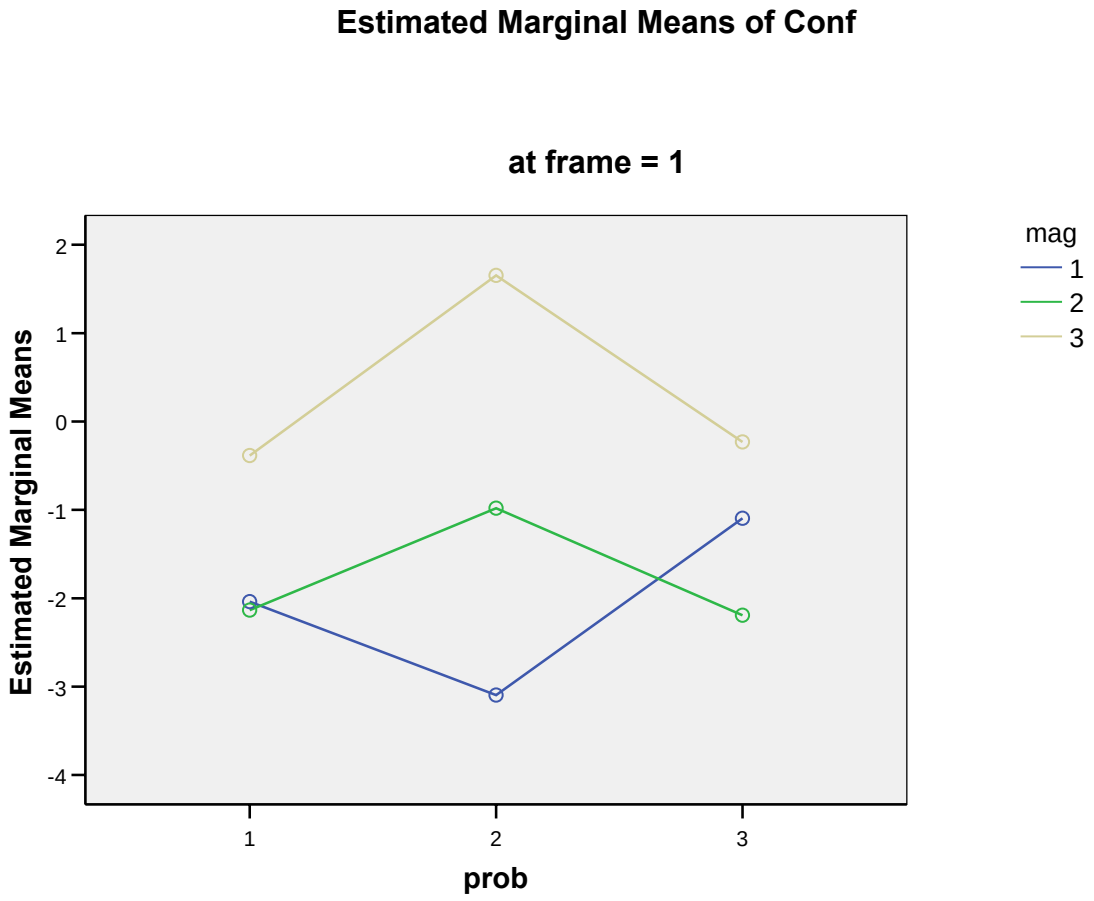
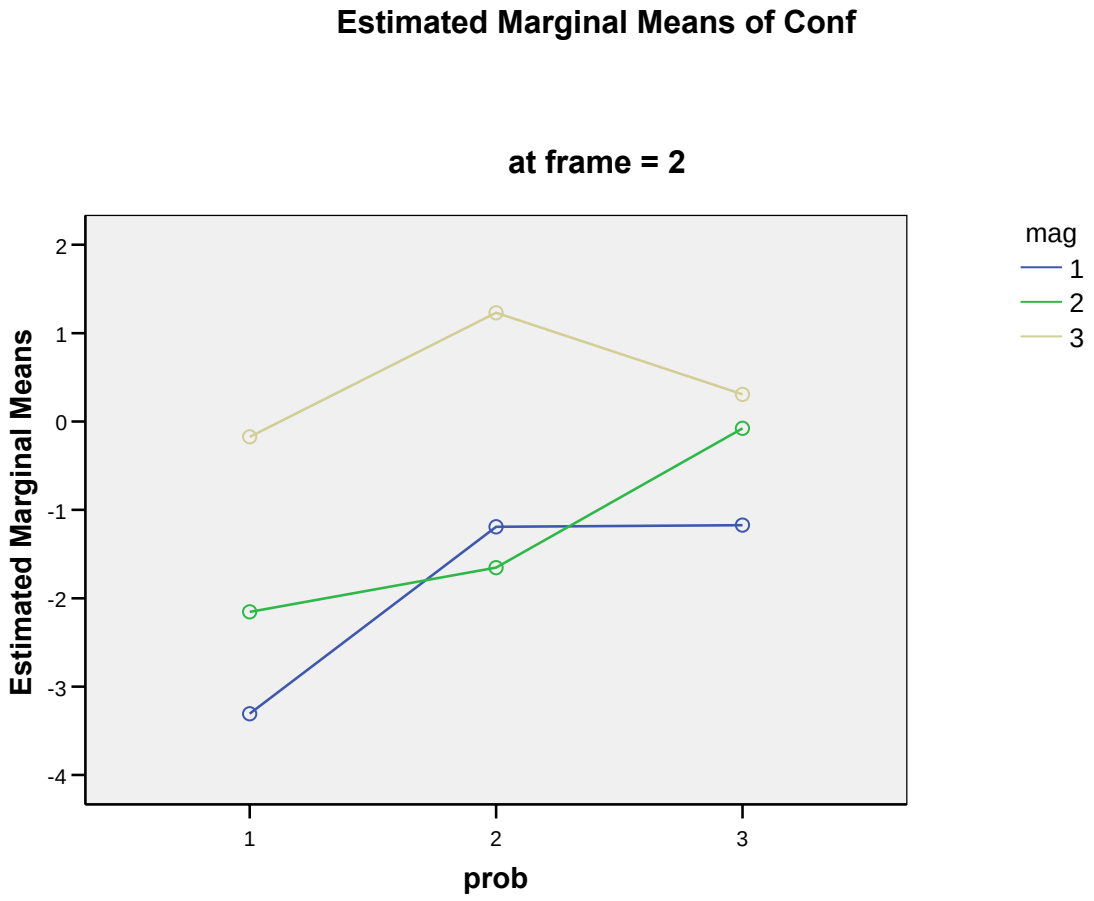

Estimated Marginal Means of Conf
at frame = 1
Estimated Marginal Means
2
1
0
-1
-2
-3
-4
1
2
3
prob
mag
1
2
3

Figure 10:


Estimated Marginal Means of Conf
at frame = 2
Estimated Marginal Means
2
1
0
-1
-2
-3
-4
1
2
3
prob
mag
1
2
3