PREFERENCE REVERSALS IN EMPLOYEE EVALUATIONS OF CASH VERSUS NON-CASH INCENTIVES

DISSERTATION

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By

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ABSTRACT

Preference reversals based on changes in evaluation mode demonstrate violations of the invariance axiom in models of rational choice. In this document, data are presented from 8 experiments which demonstrate that potential employees show variance in their preferences for cash versus non-cash incentives received from their employer. Furthermore, this preference reversal is shown to be partially caused by the evaluation mode, whether ratings are taken in isolation or in comparison. Two additional manipulations are employed in an attempt to persuade participants to choose the non-cash incentive in a direct comparison. Effort required to earn the bonus did not effect participant preferences for non-cash incentives. However, allowing participants to donate a portion of their paycheck to charity makes those who choose to donate more likely to choose the non-cash incentive. Together these 8 experiments demonstrate that employee preferences for incentives are not stable; they are influenced by the evaluation mode, the opportunity to donate to charity and, to a lesser extent, the luxuriousness of the non-cash incentive.
Dedicated to my parents, Leigh & Barbara, to my future husband, Ed, and to my three orange angels: Solo, Simon, and Sydney
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CHAPTER 1

INTRODUCTION

Decision making has been studied for many centuries in various domains; however, it is a relatively new phenomenon studied by psychologists. Ward Edwards unofficially founded the discipline within psychology with his 1954 article in *Psychological Bulletin*, “The Theory of Decision Making”. Since that time, thousands of articles and books have been devoted to study of decision making. Several theories about decision making and choice have been developed in order to explain and predict human behavior. Most of these early models were rational theories of choice based largely on the axioms developed by Von Neumann and Morgenstern (1947). One basic assumption of rational choice theories is the principle of invariance; decision makers should have measurable and stable preferences. Preferences should not be affected by manner in which the options are presented or the method through which the choice is made. These concepts are referred to as description invariance and procedural invariance respectively. However, violations of both description and
procedural invariance have been repeatedly demonstrated. When either the format of presentation or the elicitation method is varied, decision makers often display a reversal in preference. These preference reversals have been the subject of much research inquiry over the last 30 years, and a large body of research has supported the claim that the invariance property does not hold in human judgment. Specifically, preferences appear to be constructed at the time of judgment, are sensitive to the mode of elicitation, and susceptible to framing effects (Slovic, 1995; Slovic & Lichtenstein, 1983; Tversky & Kahneman, 1981).

In this paper, the rich literature on preference reversals will be used to shed some light on a question that has plagued the incentive industry: should employees be rewarded with cash or non-cash bonuses? Much of the confusion within the industry arises from the contradictory findings reported in the literature. For example, Incentive magazine asked employees to indicate their preference among the following awards: $1500 cash, a travel award worth $1500, or a merchandise award worth $1500 (Heinz & Alonzo, 1998). Seventy-nine percent of the respondents chose to receive the cash. However, a study conducted by BI Performance Services and Goodyear Tire & Rubber Co. found that in a comparison of sales performance, the group of salespeople receiving non-cash incentives outperformed those receiving cash incentives by a margin of 46% (Alonzo, 1996). This latter finding is also at odds with traditional economic
theory which states that cash should always be preferred due to its flexibility in spending. Several principles from psychological research, in particular, research which has focused on understanding preference formation, can help resolve this apparent conflict within the incentive literature.

This paper will begin with an overview of research on preference reversals in psychology, discuss new avenues for explorations, and introduce new experiments which reveal reversals in preference for incentive options. Several studies will demonstrate preference reversals in employee choice between cash and non-cash incentives. An additional set of studies will help to identify and isolate variables that affect this observed preference reversal: luxuriousness of the non-cash incentive, effort required to receive bonus, and the ability to concurrently donate a portion of your weekly earnings to charity. These studies will feature predominately questionnaire based measures on hypothetical choices. However, to increase ecological validity, the final experiment will examine real choices in a task where the highest performer earns a substantial incentive.
PREFERENCE REVERSALS: A REVIEW

Preference reversals have traditionally been demonstrated by asking participants to choose between a pair of gambles, A and B. Gamble A features a high probability of winning but a low monetary payoff while gamble B has a low probability of winning but a high monetary payoff. Typically, when asked to choose between the two gambles, participants will choose gamble A, the option with the high probability of success. However, when participants are asked to assign a dollar amount to the value of the gamble, they allot a higher monetary value to gamble B. This constitutes a violation of the invariance axiom upon which the majority of choice theories are based.

The concept of a preference reversal was based upon the early observation by Paul Slovic and Sarah Lichtenstein (1968) that the response mode used affected reported preferences. Simple gambles, such as the following, were used as experimental stimuli: a 30% chance to win $16 and a 70% chance to lose $4. When Slovic and Lichtenstein asked participants to rate the attractiveness of
gambles or choose between them, their responses were mainly influenced by the probability of winning associated with each simple gamble. In addition to choice, there are other methods of reporting preference. For example, Slovic and Lichtenstein asked participants to assign buying and selling prices to each gamble. Specially, they were asked, “What is the most that you would pay to play this gamble?” or “What is the least amount for which you would sell a ticket to play this gamble?” These responses corresponded to the payoff amounts. That is, when participants found a gamble attractive, their buying and selling prices were correlated with the winning payoff amount. Consequently, when a gamble was deemed unattractive, their prices were correlated with the amount that would be lost. Slovic and Lichtenstein suggested that this result in the pricing task was due to participants anchoring their buying or selling price on the monetary payoff value and insufficiently adjusting downward to account for the probabilistic nature of the task. On the other hand, ratings and choices of the gambles appeared to correspond to different decision rules, ones which placed greater weight on the probabilities associated with winning and losing.

Following this demonstration of response-mode effects, Lichtenstein and Slovic (1971) argued that the decision making process was different for choosing between two gambles and assigning buying/selling prices. They demonstrated this in experiment 1 of their 1971 article by constructing pairs of gambles for
which participants, in direct comparison, preferred gamble A but assigned a higher buying/selling price to gamble B. In experiment 2, the authors assessed the robustness of this effect by examining the characteristics of the betting pairs which consistently resulted in preference reversals. Forty-nine pairs of gambles were constructed, in which they constrained gamble A to have a higher probability of winning a modest amount and gamble B to have a low to moderate probability of winning a large amount. Within these constraints the betting pairs were significantly different in the degree to which the pairs elicited preference reversals. The pairs of gambles which were more likely to elicit preference reversals were those where both the possible amounts lost and gained for gamble B were greater than those for gamble A. The following bet pair obtained the most preference reversals: gamble A has a 75% chance of winning $1.20 and a 25% chance of losing $.10; gamble B has a 25% chance of winning $9.20 and 75% chance of losing $2.00.

This experiment was largely criticized by economists due to the lack of external validity. The critics believed that the participants chosen for this experiment lacked the appropriate motivation to give the experiment their complete attention. Economists argued that, had they chosen a population that would be highly motivated to perform the tasks in a rational manner, the obtained preference reversals would disappear. Therefore, Lichtenstein and
Slovic (1973) attempted to replicate their results using gamblers at the Four Queens Casino in Las Vegas. Pairs of gambles were again constructed so that gamble A had a high probability of winning a modest amount and gamble B had a low to moderate probability of winning a large amount. The only change in experimental design was the addition of gambles with negative expected values. Forty-four gamblers, most of whom were highly educated, participated in this experiment. Lichtenstein and Slovic found that preference reversals occurred frequently for many participants— even for the gambles with a negative expected value. The following is an example of a typical pair of gambles offered to the participants at the casino, where each chip was worth $.25:

Gamble A: 11/12 chance to win 12 chips; 1/12 chance to lose 24 chips
Gamble B: 2/12 chance to win 79 chips; 10/12 chance to lose 5 chips.

The participants first chose between the two gambles and later indicated their minimum selling price. For this particular pair of gambles, each gamble was chosen equally often; however, 88% of the participants indicated that gamble B should have a higher minimum selling price. Lichtenstein and Slovic described those who consistently and repeatedly displayed this pattern of preference reversals as “money pumps”; these participants would be “continuously giving money to the experimenters without ever playing the gambles” (Slovic, 1995, p. 366).
Following the publication of Slovic and Lichtenstein’s work, several economists attempted to discredit the preference reversal phenomenon in an attempt to save rational models of choice (Grether & Plott, 1979; Pommerehne, Schneider, & Zweifel, 1982; Reilly, 1982). In particular, most economists believed that if motivation and payoff amount were increased, people would eventually exhibit rational, consistent preferences. Grether and Plott (1979) were the first to question Slovic and Lichtenstein’s findings. Their experiments were based upon 13 hypotheses which, if true, would make Lichtenstein and Slovic’s work either irrelevant from an economists’ perspective or explain their results in terms of accepted economic theory. Grether and Plott criticized the literature on preference reversals on the following grounds: 1- the incentives were misspecified, 2- income effects accounted for the results, 3- the experiments did not allow participants to indicate indifference between the two gambles, 4- the term “selling price” elicited a strategic response natural to real world negotiations that was difficult to overcome in the experimental setting, 5- subjective probabilities changed throughout the experiment creating the illusion of a reversal in preference, 6- the results could be explained by Tversky’s concept of elimination by aspects, 7- the results could also be explained by the phenomenon underlying Tversky’s demonstration of Lexigraphic Semiorder, 8- the experimental outcomes were the result of heuristical reasoning associated
with the decision costs in information processing, 9- words or contexts caused some dimensions of the choice problem to become anchors, thereby obscuring the “true” preference held by an individual, 10- participants were confused or misunderstood, 11- the preference reversal phenomenon only occurs with low frequency, therefore, there is not be much need for concern. 12- the participants were unsophisticated subjects, therefore, the results should not be generalized to the entire population of decision makers, and 13- because the experimenters were psychologists, and they have a reputation for deceiving subjects, the participants were influenced by what they perceived to be the purpose of the experiment. Despite designing the experiments to address these 13 specific flaws, the results of Grether and Plott’s experiments replicated Slovic and Lichtenstein’s findings. In experiment 1, 71 out of 127 (56% ) choices between pairs of gambles were inconsistent with the given prices, and in experiment 2, 30 out of 44 choices were inconsistent with the prices.

However, many economists were still unconvinced. Pommerehne, Schneider, and Zweifel (1982) believed that Grether and Plott did not sufficiently motivate their participants to make careful decisions nor were their incentives sufficiently strong to entice subjects to make rational choices over the entire experiment. Therefore, in order to increase motivation throughout the experiment, they increased both the payoff amounts offered to participants and
the discrepancy between payoff amounts in the pairs of gambles. The experimenters found that with a sizeable payoff they were able to decrease, but not eliminate, preference reversals. Additionally, they found a decreased frequency of preference reversals when the payoff differentials were larger. However, this difference was not statistically significant. The authors were forced to conclude that “even when the subjects are exposed to strong incentives for making motivated, rational decisions, the phenomenon of reversal does not vanish” (Pommerehne, Schneider, & Zweifel, 1982; p. 573).

Still unconvinced, Reilly (1982) argued that Grether and Plott did not adequately increase participants’ understanding of the task. Therefore, he conducted two experiments with manipulations aimed to increase participant knowledge in hopes of extinguishing the preference reversal phenomenon. In his first experiment, Reilly supplied the participants in the experimental group with a brief description of the concept of expected value and the expected values for every gamble. In the second experiment, he ran participants in smaller groups to encourage more effective communication between the experimenters and the participants. Additionally, the money with which the participants were gambling remained on the desks in front of them in order to increase the salience of the incentives. The manipulations designed to increase the salience of the monetary payoffs resulted in a small but significant decrease in the frequency of
preference reversals. Furthermore, the addition of expected value information also further reduced the rate of observed preference reversals. Although the experimental manipulations were able to decrease the amount of preference reversals, the effect was not eliminated. Reilly concluded that his experiments provided additional evidence that preference reversals were a robust phenomenon.

However, Chu and Chu (1990) were finally able to eliminate preference reversals by designing market like environments where participants were exposed to repeated arbitrage transactions which caused them to lose money. Those who demonstrated preference reversals in earlier rounds quickly changed their responding to reflect transitive preferences after an average of 1.71 arbitrage transactions. These environments through which preference reversals were eliminated were characterized by immediate feedback, repetition, and stiff penalties.

In sum, preference reversals have been found to be an extremely robust phenomenon. Preference reversals were reduced but not eliminated even when heavy handed attempts have been made to persuade participants to act “rationally” by providing a tutorial on expected value and supplying the expected values for each gamble.
CHAPTER 3

CAUSES OF PREFERENCE REVERSALS

By the mid 1980’s, preference reversals had been established as a robust finding in both psychology and economics; however, the cognitive mechanisms underlying the phenomenon were not well understood. In an attempt to further understand the causes of preference reversals, a set of literature developed which provided three hypotheses about the process through which axiomatic violations occur: the compatibility hypothesis, the prominence hypothesis, and the comparison of joint versus separate evaluations.

In 1990, Tversky, Slovic, and Kahneman noted that the preference reversals observed in the literature could be due to a violation of either the transitivity or procedural invariance axioms common to rational theories of choice. Transitivity implies that the following pattern of preferences must hold for any rational actor: if \( A > B \) and \( B > C \), then \( A > C \). Procedural invariance dictates that a decision maker should be indifferent to choosing between two forms of the same gamble. That is, people should have no preference when offered the choice
between a simple gamble and a mathematically equivalent compound gamble. The invariance axiom is violated when framing effects are observed.

Tversky, Slovic, and Kahneman (1990) created a method for identifying whether a single preference reversal is caused by procedural invariance or intransitivity. They extended the traditional two choice gamble (used to demonstrate the preference reversals previously cited), to include the option of receiving X$ for sure. The authors use the following pair of gambles in their experiment:

- **H bet**: 28/36 chance to win $10
- **L bet**: 3/36 chance to win $100

Each participant chose between these three bet pairs: H bet-L bet, H bet-X$ for sure, and L bet -X$ for sure. Participants were also asked to indicate C_H and C_L which represented the minimum selling prices associated with bets H and L.

From all of the choice patterns elicited, Tversky et al. (1990) used the following data pattern for diagnosing the source of a preference reversal: H>L and C_L >X>C_H. The important data examined were the choices between H and X and between X and L. Intransitivity was observed when L>X and X>H resulting in L>X>H>L. However, preference reversals due to the failure of procedural invariance could be caused by the overpricing of gamble L, the underpricing of gamble H, or both, leading to three possible data patterns. Overpricing of L
occurs when people prefer the selling price for L to bet L in a direct choice ($C_L > L$). This forms the following preference reversal pattern: $X > H$ and $X > L$ which results in $C_L > X > L$. Underpricing of H occurs when people prefer the bet H to the selling price associated with H ($H > C_H$). This creates the following pattern: $H > X$ and $L > X$ resulting in $H > X > C_H$. Over and under pricing can occur simultaneously which results in the following pattern: $H > X$ and $X > L$ yielding, $H > X > C_H$ and $C_L > X > L$. Over and under pricing do not imply that the bias associated with procedural invariance is strictly due to the pricing process; Tversky et al. argue that there is error associated with both response modes, choice and pricing.

In their experiments, the typical preference reversal rates were observed (40-50%); however, only 10% of the preference reversal patterns were due to intransitivity. The remaining 90% of the preference reversal patterns could be explained by procedural invariance. More specifically, the majority of these patterns resulted from the overpricing of bet L. That is, participants were overpricing the bet with the largest payoff amount.

The Compatibility Hypothesis

The results from Tversky et al. (1990) led to the formulation of the scale compatibility hypothesis presented by Slovic, Griffin, and Tversky (1990). The authors proposed that the weight a stimulus receives during the judgment process is directly related to its compatibility with the response mode. Slovic et
al. argued that this over-reliance on a compatible attribute is a result of two cognitive artifacts. First, if stimulus A is not on the same scale as the required response, then, additional mental operations are required to translate stimulus A into the appropriate scale. There is also additional error associated with this translation; therefore, both the increased effort and the additional error are likely to reduce the impact of the non-compatible stimulus (A). Secondly, a match between scales of the response mode and stimulus B will naturally make stimulus B more salient during the response process. This was supported by a series of studies conducted by Slovic and colleagues which substituted non-monetary outcomes (such as a dinner for two at a nice restaurant) for the traditional monetary payoffs. They hypothesized that this substitution would reduce the compatibility between the stimuli and the response mode. When participants were asked to indicate their minimum selling price, the most compatible stimulus in the gamble was the monetary payoff. Therefore, that stimulus received more weight during response elicitation. However, when the payoffs are changed to non-monetary outcomes, the compatibility between the response mode and the stimulus should decrease, thereby reducing the rate of preference reversals. Following this substitution of non-monetary incentives, the preference reversal rates decreased from 41% to 24%, confirming the authors’ prediction.
Additional support for the scale compatibility hypothesis came from Schkade and Johnson’s (1989) study investigating the amount of time participants spent examining probabilities and payoffs during choice and pricing. Their results indicated that participants spent a significantly greater amount of time examining payoff information during pricing when respondents produced preference reversals. However, if respondents did not show preference reversals, there was no significant difference in the amount of time spent viewing payoff information versus information about the probabilities.

The Prominence Hypothesis

Concurrently, an additional set of literature had developed that examined preference reversals between choice and matching response modes. Tversky, Sattath, and Slovic (1988) developed the prominence hypothesis to explain the psychological mechanisms that underlie the preference reversal between these two response modes. They argued that the more important attribute will be given more weight in choice problems than in matching. The classic demonstration of this effect is through the highway safety problem:

About 600 people are killed each year in Israel in traffic accidents. The ministry of transportation investigates various programs to reduce the number of casualties. Consider the following two programs, described in terms of yearly costs in millions of dollars and the number of casualties.
per year that is expected following the implementation of each program.

Which program do you favor?

<table>
<thead>
<tr>
<th>Program</th>
<th># casualties</th>
<th>cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>500</td>
<td>$55 million</td>
</tr>
<tr>
<td>Y</td>
<td>570</td>
<td>$12 million</td>
</tr>
</tbody>
</table>

In this problem, the more important dimension is number of casualties. Therefore, when participants were asked to choose which program they favored, 67% selected program X, the one with fewer casualties. In the matching condition, the participants saw the same information but one of the four values from casualties or cost was missing. For example, if the cost for Program X was missing, the participants would be asked to write in the value for the cost of Program X that would make them indifferent between the two programs. Preference can be inferred from this input value. For example, if participants filled in $50 million dollars as the cost of Program X that would result in indifference between X and Y, then any value for the cost of Program X that is more than $50 million dollars should result in a preference for Program Y. However, the results indicate an overwhelming majority favored Program Y in the matching task while in the choice task, the majority of participants indicated a preference for Program X. Tversky et al. argued that the response mode evokes different decisional strategies. The choice mode naturally brings to mind a more
qualitative reasoning strategy—such as the lexicographic strategy. This strategy is a heuristic which is based on selecting the option that dominates on the most important dimension. However, the matching response mode suggests a more quantitative reasoning strategy.

Preference Reversals in Joint Versus Separate Evaluation

Finally, Hsee, Loewenstein, Blount, & Bazerman (1999) proposed the evaluability hypothesis to explain preference reversals in joint versus separate evaluations. Joint evaluation mode (JE) refers to stimuli presented simultaneously for evaluation, while separate evaluation mode (SE) refers to items being evaluated in isolation. Decisions made in JE mode often differ significantly from SE.

“Traditional” preference reversals arise because of differences between scales in the response modes. However, preference reversals observed between JE and SE occur because of differences in the evaluation mode itself (Hsee et al, 1999). A typical demonstration of a preference reversal in this domain uses the following problem:

<table>
<thead>
<tr>
<th></th>
<th># of entries</th>
<th>Any defects?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dictionary J:</td>
<td>20,000</td>
<td>yes, cover is torn</td>
</tr>
<tr>
<td>Dictionary S:</td>
<td>10,000</td>
<td>no, it is like new</td>
</tr>
</tbody>
</table>
Participants were asked to indicate their willingness to pay (WTP) for each journal. In SE, participants, dictionary S received higher WTP values while in JE, dictionary J received higher WTP values. In this case, the same evaluation scale is used in both groups but the only difference employed is evaluation mode. The theoretical explanation for the preference reversals in joint versus separate evaluation modes relies on the ease with which an attribute can be evaluated in isolation. Using the dictionary example above, the condition of the book is easy to evaluate in isolation; there is an absolute indicator of quality—a torn cover demonstrates low quality. However, the number of entries in not easy to evaluate in isolation; it is a characteristic that is highly context dependent. There is no gold standard for appropriate number of words for a dictionary; therefore, without information about other dictionaries, it is difficult to evaluate this attribute. In SE, attributes that are difficult to evaluate in isolation will have less impact, and, in JE, attributes that are difficult to evaluate in isolation will have a greater impact. In SE, these easy-to-evaluate attributes will be the major determinant for the evaluations, whereas in JE, the easy-to-evaluate attributes will play a smaller role in determining the overall evaluation of the target. A preference reversal will only occur if there is a large shift in the relative impact of the easy and difficult to evaluate attributes between SE and JE modes. The ease of evaluability of an attribute is determined by the type and amount of
information about that attribute that is available; this information is referred to as the evaluability information. This includes information about the best and worst possible values of an attribute, neutral values of an attribute, and any additional information that allows the decision maker to locate a particular value of an attribute in the total attribute space. The evaluation function can be mapped, and the result is predictable based upon the evaluability information possessed by the decision maker. The functions can range from a flat line, when the decision makers have no information, to a steep function, when the decision makers have all of the information about an attribute. However, the evaluability of an attribute is not necessarily related to the ability to understand or interpret the values. It reflects the ability a decision maker has to interpret the desirability of particular values.
CHAPTER 4

LITERATURE SUMMARY

Slovic and Lichtenstein’s (1968, 1983) impressive demonstration of the preference reversal phenomenon led to a flurry of research by economists in an attempt to revive rational models of choice (Lichtenstein & Slovic, 1971; Lichtenstein & Slovic, 1973). A series of papers raised the monetary payoffs and increased the knowledge and motivation of the participants in order to eradicate preference reversals (Grether & Plott, 1979; Pommerehne, Schneider & Zweifel, 1982; Reilly, 1982). Some of the experimental manipulations were effective in decreasing the rate of preference reversals, but none eliminated them. This feat was finally accomplished by Chu and Chu (1990) using very strict experimental conditions: a market-like environment, repeated trials, with immediate and severe feedback. However, there was also no indication that the extinction of the preference reversal would generalize to a new task potentially susceptible to such a reversal.

Preference reversals are thought to be caused by either differences in response mode (such as a choice task versus a matching task) or differences in
evaluation mode (such as joint evaluation (JE) mode versus separate evaluation (SE) mode). The latter cause often corresponds to issues that arise in more naturalistic settings. For example, preference is often elicited in JE mode, but consumption of a product takes place in SE mode. Therefore, how should preferences in these types of situations be evaluated? Which method would result in greater post-decisional satisfaction? The research examined in this paper explores the issue of incentive preferences in organization settings. The incentive industry has struggled with the question: which do employees prefer, cash or non-cash incentives? And, it turns out that the answer will depend on how you ask the question. Incentive magazine asked employees to indicate their preference among the following awards: $1500 cash, a travel award worth $1500, or a merchandise award worth $1500. Seventy-nine percent of the respondents chose to receive the cash (Heinz & Alonzo, 1998). However, a study conducted by BI Performance Services and Goodyear Tire & Rubber Co., found that in a comparison of sales performance, the group of salespeople receiving non-cash incentives outperformed those receiving cash incentives by a margin of 46% (study reported in Alonzo, 1996). The following set of studies seeks to help explain the variables underlying the discrepancy in this research field. Experiment 1 demonstrates that the preference reversals in the literature are in part due to the mode of elicitation: joint versus separate evaluation. Experiments
2, 3, and 4 attempt to further extend the work by arguing that the luxuriousness of the non-cash incentive effects whether the preferences elicited will be transitive or intransitive. Experiment 5 examines preferences of employees who have been involved in a non-cash incentive program. Experiments 6 and 7 apply variables that effect the consumptions of hedonic goods in the consumer to the employee incentive literature in an attempt to increase the selection of the non-cash incentive. Finally, experiment 8 will attempt to replicate the questionnaire findings with a performance based incentive experiment which will test both preference and performance as dependent variables.
CHAPTER 5

EXPERIMENT 1

The first experiment was conducted to answer the basic question: what would employees prefer, a cash or non-cash incentive? Would the two incentives be appraised differently in joint versus separate evaluations? In order to accomplish this, students were asked to place themselves in the role of an employee and evaluate one of three bonus scenarios. In the scenario for group 1, participants received a cash bonus, in group 2 they received a non-cash incentive, and in group 3 they were offered a choice between the cash and non-cash incentives. Groups 1 and 2 evaluated their bonuses in separate evaluation mode; while group 3 used joint evaluation mode.

Method

Participants: One hundred ninety students participated in this experiment (group 1 N=64, group 2 N=60, & group 3 N=66). All participants were Psychology 100 students who were taking part in the Research Experience Program; they received course credit for their participation in this study.
Materials: All data were collected via computer using the program Media Lab.

The participants were presented with a short, online scenario and asked to respond to one scaled response question and one open ended question.

Procedure: Participants arrived in the lab and received the following instructions:

The following study is aimed to help employers identify valuable ways to reward their employees. Please read the following scenario carefully, placing yourself in the role of the employee.

Participants in group 1 were given the cash incentive scenario:

Assume that you have graduated from Ohio State and have a job paying you $35,000 per year. You consider this to be a good starting salary for someone in your field. You are satisfied with your working conditions, and you get along well with your co-workers. Although this is not the type of job you hope to hold when you are further along in your career, it is satisfactory at this point.

As you near the end of your first year of employment, the company decides to reward its most productive employees with a bonus. Due to your good performance, you are one of the approximately 50% of the employees who will receive this bonus. The amount of your bonus will be $1,500. (The bonus is actually more than $1,500, but you have to pay taxes on that amount, which leaves you with $1,500 as the final value of the bonus.)

Participants in group 2 were given the non-cash incentive scenario:

Assume that you have graduated from Ohio State and have a job paying you $35,000 per year. You consider this to be a good starting salary for someone in your field. You are satisfied with your working conditions, and you get along well with your co-workers. Although this is not the
type of job you hope to hold when you are further along in your career, it is satisfactory at this point.

As you near the end of your first year of employment, the company decides to reward its most productive employees with a bonus. Due to your good performance, you are one of the approximately 50% of the employees who will receive this bonus. For the bonus, you can choose one of five packages (listed below), which total $1,500 in value. (The value of the bonus is actually more than $1,500, but you have to pay taxes on the monetary value of the bonus, which leaves you with $1,500 as the final value of the bonus.)

1. home audio system
   The system will include 2 Klipsch synergy series floorstanding speakers (35” high, 8” wide), a Sony 600-watt, 6.1 channel audio-visual receiver with Dolby digital sound, a Sony 400-disc mega storage CD changer with CD-RW and MP3 capability, and a Sony progressive scan DVD, hi fi VCR combo.

2. Sony 51” widescreen rear-projection HDTV
   The 51” TV has a 16:9 aspect ratio (movie style screen) and 1080i capability which provides the highest quality picture from a high-definition source. It also has a 2-tuner PIP (picture in picture) which allows you to watch two equally sized shows at once.

3. Compaq Presario laptop computer
   The laptop has an Intel Pentium 2.3 Ghz processor with a 40 GB harddrive. The screen is 15” and the computer comes with DVD,CD-RW combination drive.

4. Columbus Blue Jackets ticket package
   2 club-level box seat tickets to four Columbus Blue Jackets games of your choice. Additionally, for each game, you will receive dinner for two at the Italian restaurant, Buca di Beppo, located across the street from the Nationwide Arena.

5. A 5 night Carnival western Caribbean cruise
   This cruise package includes an ocean-view room for two adults on the Carnival cruise ship, the Imagination; the cruise departs from Miami, Fl and travels to the Grand Cayman, the Cayman Islands, and Ocho Rios, Jamaica. All food and non-alcoholic beverages are included as well as all entertainment on board the ship.
Then both groups 1 and 2 were asked to answer the following question:

We are interested in your opinion of this bonus, given your salary and your job. Please circle the number on the scale below which best reflects your opinion of the bonus.

-3 --------------- -2 ----------------- -1 ----------------- 0 ----------------- +1 ----------------- +2 ----------------- +3

extremely dissatisfied very dissatisfied somewhat dissatisfied neither satisfied somewhat satisfied very satisfied extremely satisfied

nor dissatisfied

Group 3 was given the option to choose between the cash and non-cash incentives in the following scenario:

Assume that you have graduated from Ohio State and have a job paying you $35,000 per year. You consider this to be a good starting salary for someone in your field. You are satisfied with your working conditions, and you get along well with your co-workers. Although this is not the type of job you hope to hold when you are further along in your career, it is satisfactory at this point.

As you near the end of your first year of employment, the company decides to reward its most productive employees with a bonus. Due to your good performance, you are one of the approximately 50% of the employees who will receive this bonus. The amount of your bonus will be $1,500. You can take your bonus either in the form of a $1,500 check, or you can select a $1,500 bonus from one of the following 5 options:

1. home audio system
   The system will include 2 Klipsch synergy series floorstanding speakers (35” high, 8” wide), a Sony 600-watt, 6.1 channel audio-visual receiver with Dolby digital sound, a Sony 400-disc mega storage CD changer with CD-RW and MP3 capability, and a Sony progressive scan DVD/hifi VCR combo.

2. Sony 51” widescreen rear-projection HDTV
The 51” TV has a 16:9 aspect ratio (movie style screen) and 1080i capability which provides the highest quality picture from a high-definition source. It also has a 2-tuner PIP (picture in picture) which allows you to watch two equally sized shows at once.

3. **Compaq Presario laptop computer**
   The laptop has an Intel Pentium 2.3 Ghz processor with a 40 GB hard drive. The screen is 15” and the computer comes with DVD/CD-RW combination drive.

4. **Columbus Blue Jackets ticket package**
   2 club-level box seat tickets to four Columbus Blue Jackets games of your choice. Additionally, for each game, you will receive dinner for two at the Italian restaurant, Buca di Beppo, located across the street from the Nationwide Arena.

5. **A 5 night Carnival western Caribbean cruise**
   This cruise package includes an ocean-view room for two adults on the Carnival cruise ship, the Imagination; the cruise departs from Miami, Fl and travels to the Grand Cayman, the Cayman Islands, and Ocho Rios, Jamaica. All food and non-alcoholic beverages are included as well as all entertainment on board the ship.

If you select the check, it will actually be for more than $1,500, but you have to pay taxes on that amount, which leaves you with $1,500 as the final value of the bonus. Similarly, if you select one of the bonus packages, its value is actually more than $1,500, but you have to pay taxes on the monetary value of the bonus, which leaves you with $1,500 as the final value of that bonus, too.

**Group 3 was then asked to respond to the following question:**

We are interested in your preference between these two possible bonuses, given your salary and your job. Please circle the number on the scale below which best reflects your preference.

<table>
<thead>
<tr>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>extremely likely to choose the check</td>
<td>very likely to choose the check</td>
<td>somewhat likely to choose the check</td>
<td>indifferent</td>
<td>somewhat likely to choose the bonus</td>
<td>very likely to choose the bonus</td>
<td>extremely likely to choose the bonus</td>
</tr>
</tbody>
</table>

If you select the check, it will actually be for more than $1,500, but you have to pay taxes on that amount, which leaves you with $1,500 as the final value of the bonus. Similarly, if you select one of the bonus packages, its value is actually more than $1,500, but you have to pay taxes on the monetary value of the bonus, which leaves you with $1,500 as the final value of that bonus, too.

**Group 3 was then asked to respond to the following question:**

We are interested in your preference between these two possible bonuses, given your salary and your job. Please circle the number on the scale below which best reflects your preference.

<table>
<thead>
<tr>
<th>-3</th>
<th>-2</th>
<th>-1</th>
<th>0</th>
<th>+1</th>
<th>+2</th>
<th>+3</th>
</tr>
</thead>
<tbody>
<tr>
<td>extremely likely to choose the check</td>
<td>very likely to choose the check</td>
<td>somewhat likely to choose the check</td>
<td>indifferent</td>
<td>somewhat likely to choose the bonus</td>
<td>very likely to choose the bonus</td>
<td>extremely likely to choose the bonus</td>
</tr>
</tbody>
</table>
Results

Participants in both groups 1 and 2 were asked to report their satisfaction with the bonus. The dependent variable, satisfaction, was negatively skewed.

![Histogram of participant satisfaction with bonus: Separate evaluation, experiment 1.](image)

Figure 1: Histogram of participant satisfaction with bonus: Separate evaluation, experiment 1.

Therefore, nonparametric statistics were used in favor of the traditional parametric approach which requires more stringent distributional assumptions. Participants in group 1 reported a median response of 5.00 which indicated that they were somewhat satisfied with the bonus they received at this job; note the scale responses were recoded ‘1’= extremely dissatisfied and ‘7’= extremely
satisfied). However, participants in group 2 indicated that they were very satisfied with the bonus they received; they reported a median satisfaction rating of 6.00. Using a Mann-Whitney U test of ranks, it was determined that Group 2 was significantly more satisfied with their bonus than group 1; participants in group 1 had a mean rank of 53.19 while participants in group 2 had a mean rank of 72.42, Mann-Whitney $Z=3.17, p<.05$.

Group 3 was asked to indicate their preference between the cash and non-cash incentives; specifically, they were asked to report their likelihood of choosing either alternative. This variable was not normally distributed; therefore, parametric testing procedures were again rejected in favor of non-parametric statistics requiring fewer distributional assumptions.
Figure 2: Histogram of participant preference between cash and non-cash incentives: Joint evaluation condition, experiment 1.

With a median response of 3.00, group 3 reported being somewhat likely to choose the cash incentive (‘1’ = extremely likely to choose the check and ‘7’ = extremely likely to choose one of the bonus options). To test whether participants were more likely to choose the cash or the non-cash incentive, this variable was truncated into two categories; participants responding with a 1, 2, or 3, which represented a slight to a strong preference for receiving the cash, were grouped into the “choose cash” category while participants responding with a 5, 6, or 7, representing varying degrees of preference for the non-cash incentive, were grouped into the “choose non-cash” category. Participants choosing a 4 were discarded from this analysis. A binomial test revealed that a significantly larger proportion of the group preferred to receive the cash incentive (63%), $Z = 2.00, p < .05$. In summary, the non-cash incentive was preferred over the cash incentive in the separate evaluation mode (groups 1 and 2); however, the cash incentive was preferred in the joint evaluation mode (groups 3).
Discussion

In experiment 1, a reversal was demonstrated in employee preference for cash versus non-cash incentives in joint versus separate evaluation mode. The underlying cause of the reversal is the evaluation mode which highlights the dimensions upon which the stimulus is evaluated. In this scenario, it is hypothesized that the easy to evaluate dimension is the employee’s affective reaction to the award, and the difficult to evaluate dimension is the fungibility of cash. According to economic theory, participants should always prefer to receive the cash value of the award because money is fungible, meaning it can be spent on anything—including one of the bonus options offered. In SE mode, the flexibility of the cash award is not likely to be realized, and, therefore, this extremely attractive quality inherent to money, and subsequent lack of fungibility of the non-cash incentive, will not have a large impact on the evaluation of the incentive. In SE mode, participants are likely responding to their affective reaction to the bonus. It is highly likely that participants will receive more affective feedback from one of the bonus options than the less imaginative cash value award, thus resulting in a more favorable evaluation of the non-cash incentives is the SE mode. Furthermore, in JE mode, the fungibility of money will be highlighted for the participants; therefore, they would rate the cash award more favorably.
Participants in this experiment display “non-rational” behavior according to the traditional normative theories. Their preferences vary based on elicitation mode, which violates an important axiom inherent to most rational theories of choice. Additionally, participants made a choice that was contrary to their stated preferences. Participants indicated that they would be more satisfied with non-cash incentives in a between subjects comparison; however, they preferred the cash incentive in the within subjects comparison, thereby choosing the option that they were less satisfied with. This result is reminiscent of work by Hsee (1999) which demonstrated that consumers, when given a choice between items low and high in value, would choose an item high in value even if the predicted that they would be more satisfied with the item low in value. For example, participants were asked to imagine that they had won a lottery in which they could receive one of two chocolate bars as their prize:

<table>
<thead>
<tr>
<th>Value</th>
<th>Chocolate A</th>
<th>Chocolate B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net weight</td>
<td>.50</td>
<td>2.00</td>
</tr>
<tr>
<td>Type</td>
<td>Austrian milk chocolate</td>
<td>Austrian milk chocolate</td>
</tr>
<tr>
<td>Shape</td>
<td>a lovely heart</td>
<td>a cockroach that looks extremely real and disgusting</td>
</tr>
</tbody>
</table>

46 % of the participants predicted they would get more enjoyment out of chocolate A (the heart shaped chocolate) than chocolate B (the cockroach shaped chocolate). However, when they were asked which chocolate they would
choose: 68% chose chocolate B, demonstrating prediction-decision inconsistency. Although participants would get more utility out of chocolate A, they would choose to consume chocolate B.

Hsee argues that this prediction-decision inconsistency is caused by the presence of a “pseudo-value attribute”—an attribute which provides information about “rational” behavior—which can cause people to choose their less preferred option. There is a rational value attached to receiving more chocolate for your money, even though you might enjoy the less appalling shape more. This argument can be applied to the current example. Perhaps the fungibility of cash represents the pseudo-value attribute in this experiment. And, although the cash itself is not as appealing, participants recognize that it is the more rational choice in joint evaluation mode.
CHAPTER 6

EXPERIMENT 2

After identifying the preference reversal, the natural follow-up question is: for what stimuli does this preference reversal occur? It is possible that a preference reversal will only occur with non-cash incentives that are highly luxurious. For example, one of the options listed in experiment 1 is 51” widescreen TV. Most employees would be unable to purchase the TV on their own, or they are unable to justify the purchase because the money that would go to pay for the TV should go towards paying household bills or debt. Because this item is highly luxurious, it is also extremely desirable but not justifiable. Therefore, if an employee were to receive this TV as a bonus from their employer, because it is an extremely desirable item, they are likely to be very satisfied with the bonus. However, if they have to choose between receiving the TV or the cash value of the TV, the employee would find it difficult to justify choosing the TV over the cash because of the fungibility of the cash. Experiments 2 and 3 were designed to test the luxuriousness hypothesis: the luxuriousness of the non-cash incentive interacts with the evaluation mode; preference reversals
will be observed for highly luxurious non-cash incentives but not for non-luxurious non-cash incentives.

Experiment 2 was conducted to identify the luxuriousness ratings of potential bonus items. The goal for this experiment was to identify bonus options that were known to be low and high in luxuriousness.

Method

Participants: Seventy-nine students participated in this experiment. All participants were Psychology 100 students who were taking part in the Research Experience Program; they received course credit for their participation in this study.

Materials: All data were collected via computer using the program Media Lab. The participants were presented with a 20-item online questionnaire.

Procedure: Participants were given the following set of instructions:

In this study, we are interested in your opinion of the luxuriousness of various consumer goods. You will be presented with 20 consumer products; please rate each item on its luxuriousness. Each item will be worth $1500. A verbal description of each item will be presented, respond on the 7 point scale given after each item. A "-3" refers to an item that was extremely non-luxurious (such as 500,000 garbage bags). A "+3" refers to an item that was extremely luxurious (such as a diamond tennis bracelet). Each of the items presented to you will be worth $1500- so do not use the perceived price to rate the luxuriousness of the item because all items will be worth the same price.
The participants were then presented with 20 stimuli and a verbal description of each stimulus; they were then asked to rate the stimulus on a 7 point scale of luxuriousness. The following is an example of one of the stimuli from the questionnaire:

Washer and Dryer-The Kenmore Elite high efficiency front-loading washer (capacity 3.7 cubic feet) and the Kenmore gas dryer with automatic moisture sensing (capacity of 5.9 cubic feet).

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td>extremely non-luxurious</td>
</tr>
<tr>
<td>-2</td>
<td>somewhat non-luxurious</td>
</tr>
<tr>
<td>-1</td>
<td>neutral</td>
</tr>
<tr>
<td>0</td>
<td>somewhat luxurious</td>
</tr>
<tr>
<td>1</td>
<td>very luxurious</td>
</tr>
<tr>
<td>2</td>
<td>extremely luxurious</td>
</tr>
</tbody>
</table>

**Results**

The following table shows the average rating given to each of the 20 stimulus items. The above question was re-scaled for analysis, ‘1’=extremely non-luxurious and ‘7’=extremely luxurious.
<table>
<thead>
<tr>
<th>Bonus Item</th>
<th>mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>riding mower</td>
<td>3.58</td>
<td>1.58</td>
</tr>
<tr>
<td>washer &amp; dryer</td>
<td>4.23</td>
<td>1.25</td>
</tr>
<tr>
<td>1 yr of groceries</td>
<td>4.30</td>
<td>1.80</td>
</tr>
<tr>
<td>stove</td>
<td>4.37</td>
<td>1.29</td>
</tr>
<tr>
<td>1 yr of gas</td>
<td>4.41</td>
<td>1.88</td>
</tr>
<tr>
<td>grill</td>
<td>4.41</td>
<td>1.40</td>
</tr>
<tr>
<td>refrigerator</td>
<td>4.41</td>
<td>1.34</td>
</tr>
<tr>
<td>CBJ ticket package</td>
<td>4.49</td>
<td>1.36</td>
</tr>
<tr>
<td>fitness system</td>
<td>4.71</td>
<td>1.36</td>
</tr>
<tr>
<td>gift certificate to mall</td>
<td>4.77</td>
<td>1.48</td>
</tr>
<tr>
<td>laptop</td>
<td>5.01</td>
<td>1.10</td>
</tr>
<tr>
<td>7-piece furniture package</td>
<td>5.13</td>
<td>1.26</td>
</tr>
<tr>
<td>leather furniture</td>
<td>5.13</td>
<td>1.15</td>
</tr>
<tr>
<td>dinner at 5 restaurants</td>
<td>5.23</td>
<td>1.40</td>
</tr>
<tr>
<td>Movado men's watch</td>
<td>5.47</td>
<td>1.21</td>
</tr>
<tr>
<td>projection widescreen TV</td>
<td>5.67</td>
<td>1.05</td>
</tr>
<tr>
<td>home audio system</td>
<td>5.72</td>
<td>0.92</td>
</tr>
<tr>
<td>diamond earrings</td>
<td>6.16</td>
<td>0.91</td>
</tr>
<tr>
<td>cruise</td>
<td>6.43</td>
<td>0.65</td>
</tr>
<tr>
<td>diamond necklace</td>
<td>6.57</td>
<td>0.65</td>
</tr>
</tbody>
</table>

Table 1. Average luxuriousness rating of 20 stimuli, experiment 2.

From these items, one item low in luxuriousness and one item high in luxuriousness were selected for the next experiment. Because the participants in the next experiment would also be undergraduate students, the riding mower and the washer and dryer were eliminated, due to their inability to be useful to
our participants. Additionally, because the participants would be of mixed
gender, the diamond necklace, diamond earrings, and men’s watch were
removed. Therefore, for the next experiment, a 1 year supply of groceries was
selected as the bonus low in luxuriousness, and the cruise was selected as the
bonus high in luxuriousness.
EXPERIMENT 3

This experiment was designed to further extend the results of experiment 1 and to help understand the underlying cognitions that led to the observed preference reversals. In this experiment, the luxuriousness hypothesis was tested: the preference reversal observed between cash and non-cash incentives is also partially due to the luxuriousness of the non-cash stimuli. In this experiment the following prediction is tested: for items high in luxuriousness, the preference reversal (as demonstrated in experiment 1) will be replicated; however, for items low in luxuriousness, no preference reversal will be observed.

Method

Participants: Two-hundred six students participated in this experiment. (Group 1 N=39, Group 2 N=43, Group 3 N=40, Group 4 N=44, and Group 5 N=40) All participants were Psychology 100 students who were taking part in the Research Experience Program; they received course credit for their participation in this study.
Materials: All data were collected via computer using the program Media Lab. The participants were presented with a short, online scenario and asked to respond to one scaled response question and one open ended question.

Procedure: Participants were assigned to one of five groups. Group 1 evaluated a $1500 cash bonus only. Group 2 evaluated the low luxury bonus only (a 1-year supply of groceries worth $1500). Group 3 evaluated the preference between the low luxury bonus and the cash incentive. Group 4 rated the high luxury bonus only (the 5 night cruise to the western Caribbean). Group 5 indicated their preference between the high luxury bonus and the cash incentive. Groups 1, 2, and 4 rated the bonus in separate evaluation mode while groups 3 and 5 expressed their preference in joint evaluation mode.

All groups were shown the same instructions as experiment 1. The scenario given to group 1 was identical to the scenario shown to the first group of experiment 1. The scenarios for groups 2, 3, 4, and 5 had minor modifications and are listed below.

Group 2:

Assume that you have graduated from Ohio State and have a job paying you $35,000 per year. You consider this to be a good starting salary for someone in your field. You are satisfied with your working conditions, and you get along well with your co-workers. Although this is not the type of job you hope to hold when you are further along in your career, it is satisfactory at this point.
As you near the end of your first year of employment, the company decides to reward its most productive employees with a bonus. Due to your good performance, you are one of approximately 50% of the employees who will receive this bonus. For the bonus, you are given a one-year supply of groceries at your local store, with a $1,500 maximum value. (The value of the bonus is actually more than $1,500, but you have to pay taxes on the monetary value of the bonus, which leaves you with $1,500 as the final value of the bonus.)

Group 3:

Assume that you have graduated from Ohio State and have a job paying you $35,000 per year. You consider this to be a good starting salary for someone in your field. You are satisfied with your working conditions, and you get along well with your co-workers. Although this is not the type of job you hope to hold when you are further along in your career, it is satisfactory at this point.

As you near the end of your first year of employment, the company decides to reward its most productive employees with a bonus. Due to your good performance, you are one of approximately 50% of the employees who will receive this bonus. The amount of your bonus will be $1,500. You can take your bonus either in the form of a $1,500 check, or you can select a one-year supply of free groceries from your local store, with a $1,500 maximum value.

If you select the check, it will actually be for more than $1,500, but you have to pay taxes on that amount, which leaves you with $1,500 as the final value of the bonus. Similarly, if you select the free groceries, its value is actually more than $1,500, but you have to pay taxes on the monetary value of the bonus, which leaves you with $1,500 as the final value of that bonus, too.

Group 4:

Assume that you have graduated from Ohio State and have a job paying you $35,000 per year. You consider this to be a good starting salary for someone in your field. You are satisfied with your working conditions, and you get along well with your co-workers. Although this is not the type of job you hope to hold when you are further along in your career, it is satisfactory at this point.
As you near the end of your first year of employment, the company decides to reward its most productive employees with a bonus. Due to your good performance, you are one of approximately 50% of the employees who will receive this bonus. For the bonus, you are given a 5 night Carnival western Caribbean cruise worth $1500. This cruise package includes an ocean-view room for two adults on the Carnival cruise ship, the Imagination; the cruise departs from Miami, Fl and travels to the Grand Cayman, the Cayman Islands, and Ocho Rios, Jamaica. All food and non-alcoholic beverages are included as well as all entertainment on board the ship. (The value of the bonus is actually more than $1,500, but you have to pay taxes on the monetary value of the bonus, which leaves you with $1,500 as the final value of the bonus.)

Group 5:

Assume that you have graduated from Ohio State and have a job paying you $35,000 per year. You consider this to be a good starting salary for someone in your field. You are satisfied with your working conditions, and you get along well with your co-workers. Although this is not the type of job you hope to hold when you are further along in your career, it is satisfactory at this point.

As you near the end of your first year of employment, the company decides to reward its most productive employees with a bonus. Due to your good performance, you are one of approximately 50% of the employees who will receive this bonus. The amount of your bonus will be $1,500. You can take your bonus either in the form of a $1,500 check, or you can select a 5 night Carnival western Caribbean cruise worth $1500. This cruise package includes an ocean-view room for two adults on the Carnival cruise ship, the Imagination; the cruise departs from Miami, Fl and travels to the Grand Cayman, the Cayman Islands, and Ocho Rios, Jamaica. All food and non-alcoholic beverages are included as well as all entertainment on board the ship.

If you select the check, it will actually be for more than $1,500, but you have to pay taxes on that amount, which leaves you with $1,500 as the final value of the bonus. Similarly, if you select the cruise, its value is actually more than $1,500, but you have to pay taxes on the monetary value of the bonus, which leaves you with $1,500 as the final value of that bonus, too.
Groups 1, 2, and 4 are asked to respond to this question:

We are interested in your opinion of this bonus, given your salary and your job. Please circle the number on the scale below which best reflects your opinion of the bonus.

-3 --------------- -2 --------------- -1 --------------- 0 --------------- 1 --------------- 2 --------------- 3
extremely       very        somewhat    neither     somewhat    very        extremely
dissatisfied    dissatisfied dissatisfied satisfied    satisfied    satisfied
nor

dissatisfied

Groups 3 and 5 are asked to respond to this question (The response scale for group 3 has groceries instead of the cruise):

Please choose the statement that best reflects your preference:

-3 --------------- -2 --------------- -1 --------------- 0 --------------- +1 --------------- +2 --------------- +3
extremely       very        somewhat    indifferent somewhat    very        extremely
likely to       likely to    likely to    likely to    likely to    likely to    likely to
choose the      choose the  choose the  choose the  choose the  choose the  choose the
check           check       check       check       cruise      cruise      cruise

Results

All of the responses were recoded from a scale ranging from -3 to +3 to a scale ranging from 1-7 for all the analyses; ‘1’ corresponds to ‘-3’ and ‘7’ corresponds to ‘+3’. Again, the variable satisfaction was highly negatively skewed requiring non-parametric procedures.
Figure 3: Histogram of participant satisfaction with bonus: Separate evaluation, experiment 3.

The median satisfactions scores for the cash only group (1), the low luxury incentive group (2), and the high luxury incentive group (4) are reported in Table 2.

<table>
<thead>
<tr>
<th>Condition:</th>
<th>Median Satisfaction Rating:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash Only (group 1)</td>
<td>5.00</td>
</tr>
<tr>
<td>Groceries (group 2)</td>
<td>5.00</td>
</tr>
<tr>
<td>Cruise (group 4)</td>
<td>6.00</td>
</tr>
</tbody>
</table>

Table 2. Median rating of satisfaction with bonus: Separate evaluation, experiment 3.
An omnibus Kruskal Wallis test revealed significant differences between the three groups; participants in group 1 had a mean rank of 67.41, participants in group 2 had a mean rank of 51.44, and participants in group 4 had a mean rank of 71.82, $X^2 (2) = 8.17, p < .05$. Mann-Whitney U post-hoc tests indicated that both the cash group and the high luxury group were significantly more satisfied with their bonus than the low luxury group, *Mann-Whitney Z*=2.31, $p<.05$; *Mann-Whitney Z*=2.53, $p<.05$. However, the cash and high luxury groups did not differ significantly, *Mann-Whitney Z*= -0.76, $p>.05$.

Groups 3 and 5 were asked to express a preference for either the cash or non-cash incentive; again, these data were not normally distributed. See Table 3 for the median scores of groups 3 and groups 5.
Figure 4: Histogram of participant preference between cash and non-cash incentives: Joint evaluation, experiment 3.

<table>
<thead>
<tr>
<th>Condition:</th>
<th>Median Preference Between Cash &amp; Non-Cash Incentives:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groceries vs. Cash (group 3)</td>
<td>1.50</td>
</tr>
<tr>
<td>Cruise vs. Cash (group 5)</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Table 3. Median scores of the preference between cash and non-cash incentives, experiment 3.

These two groups were compared using a Mann-Whitney U test of ranks (Group 3 mean rank=37.33 and Group 5 mean rank=50.52); these two groups differed significantly, *Mann-Whitney Z*=-2.53, *p*<.05. It was determined that those offered a choice between cash and one of the low luxury incentives were significantly more likely to choose the cash incentive than those offered a choice between cash and one of the high luxury incentives. To test whether participants were more likely to choose the cash or the non-cash incentive, preference was truncated for both groups into two categories; participants responding with a 1, 2, or 3, which represented a slight to a strong preference for receiving the cash, were grouped into the “choose cash” category while participants responding with a 5, 6, or 7,
representing varying degrees of preference for the non-cash incentive, were grouped into the “choose non-cash” category. Participants choosing a 4 were discarded from this analysis. In the low luxury condition, a significantly greater proportion of participants elected to receive the cash incentive over then non-cash incentive (80%), binomial \( Z=4.00, p<0.05 \). In the high luxury condition, the proportion of participants who choose the cash bonus (60%) did not differ significantly from those who chose the high luxury bonus (40%), Binomial \( Z=0.62, p>0.05 \).

For low luxury bonuses, participants preferred the cash incentive to the non-cash incentive in both the joint and separate evaluation conditions. In the separate evaluation condition, the cash was given a significantly higher rating than the low luxury non-cash incentive. In the joint evaluation condition, a significantly greater proportion of participants elected to receive the cash incentive over then non-cash incentive. These choices represent consistent preferences over both evaluation conditions.

For high luxury bonuses, participants were indifferent between the cash and non-cash incentives in both the joint and separate evaluation conditions. In the separate evaluation condition, satisfaction ratings of the cash and non-cash incentives did not differ significantly. Because their satisfaction ratings did not differ, it can be assumed that the participants were indifferent between the two
options. In the joint evaluation condition, the proportion of participants who choose the cash bonus did not differ significantly from 50%.

Discussion

The predictions for the luxuriousness hypothesis were not completely held; however, the experiment did provide some evidence for the luxuriousness argument. In the joint evaluation conditions, participants were significantly more likely to choose the cash incentive when it was paired with a low luxury bonus in the joint evaluation condition than when it was paired with a high luxury incentive. According to economic theory, participants should always prefer the cash incentive to the non-cash incentive regardless of the luxuriousness of the non-cash incentive. Therefore, the referent in the joint evaluation group should not affect the rating given to this choice; participants should always choose ‘1’: extremely likely to choose the check. This is due to the fact that money is fungible and, therefore, could be used to purchase any desired bonus including the one offered.

Unlike experiment 1, a preference reversal was not observed. In the low luxury condition, participants chose the money over the non-cash incentive in both the joint and separate evaluation groups. In the high luxury condition, participants were indifferent between the money and the non-cash incentive in both the joint and separate evaluation conditions. This effect was driven by a
lower rating for the non-cash incentive in this experiment versus experiment 1. This may be a natural result of the lack of options offered to participants. In experiment 1, participants were offered a choice between 5 possible bonus options, each arguably high in luxuriousness. However, in experiment 3, only one non-cash incentive was offered which decreases the likelihood that the one incentive will appeal to all of the participants.

In sum, the non-cash incentive did not receive the same superior rating in the separate evaluation condition as experiment 1, resulting in consistent preferences observed across evaluation conditions. This is likely due to the change from a menu of five bonus options to the offer of a single bonus options. The menu of bonus options is more ecologically valid; therefore, this hypothesis should be reexamined with a menu of five options offered in both non-cash incentives. However, the preferences elicited in the joint evaluation condition were still inconsistent with traditional economic theory; participants were less likely to choose the cash when the referent for comparison was a high luxury incentive. Therefore, experiment 3 provides some evidence that the luxuriousness of the non-cash incentive influences the preference for the cash incentive, thereby violating predictions of economic theory.
CHAPTER 8

EXPERIMENT 4

In the third experiment, the high luxury non-cash incentive (the 5-night cruise) was not rated more favorably than the cash equivalent. This result deviates from experiment 1 in which the non-cash incentives were rated as more enjoyable than the cash equivalent. In the experiment 1 scenario, participants were offered a choice between one of five non-cash incentives; however, the scenario from the third experiment contained only one high-luxury non-cash incentive. Therefore, experiment 4 was designed to examine the effect of the luxuriousness of the bonus on ratings and choices made by the participants. However, unlike experiment 3, participants were given a menu of five options for both the high luxury and low luxury conditions. The menu of high luxury options was identical to the experiment 1. The menu of low luxury options was created from the normed set of alternatives from experiment 2; the five items given the lowest rating on luxuriousness were chosen.

Experiment 4 focused on the luxuriousness hypothesis. Within the separate evaluation conditions, group 1, the cash condition, was expected to give
lower satisfaction ratings to their bonus than group 4, who imagined receiving a choice between five high luxury incentives; this would replicate the results from experiment 1. Group 1 was also expected to give satisfaction ratings similar to group 2, who imagined receiving a choice between five low luxury incentives. Within the joint evaluation conditions, it was expected that group 5, those imagining a choice between cash and the high luxury incentives, would be more likely to choose one of the non-cash incentives than group 3, who was asked to imagine receiving a choice between cash and the low luxury incentives. In addition, these two groups are predicted to express a preference for the cash bonus. This would be in line with the predicted preferences for the low luxury group but would result in a preference reversal from the satisfaction ratings predicted for the high luxury group.

**Method**

**Participants:** Three-hundred seventy-five students participated in this experiment (group 1 N=71, group 2 N=75, group 3 N=81, group 4 N=73, group 5 N=75). All participants were Psychology 100 students who were taking part in the Research Experience Program; they received course credit for their participation in this study.
Materials: All data were collected via computer using the program Media Lab.

The participants were presented with a short, online scenario and asked to respond to one scaled response question and one open ended question.

Procedure: Participants arrived in the lab and received the following instructions:

The following study is aimed to help employers identify valuable ways to reward their employees. Please read the following scenario carefully, placing yourself in the role of the employee.

They were then randomly assigned to one of five experimental groups. Group 1, the cash group, evaluated a $1500 cash bonus only. This scenario was identical to the cash group scenarios from experiments 1 and 3. After reading the scenario, group 1 was subsequently asked to rate their satisfaction with the bonus on a 7 point Likert-type scale where a ‘-3’ represented extremely dissatisfied and a ‘+3’ represented extremely satisfied. Group 2 was assigned the low luxury menu of five bonus options as their incentive. They were presented the following five options:

1. Lawn mower
   Craftsman 42 inch Lawntractor with a 6-speed 20 horsepower engine.
2. Washer and Dryer
   The Kenmore Elite high efficiency front-loading washer (capacity 3.7 cubic feet) and the Kenmore gas dryer with automatic moisture sensing (capacity of 5.9 cubic feet).
3. 1-year supply of groceries
   Free groceries for 1-year at any of the Giant Eagle grocery stores.
4. Oven
Maytag stainless steel double oven with black trim; the oven is electric and features a ceramic-glass top and electronic controls.

5. 1-year supply of gas
   Free gas for 1-year at any of the BP gas stations.

In addition, the participants were told that all incentives would not exceed a value of $1500. Participants were subsequently asked to rate their satisfaction with receiving this bonus in this scenario; they were asked to respond on the same 7 point rating scale as group 1. Group 3, the first of the joint evaluation conditions, was offered a choice between one of the five low luxury bonus options and a check for $1500. They subsequently reported their likelihood between choosing one of the low luxury bonuses and the cash incentive. Respondents were asked to report their preference on a 7 point Likert-type scale where a ‘-3’ represented extremely likely to choose the check and a ‘+3’ represented extremely likely to choose one of the bonus items. Group 4 was assigned the high luxury menu of five bonus options as their incentive; these bonus options were identical to those offered in experiment 1 (home audio system, large screen HDTV, laptop computer, Blue Jackets ticket package, and cruise). Group 4 was subsequently asked to report their satisfaction with this bonus on the same 7 point scale as groups 1 and 2. Finally, group 5 indicated their preference between the high luxury bonus and the cash incentive; this group was asked to respond on the same rating scale as group 3. Groups 1, 2,
and 4 rated the bonus in separate evaluation mode while groups 3 and 5 expressed their preference in joint evaluation mode.

Results

Following the pattern of experiments 1 and 3, the variables, satisfaction (rated by groups 1, 2, and 4) and preference (rated by groups 3 and 5) were not normally distributed, resulting in the implementation of non-parametric statistics.

Figure 5: Histogram of participant satisfaction with bonus: Separate evaluation, experiment 4.
A Kruskal-Wallis test of ranks indicated that there was a significant difference between the separate evaluation conditions $X^2(2) = 5.96, p < .05$; see Table 4 for the median satisfaction ratings. Post-hoc Mann-Whitney U tests determined that the cash group was significantly different from both the high and low luxury groups, $Z(\text{high luxury}) = -1.91, p < .05$; $Z(\text{low luxury}) = 2.29, p < .05$. However, the non-cash incentive groups did not differ from each other, Mann-Whitney $Z = 0.33, p < .05$. Group 1, the cash group who imagined receiving cash only, had a mean rank of 95.76 in satisfaction ratings while the low luxury and high luxury non-cash incentive groups received mean ranks of 115.21 and 118.41.
respectively. Therefore, both non-cash groups, regardless of the luxury of the bonus, were more satisfied with their incentive than the cash group.

<table>
<thead>
<tr>
<th>Condition:</th>
<th>Median Satisfaction with Bonus:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash only (group 1)</td>
<td>5.00</td>
</tr>
<tr>
<td>Low luxury only (group 2)</td>
<td>6.00</td>
</tr>
<tr>
<td>High luxury only (group 4)</td>
<td>6.00</td>
</tr>
</tbody>
</table>

Table 4: Median rating of satisfaction with bonus: Separate evaluation, experiment 4.

Within the joint evaluation conditions, group 5—the high luxury group—indicated a greater likelihood of choosing the cash incentive (mean rank=70.00) than group 3—the low luxury group (mean rank=86.37), *Mann-Whitney Z*=2.31, *p*<.05. See Table 5 for the median values of each group. To test whether participants were more likely to choose the cash or the non-cash incentive, preference was truncated into two categories; participants responding with a 1, 2, or 3, which represented a slight to a strong preference for receiving the cash, were grouped into the “choose cash” category while participants responding with a 5, 6, or 7, representing varying degrees of preference for the non-cash incentive, were grouped into the “choose non-cash” category. Participants choosing a 4 were discarded from this analysis. Within the high luxury incentive group, a significantly greater proportion of the participants chose the cash
incentive (65%), $Binomial Z=2.23, p<.05$; however, participants in the low luxury incentive group were equally likely to choose the cash (51%) or the non-cash incentive (49%), $Binomial Z=0.84, p>.05$.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Median Preference Between Cash and Non-cash Incentives</th>
</tr>
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<tbody>
<tr>
<td>Low luxury incentives vs. Cash</td>
<td>4.00</td>
</tr>
<tr>
<td>High luxury incentives vs. Cash</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Table 5: Median scores of the preference between cash and non-cash incentives, experiment 4.

In this experiment, when the low luxury incentive was paired with cash, in the joint evaluation, participants were equally likely to choose the cash and non-cash incentives. This differed from experiment 3, where this same group was significantly more likely to choose the cash incentive. What changed between experiments 3 and 4, within the low luxury alternatives? Within the open-ended responses, several participants indicated that they believed the value of several of the low-luxury non-cash incentives exceeded $1500$. This was not the case in experiment 3. Additionally, this differed from what was explicitly stated in the scenario: all bonuses have a $1500$ value. To provide a fair test of the hypothesis, participants who explicitly stated that they believed the value of the non-cash incentive to exceed the value of the cash incentive (in either group 3 or group 5)
were excluded from the analyses. In group 3 (low luxury incentives versus cash), 11 participants were removed; in group 5 (high luxury incentives versus cash) 3 participants were removed. Groups 3 and 5 were subsequently compared. They were no longer significantly different, *Mann-Whitney* $Z=1.69, p>0.05$. Because the two groups did not differ, they were subsequently combined. To test whether participants were more likely to choose the cash or the non-cash incentive, preference was truncated into two categories; participants responding with a 1, 2, or 3, which represented a slight to a strong preference for receiving the cash, were grouped into the “choose cash” category while participants responding with a 5, 6, or 7, representing varying degrees of preference for the non-cash incentive, were grouped into the “choose non-cash” category. Participants choosing a 4 were discarded from this analysis. Within the new combined group, participants were more likely to choose the cash incentive (63%), *Binomial* $Z=2.65, p<0.05$.

**Discussion**

The preference reversal observed in experiment 1 was replicated in this experiment. In the separate evaluation condition, both non-cash incentive groups reported being more satisfied with their bonus than the cash condition. However, the high luxury group displayed a strict preference reversal when 65% of the group elected to receive the cash incentive in the joint evaluation.
condition. The low luxury group also displayed a preference reversal in their indifference between the two alternatives; they were equally likely to choose the cash or the non-cash incentive. Although this form of a preference reversal is less impressive than the one demonstrated by the high luxury incentive, the increased number of participants choosing the non-cash incentive was likely due to several participants’ belief that the low luxury non-cash incentive (e.g. free gas and free groceries) were worth more than $1500. Several participants expressed this sentiment in their open-ended response even though it was explicitly stated that the maximum value of those awards was $1500. This theory was supported when the participants who expressed this belief were removed from the analyses; the differences between the high and low luxury groups disappeared. A strict preference reversal was then observed in both cases.

The luxury hypothesis was not strongly supported in either experiment 3 or 4. The predictions for the patterns of the preference reversals were not upheld. In the separate evaluation condition, the low luxury incentive was given a higher satisfaction rating than the cash only condition and this rating was not significantly different from the high luxury condition. This differs from the pattern observed in experiment 3—the low luxury incentive was rated as less desirable than either the cash or high luxury non-cash incentives. The increase in positive rating from experiment 3 to experiment 4 could be due to the increase in
choice from experiment 3 to experiment 4. In experiment 3, participants receiving the non-cash incentives did not receive a choice as to which incentive they would choose—they were awarded either the groceries (low luxury conditions) or the cruise (high luxury conditions). However, in experiment 4, participants were offered a choice between one of 5 non-cash incentives in both the low and high luxury conditions. This addition of some small amount of choice could lead to the increased satisfaction with the non-cash incentive.

In conclusion, the preference reversals observed in this experiment replicate the results from experiment 1. However, the luxuriousness hypothesis was found to be less of importance than originally predicted; therefore, manipulations of luxuriousness will not be used in the following experiments.
CHAPTER 9

EXPERIMENT 5

In order to increase generality, the fifth study was designed to examine the opinions of employees, not undergraduate students, who have participated in an incentive program. This study was designed to determine whether the opinions of employees enrolled in an incentive program differed from those surveyed by Incentive magazine in 1998.

Method

Participants: Questionnaires were sent to 76 employees from various companies who received merchandise awards or gift certificates from Hinda Incentives, a company which provides rewards to employees enrolled in incentive programs. Participants in this experiment had earned “true reward points” from their company which could be redeemed via a catalogue of gifts provided by Hinda Incentives. The catalogue included items in a wide variety of price ranges, hedonic and utilitarian goods, and gift certificates to well known stores such as Best Buy.
Materials: Participants were asked to complete a brief five item questionnaire sent to them via email.

Procedure: Participants were asked to respond to a scenario involving two fictitious employees: Employee A (who received a big award item, such as a high-definition TV) and Employee B (who received a cash award exactly equal in value to the award Person A received). Participants were asked to respond to the following questions:

1. Which person would you rather be?
2. Which person would enjoy their reward for a longer period of time?
3. Who would be more likely to tell their friends about the reward?
4. Who would be more proud of their reward?
5. Who will work harder for their reward?

For each question, participants were asked to respond on 7-point Likert-type scales, where a ‘1’ indicates ‘definitely person A’ and a ‘7’ indicates ‘definitely person B’; a score of 4 corresponds to indifference.

Results

6 participants were removed from the analyses because they only filled out portions of the questionnaire; 70 participants remained. Of these 70 participants, 20 elected to receive gift certificates with their last reward, 31 received large dollar items (e.g. a television), and 19 received small dollar items.
(e.g. an ice cream maker). The opinions of the participants did not differ based upon the prize category they chose. On average, participants indicated a preference to be employee B, who received the cash reward: $\bar{X} = 5.03$, $95\% CI = (4.51, 5.55)$. In addition, participants indicated that they believe employee B was likely to work harder for their reward than employee A: $\bar{X} = 4.55$, $95\% CI (4.11, 4.98)$. However, they reported that employee A is likely to enjoy his/her reward more: $\bar{X} = 3.46$, $95\% CI = (2.91, 3.99)$. Additionally, employee A was more likely to tell his/her friends about the reward: $\bar{X} = 3.29$, $95\% CI = (2.79, 3.78)$. However, participants reported being indifferent as to which employee would be more proud of their reward: $\bar{X} = 3.90$, $95\% CI = (3.45, 4.35)$. All 5 questions were positively correlated; see table 6 for the magnitudes of these correlations.

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<tbody>
<tr>
<td>Rather be?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoy more?</td>
<td>.576*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tell friends?</td>
<td>.315*</td>
<td>.609*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>More proud?</td>
<td>.574*</td>
<td>.716*</td>
<td>.549*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work harder?</td>
<td>.678*</td>
<td>.565*</td>
<td>.476*</td>
<td>.658*</td>
<td></td>
</tr>
</tbody>
</table>

*p<.05

Table 6: Spearman correlations between survey items, experiment 5.
All of the correlations were at least of a moderate magnitude; however, there were a few substantial correlations (of .6 and .7). The question, who would work harder for their award, was strongly correlated with the questions: who would you rather be (Spearman’s R=.678) and who would be more proud of their award (Spearman’s R=.658). In addition, the question, who would enjoy their award more, was highly related to who would be more likely to tell their friends (Spearman’s R=.609) and who would be more proud of their reward (Spearman’s R=.716).

**Discussion**

Replicating the survey conducted by Incentive magazine, participants in experiment 5 reported that they would rather be the employee who receives a cash award. In addition, participants also believed that the employee who received a cash award would work harder than an employee who received a big non-cash award. However, participants believed that the employee who received a non-cash award would be more likely to enjoy their award and would additionally be more likely to tell their friends about the reward. This latter piece of information supports the hypothesis that non-cash awards are more enjoyable for the recipients. In addition the greater amount of enjoyment and the larger “trophy value” could potentially lead to increased future performance. However, these participants believed that a cash award would be a stronger
motivator. This experiment was successful in capturing “lay” theories about the influence of cash and non-cash incentives on enjoyment and performance. The participants’ belief that non-cash incentives were more enjoyable supported the data from the first experiment. Their assertion that cash incentives are a more powerful motivator will be tested in experiment 8.
CHAPTER 10

EXPERIMENT 6

In the previous vignette studies, participants reported a greater level of satisfaction with a non-cash incentive. In addition, employees from non-cash incentive reward programs in experiment 5 reported that those receiving non-cash incentives are more likely to enjoy their award. Most importantly, a study conducted by Goodyear Tire Company found that salespersons receiving non-cash incentives outperformed those receiving cash incentives. Given that it has been demonstrated that people are more satisfied and will work harder for a non-cash incentive, how can we get employees to choose non-cash incentives? The following two experiments are intended to adapt programs designed for the consumer market to the employee setting.

In the consumer decision-making literature, much research has been conducted on the prediction of the consumption of hedonic goods (luxuries) over utilitarian goods (necessities). Strahilevitz and Myers (1998) argued that people were likely to purchase hedonic goods after promising a contribution to charity. This is due to the fact that hedonic goods generally have guilt associated with
their consumption; therefore, the close proximity of the charity contribution allows the guilt to be alleviated. This reduction in guilt results in a greater increase in the consumption of hedonic goods; however, this charity manipulation is ineffective for utilitarian goods.

What application can this literature have to the cash versus non-cash incentive programs? Because people are more satisfied with non-cash incentives, it would likely provide a more pleasant work experience to give non-cash incentives. However, because employees often demand choice and choice occurs in the joint evaluation mode, participants do not choose the incentive option that they predict would satisfy them more. Therefore, the question is: because the practical implementation of incentive programs usually involves choice in joint evaluation mode, how can employees be persuaded to choose the non-cash incentive? Perhaps the key to this question is to allow employees to alleviate the guilt associated with that choice. That is, will allowing employees to donate to a charity of their choice cause them to be more likely to indulge in the hedonic bonus option? Experiment 6 is designed to test the prediction that allowing employees to contribute a small donation to a charity of their choice will increase the consumption of the hedonic bonus in the joint evaluation mode.

Method
Participants: Three-hundred forty-two students participated in this experiment (group 1 N=165 and group 2 N=177). The participants were Psychology 100 students who were participating in the Research Experience Program; the students received course credit for their participation in this study.

Materials: All data were collected via computer using the program Media Lab. The participants were presented with a short, online scenario and asked to respond to one or two scaled response questions.

Procedure: Participants arrived in the lab and received the following instructions:

The following study is aimed to help employers identify valuable ways to reward their employees. Please read the following scenario carefully, placing yourself in the role of the employee.

Participants were randomly assigned to either the control condition or the charity condition. All participants were shown the following scenario:

Assume that you have graduated from Ohio State and have a job paying you $35,000 per year. You consider this to be a good starting salary for someone in your field. You are satisfied with your working conditions, and you get along well with your co-workers. Although this is not the type of job you hope to hold when you are further along in your career, it is satisfactory at this point.

As you near the end of your first year of employment, the company decides to reward its most productive employees with a bonus. Due to your good performance, you are one of the approximately 50% of the employees who will receive this bonus. The amount of your bonus will be
$1,500. You can take your bonus either in the form of a $1,500 check, or you can select a $1,500 bonus from one of the following 5 options:

1. **home audio system**
   The system will include 2 Klipsch synergy series floorstanding speakers (35” high, 8” wide), a Sony 600-watt, 6.1 channel audio-visual receiver with Dolby digital sound, a Sony 400-disc mega storage CD changer with CD-RW and MP3 capability, and a Sony progressive scan DVD hi fi VCR combo.

2. **Sony 51” widescreen rear-projection HDTV**
The 51” TV has a 16:9 aspect ratio (movie style screen) and 1080i capability which provides the highest quality picture from a high-definition source. It also has a 2-tuner PIP (picture in picture) which allows you to watch two equally sized shows at once.

3. **Compaq Presario laptop computer**
The laptop has an Intel Pentium 2.3 Ghz processor with a 40 GB harddrive. The screen is 15” and the computer comes with DVD/CD-RW combination drive.

4. **Columbus Blue Jackets ticket package**
   2 club-level box seat tickets to four Columbus Blue Jackets games of your choice. Additionally, for each game, you will receive dinner for two at the Italian restaurant, Buca di Beppo, located across the street from the Nationwide Arena.

5. **A 5 night Carnival western Caribbean cruise**
   This cruise package includes an ocean-view room for two adults on the Carnival cruise ship, the Imagination; the cruise departs from Miami, Fl and travels to the Grand Cayman, the Cayman Islands, and Ocho Rios, Jamaica. All food and non-alcoholic beverages are included as well as all entertainment on board the ship.

If you select the check, it will actually be for more than $1,500, but you have to pay taxes on that amount, which leaves you with $1,500 as the final value of the bonus. Similarly, if you select one of the bonus packages, its value is actually more than $1,500, but you have to pay taxes on the monetary value of the bonus, which leaves you with $1,500 as the final value of that bonus, too.
Participants in the charity condition were shown the following additional information:

Additionally, in an effort to increase charitable giving, your company has begun a program which allows you to donate 5% of your next paycheck to the charity of your choice. Before taxes, your bi-weekly paychecks total $1346.15; therefore, if you choose to participate in this program, the amount you would donate is: $67.31.

Those in the charity condition were asked about their likelihood of participation in the charity program:

How likely are you to participate in this charity donation program which would result in a $67.31 donation from your next paycheck?

-3 ----------------- -2 ----------------- -1 ----------------- 0 ----------------- 1 ----------------- 2 ----------------- 3
extremely very likely likely NOT indifferent likely to very likely extremely
likely NOT NOT to to participate to participate to participate likely to to participate
not to participate participate

All participants were asked to indicate their preference between the cash or non-cash bonus:

We are interested in your preference between these two possible bonuses, given your salary and your job. Please choose the number on the scale below which best reflects your preference.

-3 ----------------- -2 ----------------- -1 ----------------- 0 ----------------- 1 ----------------- 2 ----------------- 3
extremely very somewhat indifferent somewhat very extremely
likely to likely to likely to likely to likely to likely to likely to
choose the choose the choose the choose the choose the choose the choose the
check check check check check check

(Note: On the computer screen the full statement for options 1, 2, and 3 ended with “likely to choose one of the bonuses”; the full statement did not easily fit into this document).
Results

Both the preference and the charity participation variables were not normally distributed.

Figure 7: Histogram of the likelihood of participation in the charity program, experiment 6.
Both the control and charity conditions reported being “somewhat likely to choose the check”; the median response for both the charity and control groups was 3.00. The two groups were not significantly different according to a Mann-Whitney U test of ranks, control mean rank=169.86 and charity mean rank=174.03, *Mann-Whitney Z*=0.30, *p*>.05. However, within the charity condition, likelihood of participation in the charity program was positively correlated with likelihood of selecting the non-cash incentive, *Spearman’s Rho*=258, *p*<.05. Furthermore, when charity participation was truncated into a binary dependent variable (1, 2, 3= “not participating”, 5, 6, and 7=...
“participating”, and 4 was removed from the analysis), those who chose to participate in the charity program were significantly more likely to choose the non-cash incentive, Mann-Whitney $Z=3.33$, $p<.05$. Similarly, by truncating the preference variable into “choose the check” (collapsing across responses 1, 2, & 3) and “choose non-cash incentive” (collapsing across responses 5, 6, & 7), the proportion of people choosing the non-cash incentive differs between those who chose to participate in the charity program and those who did not, $X^2(1) = 9.19$, $p < .05$.

<table>
<thead>
<tr>
<th>Choose to participate in charity program</th>
<th>Choose check</th>
<th>Choose non-cash incentive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose NOT to participate in charity program</td>
<td>57</td>
<td>21</td>
</tr>
</tbody>
</table>

Table 7: Participation in charity program x Incentive choice, experiment 6.

**Discussion**

Although allowing the experimental group the option to donate to a charity of their choice did not affect the proportion of people choosing to receive the non-cash incentive, it is clear that a relationship exists between the likelihood of participation in charitable giving and the preference for receiving a non-cash incentive. The two variables were significantly positively correlated, and of the participants that elected to participate in the charity program, the proportion of
those who chose the non-cash incentive was greater than the participants who chose NOT to participate in the charity program. It appears as though the charity manipulation did not change participants’ preferences regarding cash versus non-cash incentives. However, it allowed participants who already have a preference for receiving non-cash incentives to participate in the charity program as well. That is, it appears that the likelihood of participating in a charity program covaries with the likelihood of selecting a non-cash incentive over the equivalent cash bonus. A more stringent way of testing this hypothesis would be to randomly assign participation in the charity program. Although this manipulation would not be ecologically valid, it may help to isolate whether a cause and effect relationship does in fact exist. Furthermore, it could be useful to include some individual difference measures that could help explain these behavioral tendencies.
CHAPTER 11

EXPERIMENT 7

Experiment 6 was one of two strategies adopted from the consumer literature that was designed to increase employee selection of the non-cash incentive. Experiment 6 relied upon relieving guilt through the opportunity to donate to charity; however, experiment 7 targets a strategy used by corporations to increase the consumption of hedonic goods. In the consumer world, frequency programs (such as the frequent flier program offered by many airlines) are commonly used to retain customers and increase product consumption. Kivetz and Simonson (2002) demonstrated that “higher frequency program requirements shift consumer preference in favor of luxury rewards” (p. 167).

Another possible predictor of the choice to indulge in hedonic goods could be the amount of effort required to achieve the bonus. In this experiment, the amount of effort required to obtain the bonus was varied in two scenarios with the prediction that the more effort required to receive the bonus, the more likely the employee will be to select the hedonic reward, or the non-cash incentive.

Method:
Participants: Sixty-six Psychology 100 students participated in this experiment (low effort N=32 and high effort N=34). All participants were Psychology 100 students who were taking part in the Research Experience Program; they received course credit for their participation in this study.

Materials: All data were collected via computer using the program Media Lab. The participants were presented with a short, online scenario and asked to respond to one scaled response question and one open ended question.

Procedure: Participants arrived in the lab and received the following instructions:

The following study is aimed to help employers identify valuable ways to reward their employees. Please read the following scenario carefully, placing yourself in the role of the employee.

They were randomly assigned to either a low effort or high effort condition. In experiment 1 and all of the subsequent replications, participants were informed that they were one of approximately 50% of the employees to receive this bonus and were given no information about the amount of effort they put into their job over the past year. However, in this experiment, the amount of effort required to receive the bonus was varied between the two conditions. It was predicted that the more effort that was put into receiving the award, the more likely a person was to choose the non-cash incentive.
The following scenario was shown to the participants; the italicized words in parentheses represent the different conditions:

Assume that you have graduated from Ohio State and have a job paying you $35,000 per year. You consider this to be a good starting salary for someone in your field. You are satisfied with your working conditions, and you get along well with your co-workers. Although this is not the type of job you hope to hold when you are further along in your career, it is satisfactory at this point.

As you near the end of your first year of employment, the company decides to provide its employees with an annual bonus. You have not worked particularly hard this year. In addition, you have never had to work late at night or on weekends. (You have worked very hard this year; you have often had to work late and you have even worked on several weekends. Due to your superior effort and good performance, you are awarded a bonus)

The amount of your bonus will be $1,500. You can take your bonus either in the form of a $1,500 check, or you can select a 5 night Carnival western Caribbean cruise worth $1500. This cruise package includes an ocean-view room for two adults on the Carnival cruise ship, the Imagination; the cruise departs from Miami, Fl and travels to the Grand Cayman, the Cayman Islands, and Ocho Rios, Jamaica. All food and non-alcoholic beverages are included as well as all entertainment on board the ship.

If you select the check, it will actually be for more than $1,500, but you have to pay taxes on that amount, which leaves you with $1,500 as the final value of the bonus. Similarly, if you select the cruise, its value is actually more than $1,500, but you have to pay taxes on the monetary value of the bonus, which leaves you with $1,500 as the final value of that bonus, too.

We are interested in your preference between these two possible bonuses, given your salary and your job.

-3 -------------------- -2 -------------------- -1 ---------------------- 0 ---------------------- +1 ---------------------- +2 -------------------- +3
extremely likely to choose the check
very likely to choose the check
somewhat likely to choose the check
indifferent
somewhat likely to choose the cruise
very likely to choose the cruise
extremely likely to choose the cruise
Finally, participants were also asked to explain their response.

**Results**

The data on preference for cash versus non-cash incentive was bimodal.

![Histogram of participant preference between cash and non-cash incentives, experiment 7.](image)

Figure 9: Histogram of participant preference between cash and non-cash incentives, experiment 7.

The two groups did not differ significantly, *Mann-Whitney* $Z=1.12$, $p>.05$.

Furthermore, the groups exhibited trends contrary to the hypothesis; the low effort group reported a median likelihood of 5.00 (somewhat likely to choose the non-cash incentive) while the high effort group reported a median likelihood of 3.00 (somewhat likely to choose the cash incentive). The participants’ preferences were truncated to create a binary choice variable where scores of 1, 2,
and 3 on the preference scale corresponded to “choose check” while scores of 5, 6, and 7 corresponded to “choose non-cash incentive”, scores of 4 were removed from this analysis. The proportion of participants choosing the non-cash incentive did not differ based upon the effort manipulation, $X^2(1)=1.60, p>.05$.

**Discussion**

The current hypothesis, effort affects the choice of incentive, was not supported in this study. In fact, the data displayed a trend in the opposite direction. Participants, although not significantly so, reported being more likely to choose the non-cash incentive in the low effort group. Although the sample sizes were large enough to capture a large effect, the effect size (Cohen’s d) calculated from this sample is .28. Furthermore, power at this sample size was only .34, much lower than the recommended .80. A power of .80 would require a total sample size of approximately 200. More data should be collected to establish whether this is a finding worth pursuing.
The final experiment in this dissertation was designed to replicate the prior vignette based studies in a performance based format offering “real” choices. Participants in this experiment were asked to complete a challenging task, and the person who receives the highest score will earn a bonus. Therefore, the ratings given in this experiment will reflect real bonuses that could be received as opposed to predicted reactions to hypothetical choices. Furthermore, with the additional requirement that participants complete a challenging cognitive task, performance can be examined as a function of the type of reward offered. This experiment will attempt to replicate the preference reversals from the previous vignette based studies and replicate the performance data from the Goodyear Tire Company study (Alonzo, 1996).

Method

Participants: Eighty-five Psychology 100 students participated in this experiment (Group 1 N=25, Group 2 N=30, Group 3 N=33). All participants were Psychology
100 students who were taking part in the Research Experience Program; they received course credit for their participation in this study.

**Materials:** All data were collected via computer using the program Media Lab. The participants were presented with a performance task, consisting of 45 anagrams, and were asked to respond to one scaled response question.

**Procedure:** Participants were asked to complete an experimental task which consisted of solving 45 anagrams (or scrambled words). Prior to starting the task, participants were informed that the person with the best score on the anagram task will earn a bonus prize. If there are ties for the best score, one winner will be chosen at random from the best performers. Participants were randomly assigned to one of three bonus conditions. Participants in the cash group, group 1, were told that they are eligible to win a $250 cash prize. Participants in the non-cash incentive group, group 2, were told that they will win their choice of one of 3 prize options: Apple I-pod, Sirius satellite radio receiver and 6 month subscription, or a Palm Tungsten E handheld organizer (each worth $250 in value). Finally, group 3, the joint evaluation condition, was told that they had the option to choose between the cash prize and one of the bonus options.

Participants were given the following set of instructions:
For this experiment, we will be asking you to complete a series of anagrams, or scrambled words. You should try to unscramble the letters presented to form a word. For example, you may be given the following anagram: acbon. There will be a blank box in which you will type the word you can create from this scrambled word. The solution for this anagram is: bacon. Some of these may be more difficult than others. You will have one minute to complete each scrambled word. If you are unable to solve the anagram in that time period, the computer will automatically move to the next word. You may not move on to the next word unless you have solved the current anagram or time runs out. This task will take approximately 30 minutes.

They were then presented with the information regarding the possible bonus they could receive. Participants in the cash group were shown the following text:

Because we would like you to put your best effort into solving the anagrams, we are offering a bonus to the person who solves the most anagrams this quarter. If there are ties, one winner will be randomly selected from the group of people who solved the most anagrams correctly. If you solve the most anagrams correctly, you will receive a check for $250. You will be contacted at the end of the quarter if you are the winner of this bonus. (Picture of money is shown). We are not kidding about the bonus! Because we want you to try your best, we will be rewarding the participant who solves the most anagrams with a $250 check. Please take this task seriously!

Participants in group 2 were shown the following text:

Because we would like you to put your best effort into solving the anagrams, we are offering a bonus to the person who solves the most anagrams this quarter. If there are ties, one winner will be randomly selected from the group of people who solved the most anagrams correctly. If you solve the most anagrams correctly, you will be able to choose one of the following prizes worth $250:

1. Apple I-pod mini digital audio player with 6.0GB hard drive. You can choose from silver, blue, pink, or green. The hard drive stores up to 1,500
songs; the ultracompact player measures 0.5" thick and weighs only 3.6 ounces. (Picture of an I-pod shown)

2. Sirius Starmate satellite radio receiver with complete home and car packages and a six month subscription to Sirius satellite radio. Get access to more than 120 commercial free radio stations. The built-in wireless FM transmitter allows you to listen to your Starmate over your FM radio. The Starmate has 30 presets and a song seek function which stores the names of your favorite songs and alerts you when they are playing on any channel. (Picture of the satellite radio shown).

3. Palm Tungsten E handheld organizer (palm pilot) with 32MB of internal memory for flexible storage. Includes "Documents to Go" version 6.0 Professional edition software for creating and editing Word, Excel, and PowerPoint compatible files. Also includes a 16-bit, 320 x 320 transflective TFT color display that supports over 65,000 colors. (Picture of the Palm Tungsten shown).

Finally, group 3, the joint evaluation group was shown the following text:

Because we would like you to put your best effort into solving the anagrams, we are offering a bonus to the person who solves the most anagrams this quarter. If there are ties, one winner will be randomly selected from the group of people who solved the most anagrams correctly. If you solve the most anagrams correctly, you can choose one of two options either:

A) a check for $250 (Picture of money shown).

or

B) you can choose one of the following prizes worth $250:

1. Apple I-pod mini digital audio player with 6.0GB hard drive. You can choose from silver, blue, pink, or green. The hard drive stores up to 1,500 songs; the ultracompact player measures 0.5" thick and weighs only 3.6 ounces. (Picture of I-pod shown).

2. Sirius Starmate satellite radio receiver with complete home and car packages and a six month subscription to Sirius satellite radio. Get access to more than 120 commercial free radio stations. The built-in wireless FM transmitter allows you to listen to your Starmate over your FM radio. The Starmate has 30 presets and a song seek function which stores the names of your favorite songs and alerts you when they are playing on any channel. (Picture of the satellite radio shown).
3. Palm Tungsten E handheld organizer (palm pilot) with 32MB of internal memory for flexible storage. Includes "Documents to Go" version 6.0 Professional edition software for creating and editing Word, Excel, and PowerPoint compatible files. Also includes a 16-bit, 320 x 320 transflective TFT color display that supports over 65,000 colors. (Picture of the Palm Tungsten shown).

Participants were then asked to solve the 45 anagrams. After they completed the anagram task, the participants were reminded of their potential bonus were asked to respond to a question about the bonus. Participants in groups 1 and 2 were asked to respond to the following question:

Please choose the statement which best reflects your opinion of this bonus:

-0 indifferent -1 somewhat good -2 good -3 very good -4 excellent

Participants in group 3 were given the following information:

We will next ask you to indicate the number on the scale which best reflects your preference. If you are the recipient of the bonus for this experiment, we will give you a check for $250 as your reward if you choose -3, -2, or -1 on the scale. If you choose 0 (zero) on this scale, this indicates that you are indifferent between the cash award and choosing one of the bonus options. We will then flip a coin to determine whether you will receive the cash or your choice of one of the other bonus options listed above. If we randomly choose the bonus item for you, we will email you at the end of the quarter to ascertain your preference among the three items. Finally, if you choose +1, +2, or +3 on the scale, you will receive your choice of one of the 3 bonus options. If you are the winner, we will email you at the end of the quarter to ascertain your preference among the three items.

Please indicate which number best reflects your preference:
(Note: On the computer screen the full statement for options 1, 2, and 3 ended with “likely to choose one of the bonuses”; the full statement did not easily fit into this document).

Results

As expected, the participants’ ratings of the bonus in groups 1 and 2 were negatively skewed.

![Histogram of participant satisfaction with bonus: Separate evaluation, experiment 8.](image)

Figure 10: Histogram of participant satisfaction with bonus: Separate evaluation, experiment 8.

Additionally, participants’ ratings of their preference for receiving the cash versus non-cash incentive were extremely positively skewed.
Figure 11. Histogram of participant preference between cash and non-cash incentives: Joint evaluation, experiment 8.

Participants in the non-cash incentive group reported more favorable responses towards the bonus than the participants in the cash group; the mean rank of the cash group was 24.08 while the mean rank of the non-cash incentive group was 31.27, *Mann-Whitney* *Z*=1.71, *p*<.05. However, the participants in group 3, the joint evaluation condition, overwhelmingly preferred receiving the cash incentive. When participants’ preferences were truncated to create a binary variable (responses of 1, 2, and 3 were recoded as “choose check”, responses of 5, 6, and 7 were recoded as “choose non-cash incentive”, and responses of 4 were deleted for this analysis), 70% of the participants chose the check; A binomial test
determined that this proportion was significantly different from 50%, $Z=1.72$, $p<.05$.

Participants solved, on average, 22.57 anagrams correctly (50.15% accuracy). Their scores on the anagram task were roughly normally distributed.

![Histogram of anagram task scores](image)

Figure 12: Average accuracy on anagram task, experiment 8.

However, participants’ average accuracy did not differ based upon their bonus opportunity, $F(2,85)=0.04, p>.05$.

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean</th>
<th>StDev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>49.33%</td>
<td>15.19</td>
</tr>
<tr>
<td>Group 2</td>
<td>50.67%</td>
<td>16.42</td>
</tr>
<tr>
<td>Group 3</td>
<td>50.30%</td>
<td>19.64</td>
</tr>
</tbody>
</table>

Table 8. Average accuracy on anagram task, experiment 8.
Discussion

Participants in the “real” choice task demonstrated a preference reversal, replicating the results from the vignette studies. Of the participants in the separate evaluation conditions, those with the opportunity to receive the non-cash incentive were significantly more satisfied that those offered the cash incentive. However, in the joint evaluation condition, the majority of the participants elected to receive the cash over the non-cash incentive; this represents a preference reversal.

However, participants’ average accuracy was not affected by the incentive offered. This result is in contrast with the Goodyear Tire Company study (Alonzo, 1996) which reported a large increase in sales for those salespersons receiving the non-cash incentives. In addition, these results do not match the lay-theories reported by employees involved in a non-cash incentive program. These employees predicted that people would work harder to receive a cash incentive; however, there was no difference in accuracy between any of the groups.

This study may be limited in its ability to capture behavior in a work environment. It is likely that, although a sizable bonus was offered, the task was not given the same effort that would be applied to a place of employment. Furthermore, participants may have perceived this task to be extremely difficult.
and, therefore, believed their likelihood of obtaining the bonus was slim.

However, it is possible, given a chosen job often represents work that captures a person’s strengths, that one might feel more positive about their likelihood of earning the bonus at their actual place of employment. Therefore, the effort obtained from participants on this task may not match the effort that would be put forth in their job. The only way to accurately answer this question would be to try to examine accuracy in a more naturalistic setting.
CHAPTER 13

GENERAL DISCUSSION

These eight experiments have attempted to explain the conflict in the incentive industry over the best method of rewarding employees. Should employers use cash or non-cash incentives? Employees report a preference for cash incentives, when given an explicit choice between the two (Hein & Alonzo, 1998); however, employees receiving non-cash incentives impressively outperformed their peers receiving the cash equivalent (Alonzo, 1996). How can people be so keenly unaware of the factors that motivate them? At the root of this issue is the assumption that humans have stable, measurable preferences that are not susceptible to framing effects. The research conducted in the incentive literature has assumed that the best way to elicit an employee’s preference is simply to ask them. On the surface, this appears like the logical solution. However, approximately 30 years of research in psychology has demonstrated that preferences are not stable (Lichtenstein & Slovic, 1971; Lichtenstein & Slovic, 1973); in fact, preferences are re-constructed each time a
judgment is required (Slovic, 1995). Consequently, preferences are susceptible to framing effects—even slight changes in the wording of a question can produce significant changes in judgment.

Preferences for incentives are no different. Three experiments demonstrated that preferences can be reversed with changes in mode of elicitation. One method of assessing preference at the population level is to ask one group of individuals to evaluate item A and one group of individuals to evaluate item B. The item that receives the higher rating is preferred. In this paper, a group of participants was asked to rate their satisfaction with receiving a cash incentive while a second group of participants was asked to rate their satisfaction with receiving a non-cash incentive. The non-cash incentive received a higher rating than the cash incentive; therefore, it can be inferred that a non-cash incentive is preferred. However, a second and more ecologically valid method of ascertaining preference is to simply ask a group of people which of the two items they would rather have: item A or item B. In this paper, a third group was asked to make an explicit choice between the cash and non-cash incentives. In this case, participants reported that they would rather receive the cash incentive. This shift in preference that occurs between separate and joint evaluation modes represents a preference reversal.
The underlying cause of the reversal is the evaluation mode which highlights the dimensions upon which the stimulus is evaluated. In separate evaluation mode, the rating will be based upon the attribute that is easiest to evaluate—that is, that attribute that needs no reference point for evaluation and that comes to mind easily. In the case, the easy to evaluate dimension is the employee’s affective reaction to the award. It is highly likely that participants receive more affective feedback from one of the bonus options than the less imaginative cash value award, thus resulting in a more favorable evaluation of the non-cash incentives is the separate evaluation mode. Cash—although a positive gift to receive—is subjected to the “fan” effect: there are so many ways in which you can use cash that one thing does not immediately come to mind.

In joint evaluation mode, the choice between two alternatives is driven by the dimension that is difficult to evaluate in isolation. For example, when evaluating a single dictionary, the number of entries that the dictionary contains does not factor into the judgment because it is practically impossible to evaluate the number of entries without a reference point. In the case of the bonus, the difficult to evaluate dimension is the fungibility of cash. According to economic theory, participants should always prefer to receive the cash value of the award because money is fungible, meaning it can be spent on anything—including one of the bonus options offered. In separate evaluation mode, the flexibility of the
cash award is not likely to be realized, and, therefore, this extremely attractive quality inherent to money, and subsequent lack of fungibility of the non-cash incentive, will not have a large impact on the evaluation of the incentive. Furthermore, in joint evaluation mode, the fungibility of money will be highlighted for the participants; therefore, they would rate the cash award more favorably.

The subtle difference between joint and separate evaluation modes imply that people are unaware of their conflicting opinions regarding incentives. However, there could also be a more mindful force at work that results in a conscious choice of the less-preferred alternative. Hsee (1999) argues that the presence of a “pseudo-value attribute” will cause people to make a choice that conflicts with their preferences. A “pseudo-value attribute” is one that provides a proscriptive approach to evaluating the alternatives; it represents the “rational” choice. This argument can be applied to incentive preference. Perhaps the fungibility of cash represents the pseudo-value attribute in this experiment. And, although the cash itself is not as appealing, participants recognize that it is the more rational choice in joint evaluation mode. Therefore, participants may be fully aware that they would enjoy the non-cash incentive more; however, they make a conscious sacrifice in order to behave more rationally. Future
research could focus on the mechanism through which preference reversals occur in this area.

An additional theme of this research was to identify factors that effect this preference reversal. It was hypothesized that the luxuriousness of the non-cash incentive was a key component to the preference reversal; reversals in preference would not be found for bonus items that were deemed to be low luxury. There was some evidence in support of this hypothesis; in both experiments 2 and 3 the referent in the joint evaluation condition affected the likelihood that the participants would select the non-cash incentive. However, the luxuriousness of the bonus was not a substantial part of the preference reversal. In experiment 3, both non-cash incentives were given higher ratings than the cash only incentive. It was concluded that the luxuriousness was a smaller part of the preference reversal than was originally hypothesized.

The third component of this paper focused on methods for guiding people to choose the non-cash incentive in the joint evaluation condition. Both of these methods were adaptive from the consumer behavior literature which focused on choices between hedonic goods (luxuries) and utilitarian goods (necessities). Strahilevitz and Myers (1998) discovered that people were more likely to reward themselves with a hedonic good if they were given the opportunity to make a donation to a charitable organization. The motivation for this research is based
upon the assumption that there is guilt associated with foregoing a utilitarian
good in favor of a hedonic good. And, if that guilt can be alleviated, through a
donation to charity, people will be more comfortable selecting the good for
which they would receive more pleasure. Experiment 6 asked half of the
participants about their likelihood of donating a small portion of their paycheck
to charity if their employer provided this option. Those participants who
reported that they would be likely to participate in a donation program were also
more likely to choose the non-cash incentive. Only half of those offered the
choice to donate actually reported being likely to donate; the group average
(including those who did and did NOT donate) did not differ from the control
group. This implies that the donation option did not cause the participants to be
more likely to choose the non-cash incentive; instead, the likelihood of
participating in the charity program may covary with the likelihood of choosing
a non-cash incentive. Although randomly assigning people to participate in
charity donation may help solve the cause and effect query, it is not an
ecologically valid approach.

Kivetz and Simonson (2002) demonstrated that increasing the
requirements for a frequency reward program caused people to shift their
preference from receiving utilitarian items to receiving hedonic items. This
research provided the framework for experiment 7 which hypothesized that the
amount of effort required to earn a bonus would affect the employee’s choice of
incentive. Participants in this experiment were told that they either put little
effort or a lot of effort into receiving a bonus from their employer. They were
subsequently asked for their preference about receiving a cash or non-cash
incentive. Contrary to the hypothesis, those in the low effort condition reported
being more likely to choose the non-cash incentive, although this difference was
not significant.

The final experiment represented an attempt to reconcile the preferences
of employees with their behavior. In addition, this experiment provided a real
world test of this phenomenon to increase the generality of the vignette based
studies. Participants in this study were asked to complete a cognitively
challenging task, solving a series of difficult anagrams, in hopes of receiving a
bonus if they were the highest performer on the task. Participants were offered
one of three bonuses: a cash bonus of $250, a choice between one of three non-
cash incentives (Apple I-pod, satellite radio, or Palm pilot), or a choice between
the $250 or one of the non-cash incentives. The preference reversal observed in
the previous studies was replicated in this more ecologically valid task.

Participants reported being more satisfied with the non-cash incentive in the
separate evaluation condition, but, overwhelming preferred to receive the cash in
the joint evaluation condition. Surprisingly, the bonus option did not have any
effect on the accuracy of the participants. This is in direct contrast to the Goodyear Tire study (which reported the non-cash group outperforming the cash group) and the opinions of employees enrolled in non-cash incentive plans in experiment 5 (which predicted that those receiving the cash incentive would work harder). It is likely that this task did not capture the dynamics of employee/employer relationship. Therefore, the additional effort applied in a workplace environment was not applied in this experimental setting.

The work presented in this dissertation has answered a few questions, but has also brought to light several additional research questions. First, would this preference reversal be maintained in a “within” subjects design where all participants were exposed to all information. Similarly, how would participants react when faced with information about their inconsistent preferences? Would the preference reversal be rationalized away, or would people change their preferences? Furthermore, if participants were asked to select their choice of non-cash incentives from the list of five options, would their ratings of the non-cash incentive increase if based only upon the selected item? Similarly, would the preference reversal be observed, in a within subjects design, if participants were responding only to their preferred non-cash incentive?

Taken together, these experiments provide evidence that preference for incentives demonstrates variance, or changes based upon elicitation mode, which
violates rational theories of choice. Additionally, the preferences observed in this research are inconsistent with traditional economic theory which argues that cash is the ultimate choice due to its fungability. The separate evaluation conditions report a consistent preference for the non-cash incentive and even the joint evaluation conditions report being only somewhat likely to choose the non-cash incentive on average. Although offering employees cash incentives may be more economically rational, evidence from this paper and other published reports suggest that non-cash incentives may ultimately make employees more satisfied and have the potential to improve their job performance.
REFERENCES


