REPEATED DECISION-MAKING WITH HIGH AND LOW AFFECT FOR MONETARY AND SOCIAL RESOURCES

by

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ABSTRACT

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This research was a continuation of studies that considered the role of affect for repeated decision-making under two different conditions while maintaining similar magnitudes of gains and losses. For the two situations the resources at risk (life versus money) are deemed to be high or low in affect. These designations are relevant because past findings have shown systematic deviation in choices on single-shot or one time gambles for resources based on levels of affect associated with the potential prize. This research considers possible ceiling effects in self reports about pleasure and displeasure and considers behavior assessments of negative affect as participants conduct the experiment for each task via facial expression analysis. Additionally, this research expands the number of conditions from two to four and alters the design from within to between participants.

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CHAPTER 1

INTRODUCTION

1.1 A General Overview of Decision-Making Theories

New questions have begun to arise in the field of cognitive psychology when decision-making is high or low in emotion or affect. There are two forms of affect, the first being *incidental* meaning that emotions are brought about by some outside source (e.g., being cut off while driving to work, thus being in a bad mood when arriving at work) (Pham, 2007). The other is referred to as *integral,* which is affect that is associated with a particular subject or specific object (e.g., winning money from a scratch-off lottery ticket makes a person feel happy). This research focused on integral affect.

When considering affect in terms of emotional states in the field of decision making it is often referred to as happy or sad moods which are indicated as positive (i.e., happy, excited, or hopeful) or negative (i.e., sad, depressed, or annoyed) (Pham, 2007). Decision-making in terms of level is also stated as high affect which refers to a situation that involves a gamble or choice for something that is associated with high levels of pleasure or discomfort such as winning a kiss from a favorite movie star or choosing to euthanize the family pet, and low affect refers to a situation that has gambles that are comparatively or more emotionally neutral such as winning a few dollars or selecting a brand of peanut butter (Rottenstreich & Hsee, 2001).

An example of this is seen with Rottenstreich and Hsee's (2001) research. When they asked participants how much they would pay to enter a raffle for a discount on their college tuition or an equally valued discounted trip to Europe, the participants reported that they would pay more to try to win the trip to Europe than for the tuition discount. These researchers have also shown that when individuals are left to determine the value of an item for sale such as a Pink Floyd box set that they will set the price based on either calculation therefore adjusting a

selling value based on retail pricing or their feelings. If the feelings in this example are positive towards Pink Floyd they will ask more than the calculated price and if the feelings are negative they will ask for less (Hsee & Rottenstreich, 2004). The results of both examples are relevant because they demonstrate that while outcomes follow trends predicted by Kahneman and Tversky's (1979) prospect theory, they also illustrate that affect increases the level of risk an individual will take. It is believed that affect can alter how a decision-maker may appraise a situation as being more or less favorable or unfavorable (Loewenstein, 2005). Prospect theory had not previously accounted that outcome.

Prospect theory is a decision-making theory that is designed to predict risk-taking for individuals based on psychological processing of probability or decision weights and the assessment of gains and losses influencing the decision-maker's final choice (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981). Risk-taking refers to the assessment of gains and losses in situations that may result in negative or undesirable outcomes (Ashenhurst, Jentsch, & Ray, 2011; Wong, 2005). The classic example of psychological appraisal of assessing probability and potential outcomes is Kahneman and Tversky's (1979) solution to the Allais Paradox and explanation of the framing effect. The Allais paradox is a set of problems that demonstrate the inability of expected utility theory (a decision theory developed in mathematics that is designed to maximize gains and minimize losses) to predict systematic violations to the rules of logic or axioms when participants make choices between two sets of options (Allais, 1953; Kahneman & Tversky, 1979; Von Neumann & Morgenstern, 1964). The framing effect is a psychological phenomenon which states that how information is presented can influence the type of choices an individual will make (Tversky & Kahneman, 1981; Cheung & Mikels, 2011).

In the Allais paradox, decision-makers are asked to choose between two options. In one example of the paradox, for option A, there is a 33% chance of winning $2,500, 66% chance of winning $2,400, and a 1% chance of winning nothing at all. For option B, there is a sure win of $2,400. Participants overwhelmingly prefer option B to option A. The issue is when

they make choices for a second set of options. For option C, there is a 33% of winning $2,500 and 67% of winning nothing at all. For option D, 34% of winning $2,400 and 66% of winning nothing at all. For this set of choices participants preference tends to be for option C. This outcome violates the axiom of cancellation which states that the common features should cancel out when making a decision (Plous, 1993). Prospect theory is able to explain this outcome because the theory captures how people place more value on options that are sure to have gains compared with a probable outcome or gain. In the Allais paradox decision-makers psychologically exaggerate the amount of risk associated with 1% chance of failure compared the sure win where in the 33% chance and 34% chance decision-makers focus mainly on the dollar amount rather than the explicitly stated probabilities. It should be noted that when the gambles are for losses the preference shifts to participants placing a higher value on the gamble rather than the certain loss.

The most common example of the framing effect is called the Asian disease problem. Two groups of participants are given a questionnaire where they are given the following scenario. A disease from Asia is coming to the United States which may result in 600 deaths. For group 1 they are given two sets of options. Option A will result in 200 lives being saved or Option B with a 1/3 probability that 600 lives will be saved and 2/3 probability that nobody is saved. For this group most select option A. The other group of participants is given a different set of options. Option C will result in 400 lives being lost or Option D where there is a 1/3 probability that no lives are lost and 2/3 probability that 600 lives are lost. In this situation, the preference is for option D where C is just a reframing or altered presentation of A, and D is a reframing of B. The shift in preference is also a violation to axioms of expected utility theory because the way that the information is presented should not influence the choice of a rational decision-maker. The mathematical principle being violated is referred to as the axiom of invariance (Von Neumann & Morgenstern, 1964).

Prospect theory provides a descriptive means of capturing how people deviate from rules of logic when they are making decisions. First, the theory is able to demonstrate that probabilities are not mentally calculated as precisely as proposed by expected utility theory. Second, the theory is able to demonstrate that losses and gains are given different values psychologically. This means that winning $100 and then losing $100 does not psychologically let a decision-maker feel that they have broken even. Instead the individual, according to prospect theory, experiences the loss as more extreme. Prospect theory fails to explain the exaggerated or increased risk individuals will engage in when making choices that are high or low in affect. However, such issues have been illustrated in research by Rottenstreich and Hsee (2001).

Other studies have developed theoretical explanations for how decisions are made based on the degree that pleasure or displeasure is experienced when making a choice. Decision affect theory states that the affect experienced is determined by the outcome from decisions and expectations, as well as confidence (McGraw, Mellers, & Ritov, 2004). Mellers and McGraw (2001) have also stated that affect determines the choice a decision-maker will select based on the amount of pleasure that they may receive. Mellers, Schwartz, Ho, and Ritov (1997) used this theory to describe how people feel pleasure when they win in a gamble and displeasure when the decision-maker experiences a loss. In the publication by Mellers and McGraw (2001) describe the same basic trends in affective self-report for expected levels of pleasure for situations that dealt with weight loss, pregnancy, and course averages. Unfortunately, the conclusions drawn from the article are limited due to the fact that statistical analysis was not conducted to assess differences between scenarios and merely established that trends could be predicted by subjective expected pleasure theory.

Another caveat to consider in decision-making is the role that repetition has in gambling specifically referring to decision-making that is guided by feedback. In this paradigm, participants make repeated gambles with small gains and small losses while never being

explicitly given the odds of success or failure (Barron & Erev, 2003; Hertwig, Barron, Weber, & Erev, 2004; Li, Rakow, & Newell, 2009; Rakow, Demes, & Newell, 2008). Consider that when a decision-maker has multiple chances to gamble between two options involving gains they tend to choose the more risky choice (Barron & Erev, 2003). For example, Barron and Erev had forty-eight participants make 400 repeated gambles for two situations. For one group the participants chose between two options L and H, where L resulted in a sure win of $3 and H resulted in p(.8) of winning $4 and p(.2) of winning nothing at all. For the other group of participants choosing L resulted in a p(.25) of winning $3 and H resulted in a p(.20) of winning $4. The results of the study showed that people prefer the risky choice over the sure win. These findings are relevant because they illustrate that decision-making can have outcomes that do not follow prospect theory when the choices are made with repetition.

In terms of repeated decision-making that considers affect, research has shown that, depending on reference points, people will see their overall experience as more or less pleasurable (Heyman, Mellers, Tishcenko, & Schwartz, 2004). The research conducted by Heyman et al., (2004) had two groups of participants make repeated gambles that followed two different set trajectories. One group made gambles where they started out with $0 and then gradually won up to $24 and then they began to lose in their gambles where they ended with no winnings. For the other group the participants started out with $0 and gradually lost up to $24 and then won enough back that they broke even. Each of the groups was asked how they felt about their gambles. For the gambles that gained then lost the participants reported less pleasure than those who lost money and then earned it back. These results illustrate the roles of experience, expectation, and counterfactual thinking (i.e., considering the other possible outcomes after a choice as been made, Mellers et al., 1997) in influencing how decisions are affectively experienced as described by decision affect theory.

While Heyman et al., (2004) does investigate decision-making with repetition, this study does not look at increased or decreased risk-taking. Therefore this research solely focuses on

the role of affect for situations resulting in gains to breaking even and losses to breaking even. Additionally, this line of research focuses on affective decision-making for monetary outcomes and does not consider situations that may be low or high in affect (i.e., decision-making for other resources besides money such as life or food) (Camerer, 2003). The studies that have been previously conducted in regards to affect and resources failed to explain risk-taking based on affect, contrary to predicted outcomes for decision affect theory (Ramirez, 2010).

1.1.1 High and Low Affect for Repeated Decision-Making Tasks

My original thesis research showed that when participants are asked to invest in a sunk cost situation for a simulated business and a simulated pet which used the exact same schedule of presentation for gains and losses, participants will receive or accept significantly greater loses for the pet game or task despite reports of greater levels of displeasure. Sunk cost refers to situations where individuals begin an investment and continue to invest despite the investment depreciating in value, meaning that the investor will never see a net gain (Bornstein & Chapman, 1995; Van Dijk & Zeelenberg, 2003). The assumption in decision affect theory and subjective expected utility theory should be generalized from one situation or resource to the other, but past findings have shown the affective self-report only correlates significantly with monetary risk. Subjective expected pleasure theory states that when choosing between two options, the choice with the greatest amount of pleasure is typically selected (Mellers & McGraw, 2001), which is not seen in the Ramirez (2010) thesis research.

Ramirez (2010) hypothesized that participants would invest longer for a dying pet than for a failing business. The findings of that study supported the hypothesis which was based on the work by Rottenstreich and Hsee (2001), because the pet is high in affect and the business is low in affect.

The second hypothesis of this study was that the levels of pleasure and displeasure reported for the business would be less than the pleasures and displeasures reported for the pet. That is, the self-report of pleasure for the business would not be as high as for the pet and

the self-reported displeasure for the business would be less compared to the pet. The findings for this hypothesis were also confirmed, helping to support earlier findings by Rottenstreich and Hsee (2001) in regard to subjective value.

The third hypothesis was that ratings of pleasure and displeasure would be a better predictor of trials completed for the pet task compared to the business task as expected by subjective expected pleasure theory as well as decision affect theory. The results revealed that the outcomes did not follow the hypothesis, meaning that affective self-report only correlated with the number of trials completed for the failing business, while there was no significant correlation of affective self-report with a dying pet and the number of trials completed. At this time there is not a clear explanation for why people deviate from predicted outcomes, thus creating a new problem that requires investigation. It is possible that the ability to use affect as a predictor of risk-taking is limited to the domain of monetary gambles.

The goal of this research is to further investigate repeated decision-making that is guided by feedback in sunk-cost situations by providing additional conditions for social and monetary resources which attempt to offer a clearer explanation by considering low and high affect within the same resource type (e.g., high affect pet compared with low affect pet and high affect business compared with low affect business). The justification for altering the original design is that it is possible that resources are psychologically accounted for using different mental processes (i.e., being taught to calculate outcomes dealing with money, but being taught not to keep a mental account for acts of kindness with our friends and loved ones as indicated by McGraw, Shafir, & Todorov, 2010) which may account for the findings of the Ramirez (2010) thesis. This is relevant because it is very likely that behavioral risk-taking may begin to follow outcomes predicted by decision affect theory and subjective expected pleasure theory once comparisons are assessed within the same resource type. An additional benefit is increased validity of the past findings from Ramirez (2010) thesis research.

1.2 Summary of the Thesis Decision-Making Task

The basic design of the original business/pet sunk cost repeated decision-making task had multiple phases each intentionally designed to foster attachment (1st 50 choices), complacency (2nd 50 choices), and strategy (choices 101 to 300) associated with pending failure, with affect rating to be made after every 25 choices for a within participant design. Attachment and complacency were established by providing near certain gains for the first 100 trials. I was able to establish complacency with the resources at risk based on the self-reported affect ratings. At the 75th choice for both conditions, participant's affect scores on average peaked and began to go back down at the 100th choice. The pattern of pleasure associated with the resources on continuous gains follows trends that are consistent with Bernoulli's utility curve where winnings eventually become less attractive as the earnings increase as a result of accumulated wealth (Bernoulli, 1738/1954). After 100 trials of near certain gains, participants began to have losses that gradually increased until they were certain to occur.

For each of the tasks participants were given two menus, one for investing and one for seeking help. They were made aware in both cases that they had the ability to terminate the investments if they felt they were taking on too many losses (losses in quality of life or losses in terms of business productivity).

The menus were designed to be analogues where the actions and effort associated with each of the resources were similar in terms of care giving and investing. The care giving options for the pets were to teach a new trick, feed, groom and bathe, or put the pet outside while for the retail business they could hold an employee function, restock products, clean and sweep the store, or close for the day.

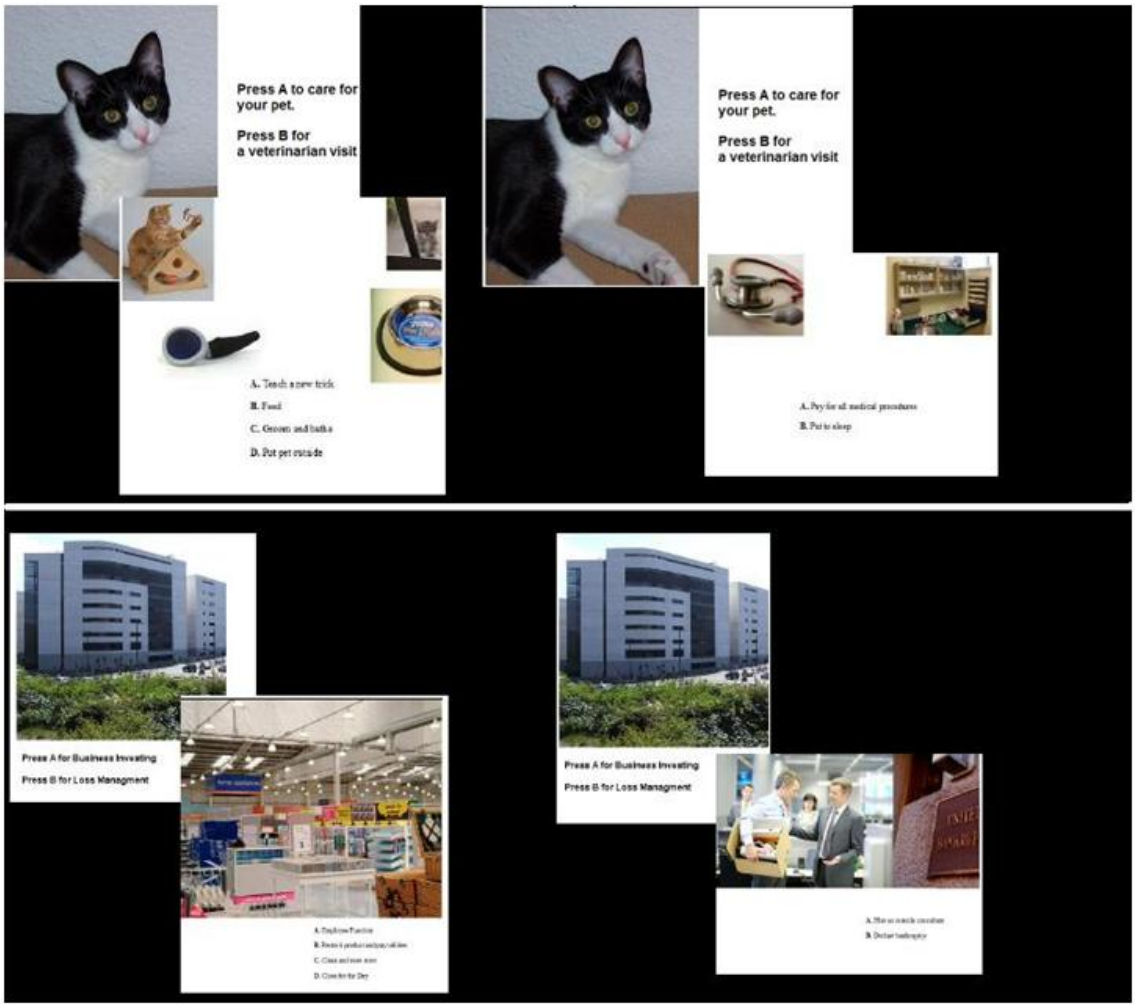

Figure 1.1 Menu of Levine and Ramirez (2012) pet and business sunk cost investment task that uses feedback to guide the decision-maker.

As previously mentioned, the tasks followed a sunk cost scenario where the initial (e.g., the first 100 choices) investing provided participants with repeated gains, but as they continued to invest their choices eventually resulted in more frequent to near certain losses (see Table 1.2).

Table 1.1 Gain and Loss Distribution Across Both Tasks

Quartile	Gain	Loss	No Gain or Loss
1-2	90%	10%	0%
3-4	70%	10%	20%
5	30%	70%	0%
6	20%	70%	10%
7	10%	80%	10%
8-12	0%	80%	20%

Additionally the schedule of feedback between the two tasks also followed the same exact pattern of gain and loss distribution (see Table 1.2).

Table 1.2 Sample of Feedback Presented To Participants Between The Two Tasks For Decision Trials 100 To 110.

Business Task Feedback	Pet Task Feedback
Your choice of action has hurt your company's growth by -1.226%	Your choice of action has hurt your pet's life by -1.226%
Your choice of action has improved your company's growth by 0.286%	Your choice of action has improved your pet's life by 0.286%
Your choice of action has hurt your company's growth by -0.319%	Your choice of action has hurt your pet's life by -0.319%
Your choice of action has hurt your company's growth by -0.725%	Your choice of action has hurt your pet's life by -0.725%
Your choice of action has improved your company's growth by 0.431%	Your choice of action has improved your pet's life by 0.431%
Your choice of action has hurt your company's growth by -1.235%	Your choice of action has hurt your pet's life by -1.235%
Your choice of action has improved your company's growth by 2.436%	Your choice of action has improved your pet's life by 2.436%
Your choice of action has hurt your company's growth by -1.634%	Your choice of action has hurt your pet's life by -1.634%
Your choice of action has hurt your company's growth by -2.463%	Your choice of action has hurt your pet's life by -2.463%

1.3 Modifications to the Thesis Decision-Making Tasks

In this dissertation research, a major change was made to the experimental task by increasing the number of conditions for each resource. Rather than having a condition with a pet or social resource and a business or monetary resource the experiment now included two of each type where the tasks were either high in affect or low in affect. The low affect tasks were a pet hamster or gerbil and a retail business, and the high affect tasks were a pet cat or dog and a charity whose goal is to fight childhood leukemia. It was believed that this modification would allow for a clearer dissociation of affect from resource type.

1.3.1 Self-report versus Observation

Prior research conducted by Ramirez (2010) assessed affect or emotion by using a self report scale called the Self Assessment Manikin or SAM. As illustrated in Figure 1.2, SAM is a self report scale that uses visual depictions to represent varying degrees of pleasure or displeasure (Bradley & Lang, 1994). See Appendix A for detailed instructions for how to use the SAM.

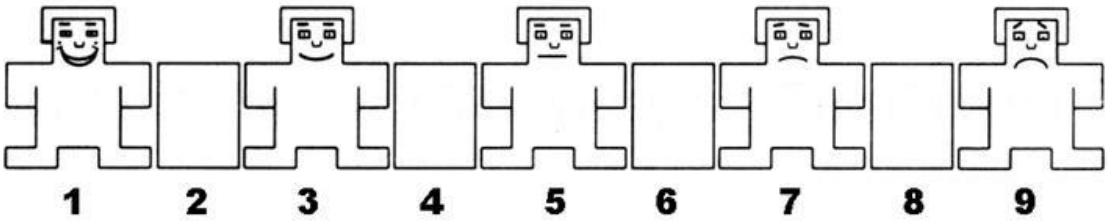

Figure 1.2 Sample of Self Assessment Manikin used to assess levels of pleasure and displeasure. Modified by Levine and Ramirez (2012).

One possible issue to consider with the Ramirez (2010) research is that the method used for assessing affect during the repeated decision-tasks may have lacked a degree of sensitivity. In order to better account for that possible deficiency, facial expressions exhibited by participants were documented via a video camera as they were engaged in the experimental tasks.

1.3.2 Modifications to Experimental Design

In the original Ramirez (2010) study, the experimental design was within participant, with a two week delay between the two tasks. In the modified experiment, the design was between participants. The research design was altered in order to determine if the effect would still occur when tested between subjects. This change in design could have revealed potential influences attributed to individual differences in the sample population (i.e., age, gender, ethnicity or prior experience with the subject matter). There is literature that focuses specifically on how decision-making can be altered depending on the sampling design. The framing effect

has been tested in two studies where one was a between participant design and the other was a within participant design (Levin, Johnson, & Davis, 1987). For the within participant and between participant designs, the decision-making questions were presented to subjects with changes to wording in a framing problem. For example, there was a positive frame (e.g., a 15% chance of winning $150 with a $20 investment), a negative frame (e.g., amount to be won $150; 85% chance of losing with a $20 investment), and a mixed frame (e.g., a 15% chance of winning $150; 85% chance of losing $20 investment). The findings showed a significant effect from framing for the between subject study, but not for the within subject study which was attributed to individual differences cancelling out in the within participant design. It is possible that feedback guided repeated decision-making may also be influenced by the sampling method which had yet to be investigated.

1.4 Hypotheses

To determine if the effects of affect on risk-taking truly deviate from decision affect theory as well as subjective expected pleasure theory as suggested by the data of Ramirez (2010), it is important to revisit the original three hypotheses. First, individuals will invest longer for a resource high in affect compared to a resource low in affect. Second, individuals will rate greater levels of pleasure and displeasure for a resource high in affect compared with a resource low in affect. Third, affective self-report will be a better predictor of risk-taking for resources high in affect than for resources low in affect.

When these three hypotheses were retested, the major changes made on the Ramirez (2010) thesis decision-making tasks were the increased number of experimental conditions (going from 2 tasks to 4) and the change to a between participant analysis. All prior research on this paradigm had been within. Additionally, participants were recorded as they conducted the experiment, which had also never been done before with this task design.

Finally, behavioral observations needed to be conducted in terms of behavioral manifestations of negative affect (e.g., negative/positive facial expressions) that may have

offered a better indicator of risk taking compared with self-report (e.g., Self-Assessment Manikin). For the fourth and final hypothesis, I predicted that behaviorally exhibited negative affect would be a better indicator of risk taking tendencies for this experiment than self-report.

CHAPTER 2

METHODS

2.1 Participants

This study used 205 volunteers (134 female and 71 male, mean age = 20.73, *S.D.* = 5.19) who were eighteen or older. The ethnic makeup of the sample was 27.8% White, 28.3% Hispanic, 20.5% Asian, 20.5% Black and 2.9% who were from another group or chose not to respond. Out of the 205 participants in this experiment, 160 provided usable samples. The remaining 45 participants were removed from the study for not reaching the loss phase (entering less than 100 trial responses, $n = 42$) also referred to as less engaged, computer issues (affect responses were not logged, $n = 2$), or were not of the age of consent, $n = 1$. It should be noted that participants who did not exceed 100 investments were not explicitly instructed that it was required. Additionally, it should be noted that all tasks begin to receive significant loss once participants have invested beyond 100 choices.

Recruitment for participants came from the SONA recruitment system in the University of Texas at Arlington's Department of Psychology. UTA students were compensated by fulfilling their participation requirement for psychological coursework. As illustrated in Table 2.1, analysis of gender, age, prior experience with either pets or businesses, and task assignment did not reveal any significant difference between those who completed the task and those who did not reach the loss phase.

Table 2.1 Analysis of Gender, Prior Experience, Age, and Task for Those Participants Engaged and Less Engaged in the Experiment.

Group	Gender		
	Male	Female	
Engaged	58	104*	
Less Engaged	13	29	
Analysis Results	χ^2 (1, N = 204) = .346, p = .557		

Prior Experience			
	Yes	No	
Engaged	90*	72	
Less Engaged	17	25	
Analysis Results	χ^2 (1, N = 204) = 3.041, p = .081		

Task					
	High Affect Pet	Low Affect Pet	High Affect Business	Low Affect Business	Low Affect Business (No Camera)
Engaged	32	32	32	32	32
Less Engaged	10	7	4	12	10
Analysis Results	χ^2 (4, N = 204) = 3.616, p = .460				

Age			
	M	S.E.	
Engaged	20.96	0.41	
Less Engaged	19.90	0.81	
Analysis Results	t (202) = 1.18, p = .24		

* Note that n for females on analysis had 1 participant removed because they were under 18.

2.2 Materials

The four experimental tasks were based on the two tasks designed by Ramirez (2010) with modifications to address the experimental questions (e.g., a camera present for facial expression analysis). The tasks were written using E-Prime (E-Prime, Version 2005.1.1.4.1).

2.3 Task Design

The tasks were designed to be repeated decision making tasks that were guided by feedback that resulted in a sunk cost scenario. The tasks were programmed to record the number of choices participants make while also measuring levels of pleasure or displeasure as they received feedback from the investments after every 25 choices are made. Performance of the investment tasks followed a pre-set schedule based on the before mentioned distributions of gains and losses so that participants received the same outcomes at the same time between the four versions of the investment tasks. For example, if a participant in the high affect pet version of the task received a loss after ten investment choices, when another participant conducted the high affect investment task or any of the other versions they also received a loss after ten investment choices. The numerical values for gains and losses were also exactly the same. This allowed for the four tasks to be mirror images of each other with the only major difference being the labels assigned to them.

During the task participants were asked to report their subjective level of pleasure or displeasure using the SAM scale after every 25 choices had been made. In addition to using the SAM scale, participants were also monitored via camera to allow the researchers to assess the number of positive and negative facial expressions exhibited during the experiment.

2.3.1 Investment Task Menus

For the four tasks, the distributions of gains and losses followed the exact same schedule. The major difference as previously stated was the labels assigned to the four investments. For two of the tasks, the goal was to simulate investing in a retail business (low affect) and a charity for children's leukemia (high affect). For the other set of tasks, the goal

was to simulate social investing in the form of a virtual pet such as a cat or dog (high affect) or a hamster or gerbil (low affect). The sets of menus were designed to be analogues of each another. As depicted in Figure 2.1, participants in each scenario had the opportunity to make choices to care for their businesses or pets, and as illustrated in Figure 2.2, they had the option to seek help as well. The care giving options for the pets were to teach a new trick, feed, groom and bathe, or put the pet outside (in the case of the hamster/gerbil they left them in the cage) while for the retail business they could hold an employee function, restock products, clean and sweep the store, or close for the day and for the charity they could hold an employee function, pay utilities or fund research, organize a fundraiser, or close for the day. For the outside help options participants could choose to take their pet to a vet or have it euthanized and for the business simulation they could bring in an outside consultant or declare bankruptcy. Euthanizing the pet or declaring bankruptcy ended each of the tasks.

Figure 2.1 Sample of menus for high affect business task (top left), low affect business task (top right), high affect pet task (bottom left), and low affect pet task (bottom right) illustrating options difference for investing.

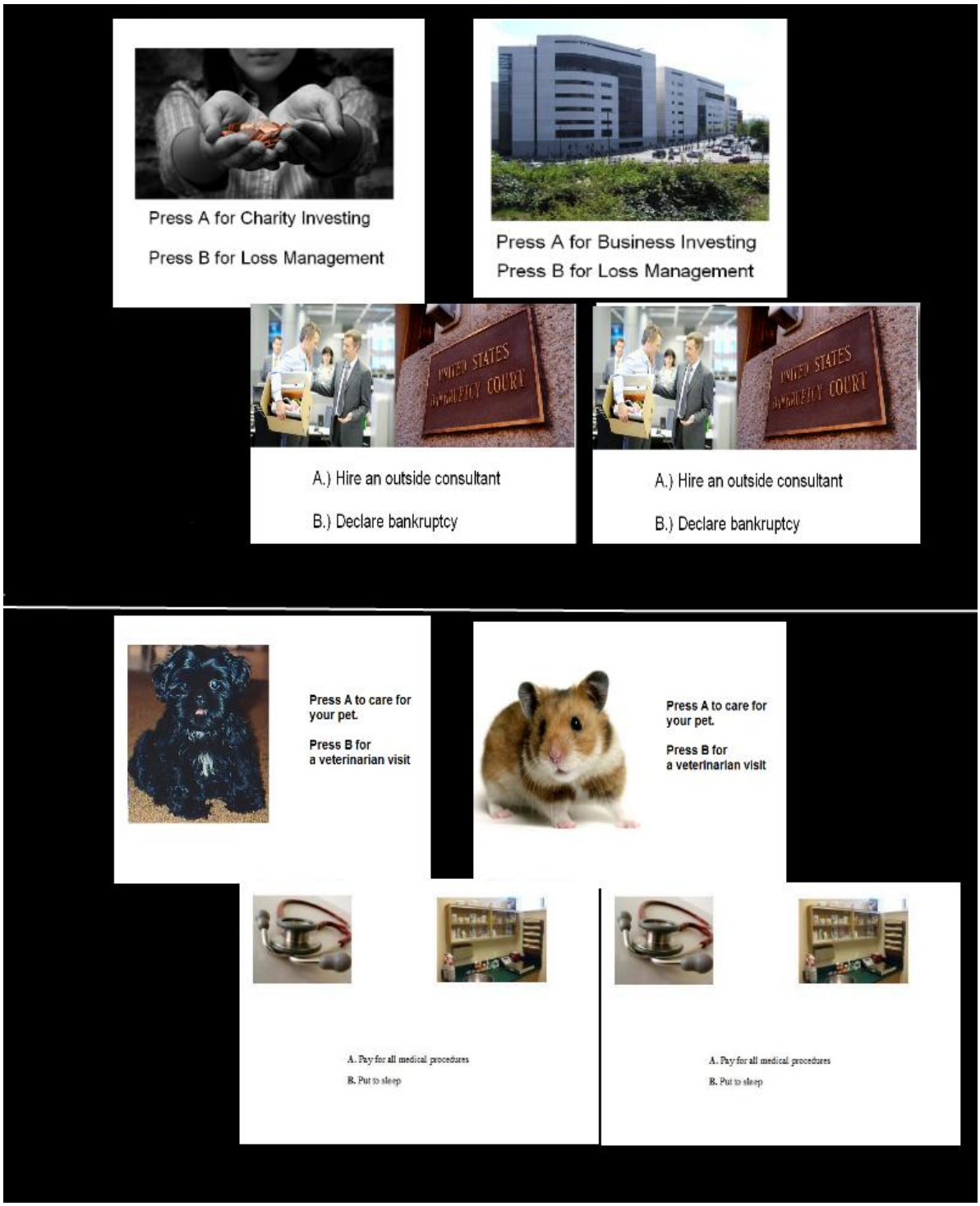

Figure 2.2 Sample of menus for high affect business task (top left), low affect business task (top right), high affect pet task (bottom left), and low affect pet task (bottom right) illustrating options difference for seeking help and electing to terminate the investment.

2.4 Procedure

Participants came to room 422 Life Science Building where they were greeted by a research assistant. At that time they were asked to read and sign an informed consent form as well as provide demographic information, prior experience in business and pet ownership, and prior affective experience associated with the two resources. Afterwards participants were asked to sit at a computer where they received the instructions as they were read out loud by the program while also being displayed on the computer screen (see Appendix B). For the sake of clarity, samples of the menus for each task were present in the room which had descriptions about what each investing action would entail (see Appendix C).

Participants made investing choices until they elected to terminate the task or completed 300 trials. Afterwards participants were given a full debriefing explaining what the purpose of the experiment was as well as being given the opportunity to have their information and video withheld from the study in accordance with the IRB's request (see Appendix D).

2.5 Statistics Description

To assess the three hypotheses statistical analysis was used. For the first hypothesis a One-Way Analysis of Variance or ANOVA was used to determine if participants invested significantly longer for resources that are high affect compared with resources that are low affect. For this analysis the dependent variable is the number of investment trials participants select and the independent variable is the tasks that participants were randomly assigned. Next, Analyses of Covariance or ANCOVAs were conducted to control for age. Additional analyses were used to reassess gender, ethnicity and prior experience using a Two-way ANOVA to determine if there was an interaction effect with the tasks. The dependent variable was the number of trials completed and the independent variables were the tasks and the second factor being gender, prior experience with the resource, or ethnicity. Finally, a Kaplan-Meier analysis was also used to assess for differences in the group performance over time

while taking into account a possible ceiling effect from the number of trials participants could make decisions.

In order to test the second hypothesis two One-Way ANOVAs were used to determine if participants rated higher levels of pleasure as well as displeasure for the high affect resources compared with the low affect resources. For the analysis of pleasure, the dependent variable was the self-reported affect during the continuous gain sequence from the SAM scale (at the end of the first quartile of that sequence) and the independent variable was the task participants were randomly assigned. For the second part of the analysis, the dependent variable was the closing self-reported affect from the SAM scale and the independent variable was the task. ANCOVAs were conducted to control for age and initial affect. Reassessment considered gender, ethnicity, and prior experience using a two-way ANOVA to determine if there was an interaction effect with the tasks. The dependent variable was the self-reported affect and the independent variables were the tasks with the second factor being gender, ethnicity, or prior experience.

To test the third hypothesis that self-reported affect would be a better indicator of investment time for high affect resources rather than for low affect resources a simple linear regression was conducted. For this analysis the dependent or predictor variable was the number of investment trials participants completed and the independent variable was the task. An additional analysis was conducted to control for initial affect.

For the fourth and final hypothesis, participant negative facial expression would be a strong indicator of investment type for affect high resources compared with affect low resources, another simple linear regression analysis was conducted. The dependent variable was the number of investment trials participants completed. The independent variable was the task. A second analysis was conducted taking the number of positive affect responses into account when assessing the relationship between the number if investment trials selected per task and the number of negative facial responses. Afterwards all the analyses for the four hypotheses

were rerun using the full dataset along with analysis of the influence of the camera which are located in the supplementary analysis section.

CHAPTER 3

RESULTS

The following section will discuss the results for the four hypotheses. The hypotheses considered the role of task assignment and investing, the role of affect and task type, the ability to predict investing based on affect and behaviorally exhibited affect and investing.

3.1 Affect Rating Associated With the Four Resources

Prior to beginning the research experiment, a pilot study was conducted where participants (N = 105) responded to a questionnaire to determine the level of perceived affect associated with the four experimental conditions. A questionnaire was administered consisting of 25 questions where 21 questions functioned as distracters. The remaining four questions allowed the researchers to assess if participants assigned different levels of affect to cats and dogs (M = 20.42, *S.E.* = 0.68) hamsters and gerbils (M = 11.5, *S.E.* = 0.79) charities (M = 19.61, *S.E.* = 0.61) and typical retail stores (M = 12.75, *S.E.* = 0.95). The ratings were made on a scale of 1 to 25 with 25 being very emotional and 1 being not emotional at all. Based on the findings, the resources were designated as high affect pet (cat/dog) low affect pet (hamster/gerbil) high affect business (charity) low affect business (retail).

3.2 Hypothesis 1: Investing Performance by Task

To determine if investing between the four resources differed by affect level a one-way ANOVA was performed. The findings did not reveal any significant difference between the four experimental tasks F (3, 124) = 0.580, p = 0.629, partial η^2 = 0.014 even though the trends followed expectations where high affect tasks would have more investment trials than the low affect tasks. Means and standard deviation are presented in Table 3.1.

Table 3.1 Mean Trials Completed By Task

	Mean	S.D.
High Affect Pet	212.53	59.00
Low Affect Pet	208.91	58.52
High Affect Business	205.47	57.46
Low Affect Business	194.06	62.27

To determine if age may have played a role in the decision-making process, the analysis was conducted again using a one-way ANCOVA with age being the covariate. This analysis still did not reveal a significant difference in investing between the four experimental tasks F (3, 123) = 0.540, p = 0.656, partial η^2 = 0.013 when controlling for age.

A second one-way ANCOVA was conducted to determine if prior pleasure associated with a resource influenced investment trials for participants. The results of the analysis did not reveal a significant difference in investing trials when controlling for prior level of pleasantness with a resource, F (3, 123) = 0.579, p = 0.630, partial η^2 = 0.014.

To determine if gender may have influenced the decision-making process another analysis was conducted using a Two-way ANOVA. The results did not show any significant interaction effect F (3, 123) = 1.822, p = 0.147, partial η^2 =0 .044 for gender and task. Additionally, there was not a main effect for task F (3, 120) = 0.352, p = 0.788, partial η^2 = 0.009**,** and no main effect for gender, F (3, 120) = 0.295, p = 0.588, partial η^2 = 0.002.

Another two-way ANOVA was conducted to test for an interaction effect for task and ethnicity. This analysis did not reveal an interaction effect, F (10, 110) = 0.605, p = 0.807, partial η^2 = 0.052. Additionally, there was no main effect for task F (3, 110) = 0.574, p = 0.633, partial η^2 = 0.015, and no main effect for ethnicity F (4, 110) = 0.979, p = 0.422, partial η^2 = 0.034.

An analysis was also conducted to determine if prior experience with the experimental tasks may have influenced the results. Another two-way ANOVA was conducted to test for an

interaction effect between prior experience as a pet or business owner and task. This analysis again did not reveal a significant interaction effect, F (3, 120) = 1.205, p = 0.311, partial η^2 = 0.029 for prior experience with a resource and number of investment trials selected. No significant main effect was found for tasks F (3, 120) = 0.808, p = 0.492, partial η^2 = 0.020, and main effect for prior experience as a pet or business owner F (1, 120) = 0.284, p = 0.596, partial η^2 = 0.002.

Finally a Kaplan Meier survival analysis was conducted to assess if there were differences between the groups based on when the participants elected to terminate the investment and the conditioned the participants were assigned. The censored data were those from the participants who invested in the full 300 trials because of the inability to determine when these participants would have ended the experiment. Table 3.2 lists the number of censored participants per task.

Table 3.2 Total Number of Censored Cases Per Task for the Kaplan-Meier Survival Analysis

Task	N	Percent of Group
High Affect Pet	5	15.6%
Low Affect Pet	6	18.8%
High Affect Business	6	18.8%
Low Affect Business	3	9.4%

Note: Censored cases were the participants that made the total possible number of choices in the experiment without ever electing to terminate their investment.

The analysis did not reveal any significant difference in length of time participants persisted in the experiment based on task assignment, χ^2 (3, N = 128) =0.967, p = 0.809.All of the analyses failed to support the research hypothesis, but it should be noted that the trends of the means for the different tasks did follow what was anticipated, based on the Ramirez (2010) thesis study.

3.3 Hypothesis 2: Affect experience between the four tasks

The second hypothesis predicted that participants would rate greater pleasure at the onset of the experiment and greater displeasure at the end of the experiment for high affect resources compared with the low affect resources. To test this hypothesis, a one-way ANOVA was conducted assessing positive affect between the four conditions. The results did not reveal any significant difference between the four tasks and self reported pleasure F (3, 124) = 1.753, p = 0.16, partial η^2 = 0.041. The means and standard deviation are presented on Table 3.3, note that the lower the number the higher the pleasure.

Table 3.3 Mean Positive Affect Reported At The 1st Quartile By Task

	Mean Positive Affect	S.D.
High Affect Pet Task	2.03	1.12
Low Affect Pet Task	2.43	1.19
High Affect Business Task	2.03	1.03
Low Affect Business Task	1.84	0.92

To determine if the emotional state in which participants began the experiment influenced affect self-reports, an ANCOVA was performed with entering affect prior to beginning the experiment being the covariate. The analysis did not reveal a significant difference in self-reported positive affect between the four experimental tasks F (3, 123) = 1.160, p =0 .328, partial η^2 = 0.028 when controlling for initial affect.

To determine if age may have influenced emotional responses a one-way ANCOVA was conducted with age being the covariate. The results did not demonstrate a significant difference in positive affect self-report when controlling for age, F (3, 123) = 1.737, p = 0.163, partial η^2 = 0.041.

To determine if there was an interaction effect with gender a two-way ANOVA was conducted to test for an interaction. The analysis revealed no significant interaction effect when considering task and gender, F (3, 120) = 0.333, p = 0.801, partial η^2 = 0.008. No significant

main effect was found for task F (3, 120) = 1.505, p = 0.217, partial η^2 = 0.036, but the analysis did reveal a significant main effect for gender, F (2, 120) = 8.124, p = 0.005, partial η^2 = 0.063. The results showed that males typically reported less pleasure than the female participants as depicted in Table 3.4.

Table 3.4 Means For Positive Affect Self-Report For Gender By Tasks

Gender	High Affect Pet	Low Affect Pet	High Affect business	Low Affect Business
Male	2.46 (2.91)	2.58 (.303)	2.50 (.371)	2.23 (.291)
Female	1.74 (.241)	2.35 (.234)	1.88 (.214)	1.58 (.241)

* The analysis revealed and males experienced less pleasure than females among the conditions.

A two-way ANOVA testing for an interaction between task and ethnicity also did not reveal an interaction effect for ethnicity and self-reported positive affect F (10, 110) = 0.650, p = 0.768, partial η^2 = 0.056. No significant main effect was found for task, F (3, 110) = 1.658, p = 0.180, partial η^2 = 0.043, and no significant main effect was found for ethnicity F (4, 110) = 0.274, p = 0.894, partial η^2 = 0.010.

The final analysis tested for an interaction effect using a two-way ANOVA for task by prior experience. The results showed a significant interaction effect for prior experience with a resource and self-reported affect per task, F (3, 120) = 2.909, p = 0.037, partial η^2 = 0.068. As depicted in Table 3.5, post-hoc analysis revealed that participants who had experience with a high affect pet rated significantly more pleasure compared to those who did not have prior experiences. Finally a marginal difference was seen for participants who had business experience when rating pleasure associated with a high affect business (M = 1.89, S.E.= 0.20) compared with a low affect business (M = 2.56, S.E. = 0.20) which followed anticipated trends.

Table 3.5 Means and Standard Error for Task by Experience for Positive Affect

	Experience	Mean	SE
High Affect Pet	Yes	1.89	0.20
	No	3.00	0.52
Low Affect Pet	Yes	2.55	0.20
	No	1.80	0.47
High Affect Business	Yes	1.33	0.43
	No	2.19	0.21
Low Affect Business	Yes	1.89	0.25
	No	1.79	0.28

Note: Higher values represent less pleasure than the lower values.

No main effect was seen for task F (3, 120) = 1.595, p = 0.194, partial η^2 = 0.038, and no main effect was seen for prior experience F (1, 120) = 1.308, p = 0.255, partial η^2 = 0.011.

The second part of the hypothesis was that participants would report greater displeasure for the high affect resources compared to the low affect resources. To test this, a one-way ANOVA was conducted assessing the self-reported affect at the end of the experiment by the task. The results of the analysis revealed no significant difference between the four tasks, F (3, 124) = 1.750, p = 0.160, partial η^2 = 0.014 even though the trends followed expectations. The means and standard deviation are presented on Table 3.6; note that the higher affect numbers indicate higher levels of displeasure.

Table 3.6 Mean Negative Affect Reported At the End of the Experiment By Task

	Mean Negative Affect	S.D.
High Affect Pet Task	7.50	1.76
Low Affect Pet Task	6.96	2.02
High Affect Business Task	7.72	1.59
Low Affect Business Task	6.84	1.76

To determine if starting affect influenced self reports of affect from the experiment an ANCOVA was conducted with entering affect prior to beginning the experiment being the covariate. The analysis did not reveal a significant difference in investing between the four experimental tasks F (3, 123) = 1.740, p = 0.160, partial η^2 = 0.041 when controlling for affect prior to beginning the experiment.

To determine if age influenced the self-report for negative affect a one-way ANCOVA was conducted with age as the covariate. This analysis did not reveal a significant difference in investing between the four experimental tasks F (3, 123) = 1.722, p = 0.166, partial η^2 = 0.040 when controlling for age.

To determine if there was an interaction between gender and self-reported negative affect a two-way ANOVA was conducted. The results revealed no significant interaction effect for task and gender, F (3, 120) = 0.956, p = 0.416, partial η^2 = 0.023. There also was no main effect for task, F (3, 120) = 1.857, p = 0.140, partial η^2 = 0.044, but a main effect was seen for gender F (2, 120) = 4.992, p = 0.027, partial η^2 = 0.040, where females typically reported more displeasure than males as depicted in Table 3.7.

Table 3.7 Means For Negative Affect Self-Report For Gender By Tasks

Gender	High Affect Pet	Low Affect Pet	High Affect Business	Low Affect Business
Male	7.23 (.488)	5.92 (.508)	7.50 (.623)	6.54 (.488)
Female	7.68 (.404)	7.60 (.394)	7.80 (.360)	7.05 (.404)

* The analysis revealed males experienced less displeasure than females among the conditions

A Two-way ANOVA testing for an interaction between task and ethnicity did not reveal a significant interaction effect, F (10, 110) = 0.737, p = 0.689, partial η^2 = 0.063, for self-reported negative affect. The analysis revealed a marginal main effect for task, F (3, 110) = 2.232, p = 0.088, partial η^2 = 0.057, but did not reveal a main effect for ethnicity, F (4, 110) = 0.431, p = 0.786, partial η^2 = 0.015. As depicted in Table 3.8, trends continued to follow expectations.

Table 3.8 Means For Negative Affect Self-Report For Tasks

High Affect Pet	Low Affect Pet	High Affect Business	Low Affect Business
7.83 (.462)	6.74 (.383)	7.73 (.335)	6.88 (.326)

* Post-hoc analysis did not reveal any significant difference between the tasks in the Two-way ANOVA

Finally a two-way ANOVA was conducted to test for an interaction effect with prior experience as business or pet owner. The analysis did not reveal a significant interaction effect with prior experience and task F (3, 120) = 0.532, p = 0.661, partial η^2 = 0.013 for self-reported negative affect. Yet, a significant main effect for task was revealed in this analysis, F (3, 120) = 2.798, p = 0.043, partial η^2 = 0.065. The post-hoc analysis did not reveal any significant difference between the individual tasks. Additionally, there was no main effect for prior experience, F (1, 120) = 1.678, p = 0.198, partial η^2 = 0.014.

3.4 Hypothesis 3: Affect Will Be A Better Predictor Of Investing For High Affect Resources Than For Low Affect Resources.

The third hypothesis predicted that affect would be a better indicator of investing for resources high in affect rather than those low in affect. To test this hypothesis, simple linear regressions were conducted with the number of trials participants completed as the dependent variable and final rating of affect as the independent variable for each task. The results showed that in predicting the number of trials or choices a participant would make for the high affect pet, an r^2 = 0.003 or 0.3% of the variation could be attributed to the final pleasure rating, F (1, 31) = 0.085, p = 0.772. When predicting the number of trials or choices a participant would make for the low affect pet, an r^2 = 0.001 or 0.1% of the variation could be attributed to the final pleasure rating, F (1, 31) = 0.004, p = 0.953. When predicting the number of trials a participant would make for the high affect business, an r^2 = 0.008 or 0.8% of the variation could be attributed to the final pleasure rating, F (1, 31) = 0.247, p = 0.623, and finally when predicting the number of trials or choices a participant would make for the low affect business, an r^2 = 0.016 or 0.16% of the variation could be attributed to the final pleasure rating F (1, 31) = 0.477, p = 0.495. Details of the regression models are in Table 3.9

Table 3.9 Regression Models For the Affect High and Affect Low Pet and Business Tasks

Variable	B	SE B	β
High Affect Pet Task	-1.79	6.11	-0.05
Low Affect Pet Task	-0.32	5.28	-0.01
High Affect Business Task	3.27	6.57	0.09
Low Affect Business Task	4.42	6.40	0.13

Note: r^2 = 0.3% for high affect pet, r^2 = 0.1% for low affect pet, r^2 = 0.8% for high affect business, and r^2 = 0.2% for low affect business.

An additional analysis was conducted taking initial affect or affect that participants were experiencing prior to beginning the research into account along with closing affect. The results showed that in predicting the number of trials or choices a participant would make for the high affect pet, an r^2 = 0.034 or 3.4% of the variation could be attributed to the final pleasure rating, F (2, 29) = 0.507, p = 0.607. When predicting the number of trials or choices a participant would make for the low affect pet, an r^2 = 0.045 or 4.5% of the variation could be attributed to the final pleasure rating F (2, 29) = 0.676, p = 0.516. When predicting the number of trials a participant would make for the high affect business, an r^2 = 0.043 or 4.3% of the variation could be attributed to the final pleasure rating, F (2, 29) = 0.650, p = 0.529, and finally when predicting the number of trials or choices a participant would make for the low affect business, an r^2 = 0.096 or 9.6% of the variation could be attributed to the final pleasure rating F (2, 29) = 1.543, p = 0.213. Details of the regression models are in Table 3.10

Table 3.10 Regression Models For the Affect High and Affect Low Pet and Business Tasks

Variable		B	SE B	β
High Affect Pet Task	Closing Affect	-0.44	6.28	-0.01
	Initial Affect	-5.51	5.72	-0.18
Low Affect Pet Task	Closing Affect	1.24	5.42	0.04
	Initial Affect	-7.42	6.39	-0.22
High Affect Business Task	Closing Affect	2.06	6.67	0.06
	Initial Affect	-6.32	6.16	-0.19
Low Affect Business Task	Closing Affect	5.07	6.25	0.14
	Initial Affect	10.46	6.51	0.28

Note: r^2 =3.4% for high affect pet, r^2 = 4.5% for low affect pet, r^2 = 4.3% for high affect business, and r^2 = 9.6% for low affect business.

3.5 Analysis of facial expressions and Data Selection Method

Facial expression data was collected for all 128 participants. Analysis was conducted on 15 participants from each condition (*N* = 60) by two undergraduate research assistants following the Kring and Sloan (1991) method referred to as the Facial Expression Coding System or FACES. Participants who were analyzed were selected completely at random.

The population make-up of this subsample had 65% female and 35% male with an average age of 21.75 (*S.D.* = 5.0). The ethnicity breakdown had 31.7% white, 31.7% Hispanic, 15% Asian, 20% Black and 1.7% was designated as other. The emotionality of experience and overall emotion demonstrated is seen in Table 3.11.

Table 3.11 Frequency of Emotion Experienced, Overall Experience, and Mean Emotions Displayed

	Predominant Emotion	
	Frequency	Percentage
Neutral	43	71.7%
Interest	13	21.7%
Anger	3	5%
Fear	1	1.7%
	Overall Expressiveness	
	Frequency	Percentage
Low	47	78.3%
Fairly Low	6	10.0%
Medium	5	8.3%
Fairly High	2	3.3%
High	0	0
	Emotions Displayed	
	Mean	S.D.
Positive Emotions	2.05	3.04
Negative Emotions	2.27	3.96

3.6 Hypothesis 4: Facial Expressions and Trials Completed

To test the hypothesis that facial expressions would be correlated with the number of investment trials in each task a simple linear regression was conducted with the number of trial participants completed as the dependent variable and the frequency of negative facial expressions displayed as the independent variable. The result showed that in predicting the number of trials or choices a participant would make for the high affect pet, an $r^2 = 0.091$ or

9.1% of the variations could be attributed to the frequency of negative facial expressions, F (1, 13) = 1.304, p = 0.274 . The result showed that when predicting the number of trials or choices a participant would make for the low affect pet, an r^2 = 0.060 or 6.0% of the variations could be attributed to the frequency of negative facial expressions, F (1, 13) = 0.823, p = 0.381. The result showed that when predicting the number of trials or choices a participant would make for the high affect business, an r^2 = 0.062 or 6.2% of the variation could be attributed to the frequency of negative facial expressions, F (1, 13) = 0.857, p = 0.372. The result showed that predicting the number of trials or choices a participant would make for the low affect business, an r^2 = 0.017 or 1.7% of the variations could be attributed to the frequency of negative facial expressions, F (1, 13) = 0.277, p = 0.641. Details of the regression models are on Table 3.12

Table 3.12 Regression Models For the High Affect and Low Affect Pet and Business Tasks

Variable	B	SE B	β
High Affect Pet Task	7.23	6.34	0.302
Low Affect Pet Task	-3.83	4.23	-0.25
High Affect Business Task	6.57	7.10	0.25
Low Affect Business Task	1.35	2.82	0.131

Note: r^2 = 6.2% for high affect pet, r^2 = 9.1% for low affect pet, r^2 = 6.2% for high affect business, and r^2 = 1.7% for low affect business.

To determine if frequency of positive facial expressions may have influenced the number of trials selected along with the number of negative facial expressions, another linear regression analysis was conducted. The result showed that in predicting the number of trials or choices a participant would make for the high affect pet, an r^2 = 0.134 or 13.4% of the variations could be attributed to the frequency of negative facial expressions, F (2, 12) = 0.932, p = 0.420 . The result showed that when predicting the number of trials or choices a participant would make for the low affect pet, an r^2 = 0.092 or 9.2% of the variations could be attributed to the frequency of negative facial expressions, F (2, 12) = 0.609 p = 0.560. The result showed that when predicting the number of trials or choices a participant would make for the high affect

business, an $r^2 = 0.064$ or 6.4% of the variation could be attributed to the frequency of negative facial expressions F (2, 12) = 0.409, p = .673. The result showed that predicting the number of trials or choices a participant would make for the low affect business, an $r^2 = .021$ or 2.1% of the variations could be attributed to the frequency of negative facial expressions, F (2, 12) = 0.131, p = 0.879. Details of the regression models are on Table 3.13

Table 3.13 Regression Models For the Frequency Of Positive And Negative Facial Expressions By Task

Variable		B	SE B	β
High Affect Pet Task	Positive Expressions	4.22	5.44	0.24
	Negative Expressions	4.28	2.48	0.18
Low Affect Pet Task	Positive Expressions	3.92	5.96	0.18
	Negative Expressions	-4.00	4.32	-0.26
High Affect Business Task	Positive Expressions	-0.89	5.56	-0.45
	Negative Expressions	6.51	7.39	0.25
Low Affect Business Task	Positive Expressions	2.92	13.02	0.06
	Negative Expressions	1.38	2.94	0.13

Note: $r^2 = 1.3\%$ for high affect pet, $r^2 = 9.2\%$ for low affect pet, $r^2 = 6.4\%$ for high affect business, and $r^2 = 2.1\%$ for low affect business.

None of the regression analyses revealed any significant correlations, meaning that the results failed to support the hypothesis. The results of the analyses indicated that the frequency of negative facial expressions predicts little of the variation in the number of choices a participant makes for any four of the versions of the task.

3.7 Supplementary Analysis

An additional condition was added to determine if there was a biasing effect created by the camera (i.e., altered or changed behavior attributed to known presence and use of a camera during experimentation) which is a known issue in fields that typically rely on video recordings (e.g., clinical psychology and social psychology) (Lassiter, Munhall, Geers, Weiland, & Handley, 2007; Penner, Orom, Albrecht, Franks, Foster, & Ruckdeschel, 2007). Analysis did not reveal a statistically significant difference for the total number of investment trials the participant selected t (62) = 1.058, p = .29 for investing between the low affect business task with a camera present (M = 194.06, S.E. = 11.01) and the low affect business task without a camera present (M = 178.34, S.E. = 9.98), so any impact that the camera may have had on investing was not mathematically relevant.

Since the difference in variability between the two tasks (camera variance of the mean = 3877.42 and no camera variance of the mean = 3187.20) was high, additional analysis was conducted using a chi square assessing low investors (101-200 investment trials) compared to high investors (201-300 investment trials). The results of the analysis revealed a significant difference for the duration of investment when assessed was based on category and condition assignment (see Table 3.14). When residuals were assessed there was not a significant difference within any one cell of the analysis.

Table 3.14 Chi Square Analysis of High Investors and Low Investors for the Low Affect Business Task With and Without the Camera.

Task		High Investor (201-300 trials)	Low Investor (101-200 trials)
Camera	Actual	15	17
	Expected	19	13
	Residuals	.9	-1.1
No Camera	Actual	23	9
	Expected	19	13
	Residuals	-.9	1.1

χ^2 (1, N = 64) = 4.146, p = 0.042

All of the individual cells p-value were greater than .05.

Analysis of the final affect measure and number of trials completed for the low affect task without the camera did reveal a significant correlation (p = 0.005) with r^2 = .23 or 23% of the variance being accounted by affect which follows the trends established in the Ramirez (2010) thesis.

3.7.1 Reassessment of Hypotheses Using the Full Dataset

The following information is the analyses of the full dataset which includes participants who did not exceed 100 investment trials. Note that significant loses did not begin to occur until the 101 trial for all conditions in this experiment.

3.7.1.1 Analysis of Engaged and Less Engaged Participants for Affect

This analysis was done to determine if there may have been a motivational difference between participants who exceeded 100 investment trials and those who did not. To determine if participants may be less invested in the experiment for those who went past 100 trails (or engaged in the tasks) compared with those who did not (or less engaged in the task), a two-way ANOVA was conducted assessing task and engagement by the level of affect participants reported they experienced when the task terminated. The results of the analysis revealed no significant main effect for task, F (3, 151) = 0.511, p =0.675, partial η^2 = 0.010, but a significant

main effect for engagement, F (1, 151) = 22.647, p = 0.001, partial η^2 = 0.13 (see table 3.15). No interaction effect between task and engagement was found. F (3, 151) = 0.757, p = 0.520, partial η^2 = 0.010.

Table 3.15 Negative Affect Ratings Compared Between Engaged And Less Engaged Participants

	Negative Affect Rating	S.E.
Engaged	7.26	0.16
Less Engaged	5.49	0.34

Post-hoc analysis of the negative affect ratings revealed that engaged participants rated significantly higher levels of displeasure when terminating an investment compared to participants who were labeled less engaged. It is possible that the less engaged participants were not as emotionally invested in the experiment and offers a possible explanation about why they did not continue to participate even though they had not received any losses in the tasks.

3.7.1.2 Analysis of Task by Trial Completed

The next full dataset analyses investigated if there was a significant difference in investing between the groups using a one-way ANOVA. The findings did not reveal a significant difference between the four tasks when including the less engaged participants, F (3, 156) = 0.554, p =0.647, partial η^2 = 0.011.

Test of covariates such as age, F (3, 155) = 0.520, p = 0.669, partial η^2 = 0.669, and prior pleasure, F (3, 155) = 0.855, p = 0.466, partial η^2 = 0.016 using a one-way ANCOVA did not reveal any significant difference between the four tasks when taken into account.

To test for interaction effects for ethnicity and trials completed a two-way ANOVA was conducted. The analysis did not reveal a significant interaction effects for ethnicity and task, F (10, 142) = 0.728, p =0.697, partial η^2 = .049. There was no significant main effect for task, F (3, 142) = 0.500, p =0.683, partial η^2 = 0.010, and no main effect for ethnicity, F (4, 142) = 1.521, p =0.199, partial η^2 = 0.041.

Another analysis was conducted using a two-way ANOVA to test for an interaction effect for task by gender. This analysis did not reveal any significant interaction effect, F (1, 152) = 0.604, p =0.614, partial η^2 = 0.012. The analysis also did not reveal a significant main effect for task, F (3, 152) = 0.257, p =0.856, partial η^2 = 0.005, and no main effect for gender, F (1, 152) = 0.759, p =0.385, partial η^2 = 0.005.

Finally an analysis was conducted to test for an interaction effect for task by prior experience. The analysis revealed a significant interaction effect, F (3, 152) = 3.220, p =0.024, partial η^2 = 0.060. As depicted in Table 3.16 post-hoc analysis between the four tasks revealed significant difference between the tasks and prior experience. With the full dataset no experience for the high affect pet results in less risk-taking, while in terms of the high affect business it results in greater risk-taking. In the case of low affect business and pets the risk-taking or number of trials is less for those who had no prior experience with the investment. There was a marginal difference in the participants who had no experience with businesses with higher investing for a high affect business compare with a low affect business.

Table 3.16 Means and standard error for condition by prior experience

Task	Experience	Mean	S.E.
High Affect High Pet Task	Yes	184.61	14.97
	No	134.38	30.41
Low Affect Pet Task	Yes	193.50	15.71
	No	126.00	28.67
High Affect Business Task	Yes	132.50	30.41
	No	198.07	16.26
Low Affect Business Task	Yes	193.50	15.71
	No	126.00	28.67

The two-way ANOVA for prior experience by task did not reveal a significant main effect for task, F (3, 152) = 0.044, p =0.988, partial η^2 = 0.001, and also did not reveal a main effect for prior experience, F (1, 152) = 2.293, p =0.132, partial η^2 =0.015.

Finally a Kaplan survival analysis was conducted to assess if there were differences between the groups based on when the participants elected to terminate the investment and the conditioned the participants were assigned. The censored data were the participants who invested in the full 300 trials because of the inability to determine when these participants would have ended the experiment. Table 3.17 lists the number of censored participants per task.

Table 3.17 Total Number of Censored Cases Per Task for the Kaplan-Meier Survival Analysis

Task	N	Percent of Group
High Affect Pet Task	5	12.2%
Low Affect Pet Task	6	15.4%
High Affect Business Task	6	16.7%
Low Affect Business Task	4	9.1%

Note: Censored cases were the participants that made the total possible number of choices in the experiment without ever electing to terminate their investment.

The analysis did not reveal a significant difference in length of time participants persisted in the experiment based on the task they were assigned, χ^2 (3, N = 160) =0.864, p = 0.834.

3.7.1.3 Analysis of Task by Affect Self-Report

Again analysis of the full dataset was conducted to determine if there were significant differences in how participants were rating pleasure and displeasure in the experiment. To begin the analysis a one-way ANOVA was conducted testing the level of pleasure reported by task. The findings did not reveal any significant difference between the tasks, F (3, 155) = 1.249, p =0.249, partial η^2 = 0.024 for self reported positive affect.

Additional analyses were conducted to determine if a possible covariate may have influenced the results. A one-way ANCOVA was conducted controlling for age, F (3, 154) = 1.248, p =0.294, partial η^2 = 0.024, and initial affect or affect prior to beginning the experiment,

F (3, 154) = 0.608, p =0.611, partial η^2 = 0.012. None of the analysis revealed significant difference in task performance when covariates were taken into account.

Another analysis was conducted to determine if there were meaningful interaction effects for task by gender, F (1, 152) = 0.364, p =0.851, partial η^2 = 0.005, No main effect was seen for task, F (3, 151) = 0.852, p =0.467, partial η^2 = 0.017, but a main effect was seen for gender, F (1, 151) = 4.566, p =0.034, partial η^2 = 0.029, Post-hoc analysis revealed that females (M = 1.79, *S.E.* = 0.13) reported more pleasure with their choices than males (M = 2.92, *S.E.* = 0.19).

Another analysis testing for an interaction between task and ethnicity for positive affect self-report was conducted using a two-way ANOVA. The results did not reveal a significant interaction effect for task and ethnicity, F (10, 141) = 0.934, p =0.504, partial η^2 = 0.062. Additionally there was no main effect for task, F (3, 141) = 1.325, p =0.269, partial η^2 = 0.027, and no main effect ethnicity F (4, 141) = 0.246, p =0.912, partial η^2 = 0.007.

Finally, a two-way ANOVA was conducted assessing task by prior experience, F (3, 151) = 4.049, p =0.008, partial η^2 = .074. As depicted in Figure 3.1, the post-hoc analysis revealed significant differences between the tasks when comparing prior experience to without experience. The only group that was not significantly different was the low affect business group. Note that trends for the participants who had prior experience follow expectations. A marginal main effect was seen for task, F (3, 151) = 2.155, p =0.096, partial η^2 = 0.041, yet no significant main effect was seen for prior experience F (1, 151) = 1.224, p =0.270, partial η^2 = 0.008.

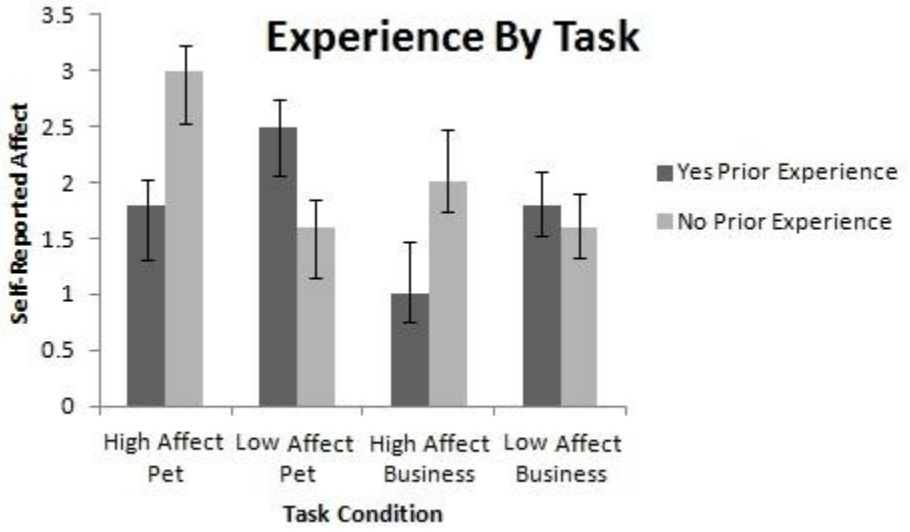

Figure 3.1 Graphic depiction of interaction between experience and positive affect reported.

The analysis of negative affect was conducted by task using a one-way ANOVA. The results of the analysis did not reveal any significant difference between the task conditions, F (3, 159) = 1.967, p =0.121, partial η^2 = 0.037 for self-reported negative affect.

Tests of covariates were conducted next to determine if age, F (3, 159) = 1.836, p =0.143, partial η^2 = 0.035, gender and initial affect upon beginning the experiment, F (3, 154) = 1.956, p =0.123, partial η^2 = .037 could have influenced the outcomes. The results for each of the one-way ANCOVAS did not reveal any significant difference when assessing negative self reported affect by task.

Analyses for interaction effects were conducted. When assessments were conducted for task by gender the results did not reveal any significant interaction effect, F (3, 151) = 0.288, p =0.834, partial η^2 = 0.006. Further analysis did not reveal any significant main effect of task, F (3, 151) = 1.812, p =0.147, partial η^2 = .035, and only a marginal main effect for gender, F (1, 151) = 3.285, p =0.072, partial η^2 = .021.

Analysis for an interaction effect was next conducted for ethnicity by task revealing no significance interaction, F (10, 141) = 0.788, p =0.640, partial η^2 = 0.053. Analysis of the main

effects of task, F (3, 141) = 2.503, p =0.051, partial η^2 = 0.008 and for ethnicity, F (4, 141) = 0.560, p =0.692, partial η^2 = 0.016, also did not reveal any significant results.

Finally, analysis was conducted to test for an interaction effect of prior experience by task. The analysis did not reveal any significant difference between task and prior experience with the resource type, F (3, 151) = 0.137, p =0.938, partial η^2 = 0.003. Analysis of the main effects of task, F (3, 151) = 2.066, p =0.107, partial η^2 = .039 and for prior experience, F (1, 151) = 2.189, p =0.141, partial η^2 = .014, also did not reveal any significant main effects.

3.7.1.4 Regression Analysis Using Self-Reported Affect

Analyses were conducted to determine if negative affect self-reported by participants could be an indicator of investing patterns for each of the tasks in the study. The results showed that in predicting the number of trials or choices a participant would make for the high affect pet, an r^2 = 0.096 or 9.6% of the variations could be attributed to the frequency of negative facial expressions, F (1, 39) = 4.153, p = 0.048. The result showed that when predicting the number of trials or choices a participant would make for the low affect pet, an r^2 = 0.018 or 1.8% of the variations could be attributed to the frequency of negative facial expressions, F (1, 37) = .669 p = 0.418. The result showed that when predicting the number of trials or choices a participant would make for the high affect business, an r^2 = 0.186 or 18.6 % of the variation could be attributed to the frequency of negative facial expressions F (1, 34) = 7.759, p = 0.009. The result showed that predicting the number of trials or choices a participant would make for the low affect business, an r^2 = .108 or 10.8% of the variations could be attributed to the frequency of negative facial expressions, F (1, 41) = 4.981, p = 0.031. These results follow the expected trends.

Table 3.18 Regression Models For the High Affect and Low Affect Pet and Business Tasks

Variable	B	SE B	β	p
High Affect Pet Task	15.52	7.62	0.31	0.05*
Low Affect Pet Task	5.66	6.92	0.13	0.42
High Affect Business Task	20.69	7.43	0.43	0.009*
Low Affect Business Task	15.80	7.08	0.33	0.31

Note: r^2 = 9.6% for high affect pet, r^2 = 1.8% for low affect pet, r^2 =18.6% for high affect business, and r^2 =10.8 % for low affect business. p-values <.05 were significant.

3.7.1.5 Regression Analysis Using Negative Facial Expressions

Analyses were conducted to determine if negative facial expression by participants could be an indicator of investing patterns for each of the tasks in the conditions. The result showed that in predicting the number of trials or choices a participant would make for the high affect pet, an r^2 = 0.091 or 9.1% of the variations could be attributed to the frequency of negative facial expressions, F (1, 13) = 1.304, p = 0.274. The result showed that when predicting the number of trials or choices a participant would make for the low affect pet, an r^2 = 0.060 or 6.0% of the variations could be attributed to the frequency of negative facial expressions, F (1, 13) = .823 p = 0.318. The result showed that when predicting the number of trials or choices a participant would make for the high affect business, an r^2 = 0.062 or 6.2 % of the variation could be attributed to the frequency of negative facial expressions F (1, 13) = 0.857, p = 0.372. The result showed that predicting the number of trials or choices a participant would make for the low affect business, an r^2 = 0.017 or 1.7% of the variations could be attributed to the frequency of negative facial expressions, F (1, 13) = .227, p = 0.641.

Table 3.19 Regression Models For the High Affect and Low Affect Pet and Business Tasks

Variable	B	SE B	β	p
High Affect Pet Task	7.23	6.34	0.30	0.274
Low Affect Pet Task	-3.83	4.22	-0.244	0.381
High Affect Business Task	6.57	7.10	0.249	0.372
Low Affect Business Task	1.35	2.82	0.131	0.641

Note: r^2 = 9.1% for high affect pet, r^2 = 6.0% for low affect pet, r^2 =6.2% for high affect business, and r^2 =1.7 % for low affect business.

CHAPTER 4

DISCUSSION

4.1 General Findings

Based on the previous thesis work by Ramirez (2010) I expected participants to engage in high risk investing (investing longer for a failing resource) for resources high in affect such as a cat or charity. This prediction was also supported by research by Rottenstreich and Hsee (2001) where decision-makers engage in higher risk when the resource is highly emotional or high in subjective value. I also expected participants to be more conservative (invest for less time for a failing resource) in their investing for resources low in affect such as a caged pet like a hamster or a typical retail store. This anticipated outcome also followed the literature on subjective value. Additionally, I expected similar trends for self-report about their investing experience where the high affect resource had more pleasure and displeasure compared with a low affect resource as well as the ability to correlate self-reported affect with risk taking for each of the resources. It was reasonable to anticipate these findings based on work by Mellers, McGraw and their associates. Specifically using affect to predict choices follows what is expected by subjective expected pleasure theory as well as decision affect theory.

The results from the Ramirez (2010) thesis were not seen for any of the task conditions in reference to investing duration, affective self-report, or regression analysis, thus failing to support the first three hypotheses. The findings for resource and affect did not show a significant difference between the four groups, but the trends did follow expectations based on work with subjective value and risk taking.

Self-report also did not follow expected trends based on decision affect theory. In this situation participants should have begun to develop positive affect with the task and the

repeated gambles, but over time negative feelings or affect should have began to manifest with repeated losses, which did occur. This anticipated response of gains and losses is further supported by affect heuristic theory where the situation and the outcomes associated with a situation can eventually influence the choices (Bateman, Dent, Peters, Slovic, & Starmer, 2007). However, in this research the degree of negative affect between the tasks was not significantly different, contrary to the expectation based on the work of Mellers and McGraw, Rottenstreich and Hsee, and Bateman et al. that the low affect resources would have been less pleasurable and unpleasant compared with the high affect resources. The trends for the positive affect did not follow what would have been expected based on the work by Rottenstreich and Hsee, while the trends for the negative affect did.

When analysis was conducted to see how well affect predicts risk-taking between the tasks, no significant difference was seen with the full dataset. Reassessment did reveal a significant relationship between affect and number of investment trials selected. While the initial analysis violated subjective expected pleasure theory across all of the resources, the reanalysis of the full dataset did not. These findings are difficult to explain because they did not follow a similar pattern to the original thesis research when assessing the full dataset. It is possible that because this study was not a within participant design that using a full dataset to interpret the data is required versus focusing on those participants who are labeled engaged. This may be beneficial to future studies in being able to reduce the possible loss of data inherent in the task design. Further studies will need to be conducted to determine if this will hold true.

Additionally, no significant correlation was seen with facial expressions and investing, also failing to support the final hypothesis. Interestingly, the trend for investment duration and negative affect were similar to the Ramirez (2010) thesis. The question about the role of resource type and whether or not decision makers are motivated to keep a mental account of gains and losses was also not clearly answered. Although the results were non-significant, the trends followed expectation. Additionally, use of facial expression analysis failed to validate

using the SAM scale in measuring the levels of affect associated with making decisions. This finding complicated identifying specifically why the null hypothesis was not rejected.

While the results of this study did not show significant differences between the four tasks, again it is important to emphasize that most of the trends were as expected. Specifically, participants invested longer for a high affect resource even though it is not significantly different. Since pilot data have shown that some amount of emotionality (e.g., high emotions with charities, low emotions with retail) is associated with each task there is some explanation about why there is a change in investment approaches with all else being equal. Consider that in literature about locus of control, when participants engage in a similar experiment where they are attempting to figure out contingencies by pushing or not pushing a button, eventually they figure that the task is fixed and give up (Alloy & Abramson, 1979). , Yet in the case of this study, specifically with the charity or typical family pet, participants continue to push a button This is a case where participants may be denying their own better judgment and rather than concede to their intuition they persist because of the possibility that the highly emotional resource may recover regardless of the odds.

This type of possible versus probable mental calculations is best explained via Fuzzy Trace Theory. Fuzzy Trace Theory is a reasoning theory that explains how information is processed and used via two pathways (e.g., verbatim and gist) (Reyna, 2004; 2008; Reyna & Farley, 2006; Rivers, Reyna, & Mills, 2008). Verbatim refers to processing of information that is very detailed, typically new situations or problems that have not been previously encountered. Gist refers to processing of information using and applying general abstract knowledge or an existing rule set to solve a problem. In this case participants first learn that all actions result in gains and pleasure. This is encoded via verbatim processing, resulting in a gist rule (expectation of gain) that becomes outdated starting at the 101st trial when the trend toward losses begins. It is possible that with higher affect, altering rule sets requires more time or possibly more effort to apply.

As far as the ability to create affect using gains and losses, this has been well established by the vital work of Bechara, Damasio, Damasio and Anderson (1994). Bechara et al. were able to establish that participants with amygdala damage were unable to learn to avoid risky choices compared to a normal healthy population on a four option repeated gambling task guided by feedback called the Iowa Gambling Task or IGT. This type of experimentation assessing emotions using gambles has been modified and replicated in numerous experiments, some for children and others with additional choices besides selecting a card and receiving feedback (Crone & Van Der Molen, 2004; Peters & Slovic, 2000).

The expectation about increased risk-taking from emotions or affect is further substantiated by other lines of research besides Rottenstreich and Hsee. Researchers have shown that the emotions associated with a situation alter how individuals see their circumstances and depending on their emotional state they will take greater or less risks (Cheung & Mikels, 2011; Loewenstein, Weber, Hsee, & Welch, 2001; Mano, 1994; Pham, 2007). Pinpointing why the differences were not significant could be from any number of possible issues. It is possible that there is a flaw in the tasks, but this research has shown the trends previously with greater laboratory control. It is possible that any one of the manipulations may have contributed or that this sample is somehow different than the sample taken three years ago.

4.2 Complications from Manipulations

The changes compared to the original study may have introduced unintended complications due to a few unforeseen confounds. The changes to the research design were additional tasks, altered sample method (e.g., within to between participant design), and the introduction of a camera. The tasks themselves were novel and had only been previously used in one other experiment. Therefore, no prior information existed to anticipate that the alterations may have resulted in null findings or that additional measures should have been taken.

4.2.1 From Two to Four Tasks

As previously stated, the original design for this research was two tasks, one a pet and the other a business, where participants invested and attempted to maximize their value while avoiding losses. In this experiment, the tasks were expanded to include two pets, one high affect and one low affect, and two businesses, one high in affect and one low in affect. The analysis failed to reject the null hypothesis. The trends for the four conditions did follow those found in Ramirez (2010) [longer investing for the pet (*M* = 217.81, *S.E.* = 11.44) compared with the business (*M* = 183.04, *S.E.* = 12.84)] and also followed the trends expected in the first hypothesis with longer investing for high affect resources than lower affect resources. For the high affect pet (*M* = 215.53, *S.E.* = 10.43) and the low affect business (*M* = 194.06, *S.E.* = 11.01) the means and standard error were nearly identical to what was seen in Ramirez (2010) as indicated above. The question then, is why did the research failed to support the hypothesis? If there was only one manipulation this would be an easily answered question, but in this case there were two additional changes that may account for the outcome.

4.2.2 Within to Between Participant Design

One issue is whether or not the sample is influenced by some other variable outside of ethnicity, gender, age, or prior experience as discovered in the reanalysis of the full dataset. In a within participant design, individual differences are easily eliminated allowing for a clean experimental analysis which may explain why there were not a factor in the 2010 thesis research. Since this research went from within to between it is possible that socioeconomic status, risk perception, risk propensity, motivation, intelligence, education level, and decision-making competence may all have played a role in why the research failed to find similar results as Ramirez (2010) (Parker & Fischoff, 2005; Sitkin & Pablo, 1992). There is evidence that individual differences in risk taking can depend on a variety of other factors such as numeracy (Pachur & Galesic, 2012). Further analysis is required to determine what additional factors may

be influencing the outcome. There is evidence that the change of research design makes the tasks more susceptible to individual differences as seen in the results section.

4.2.3 Influence of the Camera

Another change in the experimental design was the inclusion of a camera for facial expression analysis. As with the change from within to between participant designs, the use of a camera in this research has not been previously tested. Literature reviewed of noted authors (e.g.., Hertwig, Rakow, and Li et al) in emotionally influenced decision making paradigm has not focused on the possible influence of an observer be it real or artificial (e.g., a camera). The findings from expressions and trials completed showed no significant correlation. Additional analysis was conducted post-hoc to determine if there was a relationship between the negative facial expressions and the final affect rating. This too showed no significant relationship.

It is possible that the presence of the camera may have influenced the decision-making for the four tasks in some manner (e.g., making people focus their attention on the camera rather than the task or people being hyper aware of their behavior). For example I had some participants make obscene gestures at the camera as they conducted the experiment, and I also had another participant play with the camera and stick his nostril up to the lens.

The initial behavioral analysis of investing with and without a camera did not show a significant difference, but note that the difference between the means was around 20 investment trials. Given that both the conditions had such high variance it is possible that a significant effect is being observed but not detected due to a lack of power. The affect ratings for the no camera condition correlated as they did in the original Ramirez (2010) research, but not for the same condition with a camera.

4.3 Conclusion

While the results of this study failed to support the hypotheses, they did begin the process for the use of two new conditions when assessing high and low affect in a willingness to invest scenario. The comparisons among similar resource type while still accounting for affect

may provide increased validity in the field for assessing risk taking and subjective value. There are many questions to answer in terms of what influences investing for different resources (e.g., the role of individual difference, the impact of sample design, the role of observation). Additionally, it is worthwhile to consider the manner or strategic approach that participants were taking among the different tasks by assessing the individual response per condition. Unfortunately, this analysis is not feasible to do at this time because of limitation in the programming and the ability to extract the data in a reasonable timeframe; this analysis is planned to be done at a later time. Future research will include dissociation between affect and resource type, but in a within participant design. Additionally, future studies will still need to consider what needs to be in place in order to have predictable choice preference in highly emotional situations. It is still possible that observation is needed only in a situation that will require deception. Finally, it is worth investigating if the same trends occur when numerical feedback is completely removed from the experiment. Doing so may provide a possible solution to the current debate between McGraw et al,(2010) and Rottenstreich and Hsee (2001) which is attempting to determine if subjective value results in greater risk taking or if things high in subjective value tend to be hard to quantify, unlike bank accounts and stocks.

APPENDIX A

THE FOLLOWING ARE INSTRUCTIONS GIVEN TO PARTICIPANTS TO RESPOND TO THE SAM SCALE.

On the computer screen you will see a set of figures each arranged along a continuum. The set of figures are called SAM. You will use these figures to rate how you felt about your investing when cued throughout the task. SAM shows different ranges of happiness to unhappiness.

You can see the SAM figures vary. In the illustration, the SAM scale ranges from a smile to a frown. At one extreme of the scale you felt happy, pleased, satisfied, content, or hopeful. If you felt completely happy you can indicate this by selecting the number 1 which is below the figure on the far left. At the other end of the scale is when you felt completely unhappy, annoyed, unsatisfied, melancholic, despair, or bored. You can indicate this by selecting the number 9 which is below the figure on the far right.

The figures also allow you to describe intermediate feelings of pleasure. If you felt completely neutral, neither happy nor unhappy, you can indicate this by selecting the number 5 which is below the figure in the middle. If, in your judgment, your feelings of pleasure or displeasure fall between two of the pictures you can indicate this by selecting the corresponding number that is between the figures. This permits you to make a more finally graded rating for how you feel in reaction to your investment feedback.

APPENDIX B

TASKS INSTRUCTIONS

Low Affect Business game

Thank you for volunteering to participate in this experiment. You are about to play a game where you own a private retail business in sales. It is your responsibility to make sure that your business is successful. You will be presented with actions to take to improve your business. After you have chosen an action to take you will be given feedback about the impact that the chosen action has had on your business. During the task you will be asked to report how good or bad you feel about the outcomes. The choices you make can and will impact how well your business has performed at the end of the game. Because this is a scientific experiment it is important that you attempt to do as well as possible to provide meaningful information for the study.

High Affect Business game

Thank you for volunteering to participate in this experiment. You are about to play a game where you are responsible for the finances of a private charity whose purpose is to fight childhood leukemia. It is your responsibility to make sure that charity is financially successful. You will be presented with actions to take to maintain this charity. After you have chosen an action to take you will be given feedback about the impact that the chosen action has had on your charity. During the task you will be asked to report how good or bad you feel about the outcomes. The choices you make can and will impact how well your charity has performed at the end of the game. Because this is a scientific experiment it is important that you attempt to do as well as possible to provide meaningful information for the study.

High Affect Pet game

Thank you for volunteering to participate in this experiment. You are about to play a game where you have adopted a cat/dog. It is your responsibility to make sure that your new cat/dog is well cared for. You will be presented with actions take to care for your pet. After you have chosen an action to take you will be told the immediate impact that it has had on your

cat/dog and you will be asked to report how good or bad you feel about the outcome. The choices you make can and will impact how well your pet is at the end of the game. Because this is a scientific experiment it is important that you attempt to do as well as possible to provide meaningful information for the study.

Low Affect Pet game

Thank you for volunteering to participate in this experiment. You are about to play a game where you have purchased a hamster/gerbil. It is your responsibility to make sure that your new hamster/gerbil is well cared for. You will be presented with actions take to take care of your pet. After you have chosen an action to take you will be told the immediate impact that it has had on your hamster/gerbil and you will be asked to report how good or bad you feel about the outcome. The choices you make can and will impact how well your pet is at the end of the game. Because this is a scientific experiment it is important that you attempt to do as well as possible to provide meaningful information for the study.

APPENDIX C

MENU DESCRIPTIONS PROVIDED TO PARTICIPANTS

Menu for Caring or Investing Behaviors for the Tasks.

High Affect Business	Low Affect Business	High Affect Pet	Low Affect Pet
Hold an employee function	Hold an employee function	Teach a trick	Teach a trick
Fund Research	Restock Product	Feed	Feed
Organize a Fundraiser	Clean and reset the store	Groom and Bathe	Groom and Bathe
Close for the day	Close for the day	Put outside	Leave in cage

Menu for outside help with the tasks.

High Affect Business	Low Affect Business	High Affect Pet	Low Affect Pet
Hire an outside consultant	Hire an outside consultant	Pay for medical procedures	Pay for medical procedures
Declare Bankruptcy	Declare Bankruptcy	Put the pet to sleep	Put the pet to sleep

APPENDIX D

DEBRIEFING

Thank you for your participation. The experiment you performed was testing differences in decision-making between two resources under similar conditions while considering the role of emotions. As you were previously informed your interaction with the task was recorded and you have ability to request that your data and video recording be removed from the study. The researchers for this experiment are requesting that information about this project not be discussed with other students. If you have questions or would like more information please contact Patrick Ramirez (817-272-0114) or Dr. Daniel Levine (817-272-3598).

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BIOGRAPHICAL INFORMATION

Patrick Ramirez earned his undergraduate degree at the University of Texas at Arlington where he was a University and a McNair Scholar. Patrick stayed at UT Arlington to complete his Master's in Experimental Psychology and later his PhD. Mr. Ramirez's interest in research concern human decision-making and attempting to explain how and why people deviate from mathematical efficiency. His work ranges from investigations of caffeine on emotional decision-making to using functional magnetic resonance imaging while investigating the ratio bias. Patrick's future plans are to find a post-doctoral position in psychology and from there enter the ranks of academia with the goal to eventually be a college professor.