Why tangible rewards can motivate greater effort than cash rewards: An analysis of four commonly cited attribute differences

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ABSTRACT

Tangible rewards (e.g., gift cards, merchandise) are performance-contingent, non-cash incentives with non-trivial monetary value. Proponents claim tangible rewards are more motivating than cash rewards because employees tend to view cash rewards as simply "more salary," but less so with tangible rewards, which affects their effort. Using four studies, we investigate the effects of four commonly cited attribute differences between cash and tangible rewards on effort: fungibility, hedonic nature, novelty, and discrete framing. We find these four differences affect effort, both individually and collectively, in a manner consistent with proponents' claims. We also find the greater fungibility of cash has countervailing motivational advantages over tangible rewards. Overall, our results go beyond demonstrating *whether* tangible rewards motivate greater effort than do cash rewards and shed light on *why* tangible rewards can motivate greater effort.

Keywords: cash rewards; effort; mental accounting; motivation; reward attributes; reward distinctiveness; tangible rewards.

Data Availability: Please contact the authors.

I. INTRODUCTION

We examine the effects of four commonly cited attribute differences between cash and tangible rewards on employee effort. Tangible rewards are performance-contingent, non-cash incentives that are restricted in use, but have non-trivial monetary value (Incentive Federation 2007, 2013, 2016; Peltier, Schultz, and Block 2005). Common examples include gift cards, recreational trips, and merchandise. Their non-trivial monetary value distinguishes them from other forms of non-cash rewards such as letters of praise, plaques, and tokens of appreciation (Condly, Clark, and Stolvitch 2003; Jeffrey and Shaffer 2007). The use of tangible rewards to motivate employees is widespread and growing. In a recent survey, 84 percent of surveyed firms in the United States report offering tangible rewards, spending more than $90 billion dollars annually (Incentive Federation 2016). This is a marked increase from 2013 (2007) when 74 percent (34 percent) of surveyed respondents reported using tangible rewards, spending $76 ($46) billion dollars annually (Incentive Federation 2007, 2013).

Proponents of tangible rewards claim they are more motivating than cash rewards because employees tend to view cash rewards as simply "more salary," but tend to view tangible rewards as being distinct from salary (Flanagan 2006; Odell 2005). Mental accounting theory (Thaler 1985, 1999) provides a foundation for understanding this claim. Mental accounting theory asserts individuals use a similarity-based categorization process to combine similar outcomes – including financial gains and losses – into the same category or mental account (Henderson and Peterson 1992; Rosch and Mervis 1975). Importantly, outcomes are subject to diminishing marginal value, such that the positive (negative) marginal value of gains (losses) is diminishing for each additional gain (loss) that is categorized into a given mental account. As a result, individuals perceive greater subjective value for two gains (e.g., an employee's salary and

reward) that are categorized into different mental accounts than when the same two gains are categorized into the same mental account (Thaler and Johnson 1990). Applied to our setting, mental accounting theory predicts a tangible reward will be relatively *less* susceptible to the diminishing marginal value associated with gains because employees will perceive less similarity between the tangible reward and their salary than they do between a cash reward and their salary. That is, employees will be more motivated to earn the tangible reward because they perceive tangible rewards to have greater reward distinctiveness. The usefulness of mental accounting theory for understanding the motivational effects of tangible rewards is evident, as prior research examining the motivational effects of tangible rewards utilize mental accounting theory (e.g., Kelly, Presslee, and Webb 2017; Mitchell, Presslee, Schulz, and Webb 2020; Presslee, Vance, and Webb 2013).

We focus on four attribute differences between cash and tangible rewards commonly cited by proponents of tangible rewards as contributing to employees' differing perceptions of cash and tangible rewards (Alonzo 1996; Balk 2017; Flanagan 2006; Jeffrey and Shaffer 2007; Luckey 2009; Next Level Performance n.d.). Each of these differences is expected to lead employees to perceive the tangible reward as having greater reward distinctiveness vis-à-vis salary, which affects how employees subjectively value the reward, and in turn, their motivation to earn it. The four differences are:

1. *Fungibility (More versus Less)*: Employees can more easily use cash rewards to obtain desired goods and services, whereas tangible rewards are restricted in use, by definition.

2. *Hedonic Nature (Utilitarian versus Hedonic Consumption)*: Employees tend to use (spend) cash rewards in more utilitarian ways, as they do their salary, while tangible rewards are often hedonic in nature, and represent "wants" instead of "needs."
3. *Novelty (Expected versus Unexpected Reward Opportunity)*: Employees tend to view cash rewards as being less novel because they quickly develop an expectation for the opportunity to earn cash rewards and view the opportunity as being a "built-in" component of their compensation plan (like they view their salary). In contrast, employees are less likely to develop such expectations for the opportunity to earn tangible rewards because these rewards are often unexpected and feel more novel.
4. *Discrete Framing (Joint versus Discrete)*: Employees perceive cash rewards to be framed jointly with their salary, but perceive tangible rewards to be framed discretely from their salary. For example, employees often receive their salary and cash rewards in a lump-sum, while tangible rewards cannot be paid in a lump-sum with salary.

Importantly, although proponents of tangible rewards point to these attribute differences as contributing to employees' differing perceptions of cash and tangible rewards, whether these differences actually affect employees' perceptions of the reward, and in turn, their effort, remains an empirical question. Further, as the traditional economic perspective implies cash rewards will generate greater expected utility than tangible rewards because cash is more fungible (Waldfogel 1993), it is unclear whether tangible rewards will motivate greater effort, even when all three commonly cited differences are present, *and* employees perceive greater reward distinctiveness for the tangible reward. Thus, we test the hypothesis that tangible rewards will motivate greater effort than cash rewards as well as the theorized relationships underlying that hypothesis among reward type, reward attributes, reward distinctiveness, and effort.

Across four studies, we find support for the hypothesis and the underlying theory. In Study 1, participants indicate tangible rewards are less likely to be fungible and more likely to be hedonic in nature and novel. Participants also indicate tangible rewards are more likely to be distinct relative to salary. Notably, path analysis results are consistent with the predicted links between reward attributes and reward distinctiveness. In Study 2, participants rate rewards that are more hedonic in nature or more novel to be more motivating. Notably, they also rate rewards that are more fungible to be *more* motivating. Thus, consistent with the traditional economic perspective, the greater fungibility of cash rewards acts as a countervailing motivational force against the motivating effects of tangible rewards, even though greater fungibility also leads participants to perceive greater similarity between cash rewards and salary. In Study 3, we find rewards with greater distinctiveness vis-à-vis the salary motivate greater effort. We manipulate reward distinctiveness in the Study 3 experiment by varying whether the reward is framed jointly with salary or separately from salary (i.e., discrete framing). Thus, the results of Study 3 complement those from Study 1 and 2 by highlighting the importance of discrete framing as an important difference between cash and tangible rewards. Finally, in Study 4, we integrate the results of the prior three studies and examine the effects of cash versus tangible rewards on effort in an experimental setting in which all four reward attribute (fungibility, hedonic nature, novelty, and discrete framing) differences are present. Consistent with proponents claim and the hypothesis, we find tangible rewards motivate greater effort; participants' performance on a computerized real-effort task is higher when they are offered a tangible reward, both in terms of "raw" performance as well as the frequency of attaining an assigned performance goal in each round.

By focusing on reward attribute differences between cash and tangible rewards, our study complements prior research by going beyond *whether* tangible rewards motivate greater effort than cash rewards and examining *why* tangible rewards can motivate greater effort. We find three commonly cited differences between cash and tangible rewards – discrete framing, hedonic nature, and novelty – each contribute to the motivational effects of tangible rewards. Further, we find each of these differences affect effort (motivation) both individually (Study 2-3) and collectively (Study 4). In addition to corroborating proponents' claims about these differences, we also confirm the greater fungibility of cash can counteract the motivational effects of tangible rewards. Thus, one potential implication of our study is that firms are best served to offer tangible rewards that differ from cash rewards in multiple ways.

II. BACKGROUND AND THEORY

The Motivational Benefits of Tangible Rewards

Proponents of tangible rewards argue these rewards are more motivating than cash rewards because employees tend to view cash rewards as simply "more salary," but are less inclined to view tangible rewards in this way (Flanagan 2006; Odell 2005). Consistent with this claim, Presslee et al. (2013) find call-center employees rate their reward as being more distinct from other income when working to attain a tangible reward than a cash reward.

Mental accounting theory (Thaler 1985, 1999) provides a foundation for understanding why employees may view these two reward types differently, and why such differences lead to differences in effort (Kelly et al. 2017; Presslee et al. 2013). According to mental accounting theory, people categorize outcomes (including financial gains and losses) into various topical mental accounts (e.g., "bills," "retirement," or "entertainment") using a similarity-based categorization process in which outcomes perceived to be similar are categorized into the same

category or mental account (Henderson and Peterson 1992; Rosch and Mervis 1975). This categorization affects how people subjectively value gains and losses (both prospective and realized) in that outcomes exhibit diminishing marginal value: the positive (negative) marginal value of gains (losses) is diminishing for each additional gain (loss) that is categorized into a given mental account. Consequently, individuals perceive greater subjective value for two gains that are categorized into separate mental accounts than when the same two gains are categorized into the same mental account (Thaler and Johnson 1990).[1]

Applied to our setting, to the extent that tangible rewards are viewed as being more distinct from salary than are cash rewards, tangible rewards are *less* susceptible to the diminishing marginal value associated with gains, and thus, more motivating than are cash rewards.

Four Commonly Cited Attribute Differences Between Cash and Tangible Rewards

Prior research and proponents of tangible rewards point to several potential attribute differences between cash and tangible rewards as possible reasons why tangible rewards motivate greater effort (Alonzo 1996; Balk 2017; Flanagan 2006; Jeffrey and Shaffer 2007; Luckey 2009; Mitchell et al. 2020; Next Level Performance n.d.; Presslee et al. 2013). However, whether these differences actually affect employees' mental accounting of the reward and their effort remains an empirical question.

We investigate the effects of four commonly cited attribute differences that prior research and proponents argue will make tangible rewards more motivating: (1) fungibility (more versus less), (2) hedonic nature (utilitarian versus hedonic consumption), (3) novelty (expected versus

[1] More generally, suppose there are two gains, X and Y, and v(X), v(Y), and v(X + Y) capture the subjective value of X, Y, and the combined "total" gain of X and Y, respectively. Research finds $v(X) + v(Y) > v(X + Y)$ because gains are subject to diminishing marginal value (Thaler 1985; Thaler and Johnson 1990).

unexpected reward opportunity), and (4) discrete framing (joint versus discrete). Beyond being commonly cited, these differences also offer more generalizable implications regarding the motivational benefits of tangible rewards, as they apply to a broader set of tangible rewards than do other mentioned differences.[2] We next describe each attribute difference and discuss why each difference affects distinctiveness vis-à-vis salary, and thus affects effort.

Fungibility (More versus Less)

By definition, tangible rewards are less fungible (more restricted in use) than cash rewards. This difference in fungibility can have two countervailing effects. On the one hand, proponents and recent studies argue the restricted use attribute of tangible rewards lead employees to view tangible rewards as distinct from salary (Jeffrey and Shaffer 2007; Presslee et al. 2013). Conversely, cash rewards are less distinct from salary because cash is equally fungible. Thus, all else equal, tangible rewards are less fungible, but more distinct from salary than cash rewards are from salary, which mental accounting theory suggests would lead tangible rewards to be more motivating than cash rewards.

On the other hand, conventional economic reasoning suggests the greater fungibility of cash rewards will generate greater expected utility and thus, be more motivating than tangible rewards because cash can be more easily be used to obtain desired goods and services (Waldfogel 1993). Consistent with this reasoning, individuals express a clear preference for cash rewards over tangible rewards when given a choice between the two types of rewards as the difference in fungibility becomes quite salient (Jeffrey 2009; Shaffer and Arkes 2009). Thus,

[2] For example, some proponents suggest tangible rewards may be more motivating because they have greater "trophy value" (Jeffrey and Shaffer 2007). However, arguments about the motivational effects of trophy value apply only to material tangible rewards (a TV) and not to experiential rewards (a vacation). In contrast, the differences we examine apply to both material and experiential tangible rewards.

differences in fungibility between tangible rewards and cash are expected to have two countervailing effects on effort.

Hedonic Nature (Utilitarian versus Hedonic Consumption)

Proponents and recent studies also argue tangible rewards are more motivating due to differences in how the two types of rewards are spent or consumed (Balk 2017; Flanagan 2006; Jeffrey and Shaffer 2007; Kelly et al. 2017; Luckey 2009; Mitchell et al. 2020). Proponents argue employees find it difficult to justify spending cash rewards in a fun or frivolous way, and instead spend them in a more utilitarian fashion by paying off bills, buying groceries, and meeting other basic "needs." In contrast, tangible rewards are often hedonic goods and services, representing "wants" that people find difficult to justify purchasing on their own.

These differences in how employees consume cash and tangible rewards are notable because employees use the bulk of their salary on utilitarian (functional) expenses like housing, food, healthcare, transportation, and taxes (Frankel 2018).[3] Thus, employees are likely to perceive relatively more similarity between their salary and a cash reward because both are typically spent in similarly utilitarian ways. In contrast, employees are likely to perceive relatively less similarity between their salary and a tangible reward because the two forms of compensation are less likely to be spent or consumed in similar ways.

Recent studies provide preliminary support for the motivational benefits of offering hedonic rather than utilitarian rewards. First, Kelly et al. (2017) conduct a field experiment using a repeated (two sequential) tournament setting with home furnishing retailers, and find that in the second tournament, retailers offered a hedonic tangible reward outperform retailers offered a

[3] This is consistent with the popular "50-30-20" financial rule of thumb which recommends spending 50 percent of (after-tax) income on "needs" like paying bills and buying groceries, spending 30 percent on "wants" like shopping and other entertainment, and allocating 20 percent on savings and retirement (Pant 2018).

cash reward, and attribute these performance differences to retailers who lost in the first tournament. Second, Mitchell et al. (2020) conduct a laboratory experiment in which participants perform a computerized real-effort task under a piece-rate incentive compensation scheme, and find participants offered a hedonic tangible reward outperform participants offered a utilitarian tangible reward. Using a free-sort task, they also find support for the effects of hedonic nature on mental accounting, as they find salary is more commonly grouped (categorized) with, and spent on, utilitarian items than hedonic items.

Novelty (Expected Versus Unexpected Reward Opportunity)

Proponents argue tangible rewards are more motivating due to differences in the degree to which employees develop an expectation of the reward versus the degree to which the reward feels novel or unexpected. In particular, employees can quickly develop a sense of entitlement with respect to cash rewards and treat them like an expected source of compensation, much like their salary (Balk 2017; Flanagan 2006; Luckey 2009). This phenomenon likely relates to the other two differences between cash and tangible rewards discussed earlier. For example, according to Michael Dermer, President and CEO of IncentOne, a rewards management company,

> Employees view cash incentives and awards as part of their annual compensation. Because those dollars just become part of what you take home, there's nothing special about them. [The money] tends to get spent paying bills, and you don't really do anything that's memorable, so there's no lasting effect relative to the dollars that you're putting into those incentive schemes. It just becomes part of that fungible pile of money that you find a way to spend every month and every year (Flanagan 2006).

Consequently, when an employee fails to attain the cash reward, or the cash reward incentive pay program is discontinued, employees often feel as if their salary has been cut (Flanagan 2006;

Odell 2005). In contrast, the use of tangible rewards to motivate employees is more novel, and thus, employees are less likely to develop a similar expectation for the reward (Balk 2017).

Discrete Framing (Joint versus Discrete)

Finally, proponents argue tangible rewards are more motivating because tangible rewards are more likely to be framed (presented) as being distinct from an employee's salary than are cash rewards (Balk 2017; Flanagan 2006; Jeffrey and Shaffer 2007; Luckey 2009; Odell 2005). The way in which an employee's compensation is paid could potentially trigger differences in the framing of the reward. For example, employees often receive earned cash rewards together with their salary in a lump-sum. Thus, employees may view cash rewards as merely generating a slightly higher paycheck, and not as a special recognition for outstanding job performance. That is, employees may view their salary and cash reward as one slightly bigger gain rather than as two separate gains. In contrast, employees may be more likely to view their salary and tangible rewards as two separate gains rather than as one larger gain because tangible rewards cannot be paid in a lump-sum and must be paid separately from an employee's salary. Such framing effects have likely strengthened over time, as technological innovations like direct deposit have made it easier for the cash reward to be lumped in with salary and other cash-based income (Flanagan 2006).

Summary

Based on the preceding discussion, we test the hypothesis that tangible rewards will lead to greater effort than cash rewards via the four attribute differences (fungibility, hedonic nature, novelty, and discrete framing) that result in mental accounting differences. We summarize this hypothesis and the underlying theory in Figure 1. We use four studies to test for theoretical mediation as shown by our conceptual model (Asay, Guggenmos, Kadous, Koonce, and Libby

2019; Spencer, Zanna, and Fong 2005).[4] In Study 1, we examine whether cash and tangible rewards differ in terms of the three reward attributes discussed earlier, and whether these differences affect perceptions of reward distinctiveness relative to salary. In Study 2, we examine whether differences in reward attributes affect motivation. In Study 3, we examine whether reward distinctiveness relative to salary affects motivation. Finally, in Study 4, we build on the insights from the previous three studies to examine whether tangible rewards motivate greater effort than do cash rewards when differences in all four attributes are all present.

Section III. Study 1 Method and Results

Overview

In Study 1, we examine whether cash and tangible rewards do, in fact, differ with respect to three of the four reward attributes (fungibility, hedonic nature, and novelty) discussed in Section II (Figure 1, Link 1), and whether these differences are associated with differences in the perceived distinctiveness of cash and tangible rewards (Figure 1, Link 2). We do not examine the attribute of discrete framing in Study 1 because doing so would involve informing participants about the different ways that the reward can be framed relative to salary, and framing effects largely disappear when participants are made aware of the different possible frames (Cheng and Wu 2010).[5]

Method

Participants

One hundred fifty-five participants recruited from Amazon's Mechanical Turk (MTurk) complete Study 1. MTurk participants are more representative of the general population than

[4] We obtained IRB approval for all four studies.
[5] As discussed in Section V, however, we use differences in discrete framing to manipulate reward distinctiveness and results suggest a successful manipulation. This provides support for the importance of discrete framing as a relevant reward attribute for understanding the effects of cash versus tangible rewards on effort.

traditional laboratory participants (Buhrmester, Kwang, & Gosling, 2011). Moreover, Farrell, Grenier, and Leiby (2017) find MTurk participants and traditional laboratory participants exhibit similar performance on a variety of accounting tasks.

We require participants to meet four criteria: (1) be located in the U.S., (2) be at least 18 years old, (3) have completed over 1,000 MTurk tasks (HITs), and (4) have at least a 95% approval rating on prior HITs. Ninety-seven participants (63 percent) are male, and the average age is 36.1 years. Participants receive $2 USD for completing the study and receive their payment within 48 hours after completing the study. On average, participants complete the study in just under six minutes.

Procedures and Measures

We administer the study using Qualtrics. After providing their informed consent, participants receive the following definitions of cash and tangible rewards:

> Cash Rewards: Cash rewards are monetary payments for good performance at work.
> Tangible Rewards: Tangible rewards are non-monetary payments for good performance at work. The payments are restricted in use, but have financial value. Examples of tangible rewards include redeemable points, gift cards, trips/travel, and merchandise. Notably, tangible rewards are not tokens of appreciation or non-financial recognition (e.g., thank you note).

Then, participants receive the following definitions for three reward attributes and reward distinctiveness:

> Fungibility: the reward can easily be used to obtain goods and services.
> Hedonic in nature: the reward is used to consume "wants" instead of "needs."
> Novelty: the reward is novel and unique.
> Distinctiveness: the reward feels distinct from salary, and not simply "more salary."

Then, participants indicate how likely they think cash and tangible rewards are to have each attribute and reward distinctiveness (eight likelihood assessments in total). Participants make those assessments using a 7-point scale with endpoints of -3 (very unlikely) and +3 (very

likely). Finally, participants provide demographic information. We counter-balance whether participants assess cash or tangible rewards first. By and large, our results are inferentially similar across the two orders; thus, we do not include order as a variable in our analyses.[6, 7]

Results

We analyze participants' assessments using paired t-tests and path analysis. We use participants' assessments to create four measures: *Fungibility, Hedonic Nature*, *Novelty*, and *Distinctiveness*. Table 1, Panel A reports descriptive statistics for each measure by reward type. Table 1, Panel B reports the path analysis results.

[Insert Table 1 here]

Untabulated pairwise t-tests of each measure are consistent with expectations. First, *Fungibility* is higher for cash rewards than for tangible rewards (one-tailed $p < 0.01$). Second, *Hedonic Nature* is higher for tangible rewards than for cash rewards (one-tailed $p < 0.01$). Third, *Novelty* is higher for tangible rewards than for cash rewards (one-tailed $p < 0.01$). Finally, *Distinctiveness* is higher for tangible rewards than for cash rewards (one-tailed $p < 0.01$).

Path analysis results are also consistent with expectations. Our path analysis simultaneously tests the associations between *Reward Type* (0 = cash rewards, 1 = tangible rewards) and *Fungibility, Hedonic Nature*, and *Novelty* and between these latter three attributes and *Distinctiveness* (Kline 2011). We allow *Fungibility, Hedonic Nature*, and *Novelty* to co-vary, and bootstrap the standard errors in the path analysis model using 10,000 replications (Hayes 2018). We also cluster standard errors by participant to address the potential for correlated error

[6] In untabulated pairwise t-tests, participants do not assess tangible rewards are more likely to be hedonic in nature when participants provide their assessments for cash rewards first ($Mean_{cash} = 5.30$, $Mean_{tangible} = 5.23$, $t = -0.31$, $p = 0.76$). Notably, our path analysis results regarding this attribute are robust to the order in which participants provide their assessments. The difference in statistical significance between tests likely reflects the noisiness of the underlying data due to both individual differences (repeated measure) and associations between measured variables; path analysis is more effective in controlling these sources of noise.

[7] All p-values are reported two-tailed unless otherwise stated.

terms due to multiple observations from the same participant. The path model fits the data well: CFI = 0.98; SRMR = 0.03 (Kline 2011).

Consistent with our paired t-test results, *Fungibility* is higher for cash rewards (one-tailed $p < 0.01$) while *Hedonic Nature* and *Novelty* are higher for tangible rewards (one-tailed $p < 0.01$ for both measures). Importantly, *Fungibility* is negatively associated with *Distinctiveness* (one-tailed $p = 0.02$), while *Hedonic Nature* and *Novelty* are positively associated with *Distinctiveness* (one-tailed $p < 0.01$ for both attribute measures). Collectively, these results are consistent with our expectations for Links 1 and 2, and corroborate proponents' claims regarding those links.

Section IV. Study 2 Method and Results

Method

Overview

The results of Study 1 are consistent with proponents' claims about the difference in attributes between cash and tangible rewards, and how these differences affect perceptions of reward distinctiveness vis-à-vis salary. In Study 2, we build on these results and examine whether differing levels of these attributes affect motivation, as greater motivation should lead to greater effort (Figure 1, Links 2 and 3). As with Study 1, we do not examine the discrete framing attribute in Study 2 because doing so would involve informing participants about the different ways that the reward can be framed relative to salary, which largely mitigates framing effects (Cheng and Wu 2010).

Participants

Four hundred forty-one participants recruited from MTurk complete Study 2. Similar to Study 1, we require all participants to meet four criteria: (1) be located in the U.S., (2) be at least 18 years old, (3) have completed over 1,000 HITs, and (4) have at least a 95% approval rating on

prior HITs. We prohibit Study 1 participants from completing Study 2. One hundred eighty-four participants (42 percent) are female, and the average age is 36.6 years. Participants receive $1 USD for their participation and receive their payment within 48 hours after completing the experiment. On average, participants complete the study in just under six minutes.

Procedures, Independent Variables, and Dependent Variable

We administer the study using Qualtrics. After providing their informed consent, we ask participants to imagine they are an employee of a company. Further, the company offers them a reward for good job performance in addition to their salary.

We use a 3 x 2 between-participants design in which we vary the reward attribute (fungibility, hedonic nature, or novelty), each at two levels. We randomly assign participants to one of the six conditions. We describe the reward in each condition as follows:

Fungibility:

(1) *Less Fungible*: "The reward cannot easily be used to obtain goods or services."
(2) *More Fungible*: "The reward can easily be used to obtain goods or services."

Hedonic Nature:

(1) *Utilitarian*: "The reward can only be used to obtain goods and services that are necessary and practical."
(2) *Hedonic*: "The reward can only be used to obtain goods and services that are fun and exciting."

Novelty:

(1) *Low Novelty*: "The reward is ordinary and common."
(2) *High Novelty*: "The reward is novel and unique."

Then, using a 7-point scale with endpoints of +1 (not motivating at all) and +7 (highly motivating), participants indicate how motivating they would find working towards earning the reward [*Effort*]. Finally, participants provide demographic information.

Results

We test the motivational effects of each attribute using t-tests. Table 2 reports descriptive statistics and t-test results comparing the two levels for each of the three reward attributes. We find results consistent with our expectations. First, *Effort* is higher in the more fungible condition than in the less fungible condition (one-tailed $p < 0.01$), suggesting rewards that are more fungible are more motivating. This result is notable because the increased motivation arising from greater fungibility acts as a countervailing force against the motivating effects of tangible rewards. That is, although cash rewards are more fungible, and thus, perceived to be less distinct from salary, greater fungibility increases the flexibility in how the reward can be used, which acts as a strong motivator, consistent with the discussion in Section II. Second, *Effort* is higher in the hedonic condition (more hedonic) than in the utilitarian condition (less hedonic) (one-tailed $p = 0.02$), suggesting rewards that are more hedonic in nature are more motivating. Finally, *Effort* is higher in the high novelty condition than in the low novelty condition (one-tailed $p = 0.01$), suggesting rewards that are more novel are more motivating.

[Insert Table 2 here]

Section V. Study 3 Method and Results

Overview

In Study 3, we direct our focus to Link 3 in Figure 1 and examine whether rewards with greater distinctiveness relative to salary motivate greater effort. Two aspects of Study 3 are worth nothing. First, Study 3 complements the results of Study 2 by using a real-effort task to measure effort. Second, we manipulate reward distinctiveness relative to salary through discrete framing, which is one of the commonly cited attribute differences between cash and tangible rewards (see Section II). This complements the focus in Study 1 and 2 on the other three

commonly cited differences between cash and tangible rewards (fungibility, hedonic nature, and novelty).

Method

Task

Participants complete a computerized version of Chow's (1983) decoding task, which requires participants to translate three-digit numbers into letters using a provided translation key (Kelly and Presslee 2017). Participants receive a different translation key in each round. The computer screen displays the translation key, participants' performance (number of correct translations), and the time remaining in the round (see Appendix A). The task is designed to be easily understood by participants without requiring specialized knowledge (low task complexity), and task performance is sensitive to effort, making task performance a suitable proxy for effort (Choi, Clark, and Presslee 2019).

Procedures

We conduct the experiment at a large university in the United States. At the start of the experiment, participants provide their informed consent and read an initial set of instructions explaining the decoding task. Then, participants perform the task in a two-minute practice round to familiarize themselves with the task. Participants do not receive any compensation for their practice round performance. After the practice round, participants receive additional instructions about the experiment, and must pass a short quiz to ensure they understand the instructions. After successfully completing the quiz, participants perform the decoding task for eight additional rounds, each lasting two minutes. In all eight rounds, we assign participants a moderately difficult performance goal of 25 correct translations.[8]

[8] We chose this performance goal based on the results of a pilot test in which participants perform the task in a two-minute round and receive piece-rate compensation ($0.10 USD per correct translation); the mean and median level

Importantly, there is no performance-contingent compensation during the first four rounds. This design choice allows us to capture the effects of performance-contingent compensation in our setting, which we introduce before the fifth round. Specifically, at the start of the fifth round, participants learn that in the remaining four rounds they would earn additional compensation in each round that they achieved the assigned performance goal of 25 correct translations. As described later, our manipulation varies the framing of the compensation scheme. Following the eighth round, participants complete a post-experimental questionnaire and receive payment. As payment for participating in the study, participants receive their compensation from one randomly selected round.

Distinctiveness Manipulation

We manipulate distinctiveness by varying how we frame participants' compensation across conditions. In our manipulation, we vary both the labels and the numerical presentation of compensation components, while holding the compensation structure constant across conditions. In the low distinctiveness condition, we inform participants they will receive a $25 wage in each round, and in rounds 5-8, can instead earn a $35 wage in each round that they achieve the performance goal. Thus, in the low distinctiveness condition, we frame all compensation components using a more general term (wage), which can easily be used to describe changes in compensation, and describe the compensation in terms of the aggregate payoff (either $25 or $35). In the more high distinctiveness condition, we inform participants they will receive a $25 salary in each round, and in rounds 5-8, can also earn a bonus of $10 cash in each round that they achieved the performance goal.

of performance in the pilot test is 25 correct translations. Participants from the pilot test could not participate in the experiment.

Two aspects of our manipulation merit discussion. First, varying either the labels or the numerical presentation (but not both) would likely not generate the necessary difference in distinctiveness across conditions. For example, even if we use the label "wage" to describe compensation in both conditions, separating the fixed and performance-contingent pay as we do in the high distinctiveness condition ($25 fixed pay plus $10 performance-contingent pay) would still prompt participants to view these as two distinct compensation components even in the low distinctiveness condition. Second, while we acknowledge participants likely perceive a wage increase differently from earning a bonus, the goal of our manipulation is to create differences in participants' perceptions of reward distinctiveness vis-à-vis the salary, and framing the performance-contingent compensation as a wage increase versus earning a bonus helps achieve this goal. Relatedly, the framing we use in the two distinctiveness conditions builds on proponents' claims that cash and tangible rewards differ in terms of discrete framing that leads employee to view performance-contingent cash rewards as simply "more salary" (Flanagan 2006; Odell 2005). Therefore, Study 3 allows us to test this claim.

Dependent Measures

We consider two measures of participants' task performance in response to our manipulation of distinctiveness. First, we consider participants' *Post-Performance*, which is the average number of correct translations in a round over the last four rounds (i.e., post-manipulation). Second, we consider participants' *Post-Attainment*, which is the number of times participants attain the performance goal in the last four rounds. When analyzing these dependent variables, we control for participants' performance prior to our manipulation because prior performance is highly predictive of future performance on real-effort tasks (Bonner and Sprinkle 2002; Kelly, Webb, and Vance 2015). Specifically, when analyzing *Post-Performance*, we

control for *Pre-Performance,* which is the average number of correct translations in the first four rounds. When analyzing *Post-Attainment*, we control for *Pre-Attainment,* which is the number of times a participant attains the performance goal in the first four rounds.[9]

Results

Sixty-six participants recruited from an experimental economics lab participant pool complete Study 3. Thirty-two participants (48 percent) are male, and their average age is 20.4 years. We do not include age or gender in our analyses, as neither variable differs by condition, nor are they correlated with *Post-Performance* or *Post-Attainment*.[10] We administer one randomly assigned condition in each experimental session, and each session lasts about 45 minutes. We do not include session in our analyses, as our results are inferentially similar after control for session.

Analysis of participants' responses to post-experimental questionnaire items indicate a successful manipulation of reward distinctiveness. In the low distinctiveness condition, participants rate their agreement with the following statement: "I consider the wage increase for achieving the performance goal in rounds 5-8 as being separate from my $25 wage." In the high distinctiveness condition, participants rate their agreement with the following statement: "I consider the bonus of $10 cash for achieving the performance goal in rounds 5-8 as being separate from my salary." In both conditions, participants respond using an 11-point scale with endpoints of -5 (strongly disagree) and +5 (strongly agree), and we use participants' responses to these two items to create our measure, *Distinctiveness*. Table 3, Panel A, presents descriptive statistics for *Distinctiveness* and the other measures of interest by condition. In untabulated tests,

[9] There is no difference between conditions in practice round performance ($p = 0.75$), *Pre-Performance* ($p = 0.88$), or *Pre-Attainment* ($p = 0.70$).
[10] $p \geq 0.12$ for age, and $p \geq 0.14$ for gender.

we find *Distinctiveness* is higher in the high distinctiveness condition ($t = 4.28$, one-tailed $p < 0.01$).

Consistent with our expectations, we find greater distinctiveness leads to greater effort. As shown in Table 3, Panel B, *Post-Performance* is higher in the high distinctiveness condition (one-tailed $p = 0.02$). As shown in Table 3, Panel C, *Post-Attainment* is also higher in the high distinctiveness condition (one-tailed $p = 0.07$). By and large, we continue to find greater distinctiveness leads to greater effort in untabulated tests using alternative measures of distinctiveness and effort.[11]

[Insert Table 3 here]

Section VI. Study 4 Method and Results

Overview

In Study 4, we integrate the results of the prior three studies and examine the effects of cash versus tangible rewards on effort using a real-effort task. This allows us to examine the full set of links shown in Figure 1. Notably, the design of Study 4 allows us to examine whether tangible rewards motivate greater effort in a setting in which all four commonly cited differences between cash and tangible rewards are present. This is non-trivial, as the results of Study 2 indicate cash rewards can motivate greater effort because cash is more fungible, yet Study 3 holds constant fungibility when examining the effect of distinctiveness on effort.

[11] First, we replace the indicator variable capturing the two conditions with *Distinctiveness*, and find *Distinctiveness* is positively associated with *Post-Performance* (coefficient = 0.28, one-tailed $p < 0.01$) and *Post-Attainment* (coefficient = 0.09, one-tailed $p = 0.02$). Second, we compare the change in performance (*Performance Change*) and goal attainment (*Attainment Change*) from the first four rounds to the last four rounds as our measures of performance. Descriptive statistics for *Performance Change* and *Attainment Change* are presented in Table 3, Panel A. *Performance Change* is higher in the high distinctiveness condition than in the low distinctiveness condition (coefficient = 0.52, one-tailed $p = 0.02$). However, while *Attainment Change* is directionally higher in the high distinctiveness condition, this difference is not statistically significant at conventional levels (coefficient = 0.15, one-tailed $p = 0.14$). Thus, with the exception of *Attainment Change*, we find greater distinctiveness leads to greater effort.

Method

Task

Participants perform a computerized version of Gill and Prowse's (2012) slider task for one practice round and twelve production rounds. For this task, the computer screen presents a series of sliders with endpoints of 0 and 100, and each slider has a slider box that is initially set at 0. The objective is to use the computer mouse and drag the slider box to the midpoint of the slider (50). In each round, participants receive real-time information regarding their performance (number of correctly positioned slider boxes) and the time remaining in that round (see Appendix B). The task is designed to be easily understood by participants without requiring specialized knowledge (low task complexity), and task performance is sensitive to effort, making task performance a suitable proxy for effort (Choi et al. 2019).

Procedures

We conduct the experiment at a large university in the United States that was different from the university in Study 3. We recruit individuals from an interdisciplinary behavioral research lab participant pool to participate in one of seven sessions. Participants sit at individual private computer terminals upon arrival at the lab. After providing their informed consent, participants receive initial instructions about the slider task. Then, participants proceed to the practice round, which lasts two minutes. Participants do not receive any compensation for the practice round, and practice round performance does not differ between conditions ($p = 0.20$).

After the practice round, participants receive additional instructions about the experiment, and must pass a short quiz to ensure they understand the instructions. Specifically, participants learn they will perform the slider task for twelve production rounds, each lasting two minutes.

Further, participants have a difficult, but attainable, performance goal of correctly positioning 39 slider boxes in each round.[12]

In all conditions, participants receive fixed pay of $20 in each of the twelve production rounds, and this compensation represents their salary in each round. To mimic how employees typically spend their salary on more serious expenses (Frankel 2018), we ask participants to imagine they plan to spend the $20 on utilitarian items that are "necessary and helpful things, like paying bills and buying groceries." Participants also have the opportunity to earn additional compensation for attaining their assigned goal, and the additional compensation is either a cash or a tangible reward, which varied by condition. At the end of each round, participants receive feedback about their performance and the compensation they earned in the round. Following the last production round, participants complete a post-experimental questionnaire and receive their earnings from one randomly selected round.

Reward Type Manipulation

Between sessions, we manipulate whether participants earn a cash reward ($10) or a tangible reward ($10 AMC movie theater gift card) for attaining the performance goal in a round. We use a holistic manipulation emphasizing all four differences discussed in Section II (see Appendix C). First, we manipulate fungibility by using a $10 AMC movie theater gift card to operationalize the tangible reward. That is, the tangible reward can *only* be spent at an AMC movie theater and is limited to purchasing movie tickets and concessions. These limitations do not apply to the cash reward.

[12] In a pilot study in which participants perform the slider task for eight rounds and earn $0.05 for each correctly positioned slider box, approximately 30 percent of participants correctly position 39 slider boxes in at least one round. We recruit pilot study participants from the same participant pool as those participating in the experiment, but participants from the pilot study did not participate in the experiment.

Second, we manipulate the utilitarian (cash reward condition) versus hedonic (tangible reward condition) nature of the reward. Recall we ask all participants to imagine they plan to spend their $20 fixed pay in each round on utilitarian items. We ask participants in the cash reward condition to imagine they *also* plan to spend the reward on "necessary and helpful things, like paying bills and buying groceries." In contrast, we ask participants in the tangible reward condition to imagine they plan to spend the reward "to buy movie tickets and buy concession items (i.e., snacks, candy, and drinks)." This difference in planned consumption between conditions reflects how employees tend to spend cash rewards on utilitarian items ("needs"), while tangible rewards are hedonic in nature ("wants").

Third, we manipulate novelty using participants' expectations regarding the opportunity to earn the reward. Prior to round 1, participants in the cash reward condition learn they have the opportunity to earn the reward for attaining the performance goal in all twelve production rounds. Prior to round 9, participants in the tangible reward condition learn they have the opportunity to earn the reward in rounds 9-12; these participants do not have an opportunity to earn the reward in the previous eight rounds. Since we test the hypothesis using participants' performance and goal attainment in rounds 9-12, this difference in the (un)expected opportunity to earn the reward between conditions reflects how employees tend to develop an expectation for the opportunity to earn cash rewards, whereas the opportunity to earn tangible rewards feels more novel.

Finally, like in Study 3, we manipulate discrete framing of the reward by framing it jointly with fixed pay (cash reward condition) or separately from fixed pay (tangible reward condition). In the cash reward condition, we frame the reward jointly with fixed pay by informing participants they will earn "$30" for goal attainment. In the tangible reward condition,

however, we frame the reward separately from fixed pay by informing participants they will earn "$20 and an additional $10 AMC gift card" for goal attainment. This difference in framing between conditions reflects how cash rewards are often paid together with an employee's salary in a lump-sum payment, but tangible rewards are not.

Dependent Measures

We consider two measures of task performance. First, we consider *Post-Performance*, which is the average number of correctly positioned sliders in a round over the last four rounds. Second, we consider *Post-Attainment*, which is the number of times a participant achieves the performance goal in the last four rounds. When analyzing these dependent measures, we control for participants' performance in the four rounds prior to introducing tangible rewards in round 9 because prior performance is highly predictive of future performance on real-effort tasks (Bonner and Sprinkle 2002; Kelly et al. 2015). Specifically, when analyzing *Post-Performance*, we control for *Pre-Performance,* which is the average number of correctly positioned sliders in rounds 5-8. When analyzing *Post-Attainment*, we control for *Pre-Attainment,* which is the number of times a participant attains the performance goal in rounds 5-8.[13]

Results

Eighty-two participants complete Study 4. Forty-one (50 percent) participants are female, and the average age is 21.4 years. We do not consider age or gender in our analyses, as our results are inferentially similar when we control for these variables.[14] We administer one randomly assigned condition in each experimental session, and each session lasts 45 minutes.

[13] There is no difference between conditions in *Pre-Performance* ($p = 0.68$) and *Pre-Attainment* ($p = 0.87$).
[14] Gender does not differ by condition ($p = 0.52$), while age is higher in the cash reward condition than in the tangible reward condition ($p = 0.07$). Age is not correlated with either *Post-Performance* or *Post-Attainment* ($p = 0.38$), while *Post-Performance* ($p = 0.05$) and *Post-Attainment* ($p < 0.01$) are greater for men than for women.

We do not include session in our analyses, as our results are inferentially similar after controlling for session.

Participants' responses to a post-experimental questionnaire item indicate a successful manipulation. If our manipulation is successful, then we should observe differences in perceptions of reward distinctiveness between conditions. We capture participants' assessments of reward distinctiveness relative to the $20 fixed pay they receive in each round using a validated approach developed in psychology research (Aron, Aron, and Smollan 1992) and subsequently used in extant accounting and marketing research (e.g., Bauer 2015; Chernev, Hamilton, and Gal 2011). We present participants with seven pairs of circles, with one circle in each pair representing the $20 fixed pay and the other circle representing the reward (see Appendix D). The seven pairs of circles vary in the degree of overlap between the circles, which reflects the perceived similarity between the $20 fixed pay and the reward (greater degree of overlap indicates greater perceived similarity). We ask participants to choose one pair of circles that best captures how they perceive the degree of similarity between the two forms of compensation. To create our measure, *Distinctiveness*, we convert participants' choices using a numerical scale with endpoints of 1 and 7 (higher values indicate lower distinctiveness). Table 4, Panel A, presents descriptive statistics by condition for *Distinctiveness* and our measures of interest. Participants view the reward as being more similar (i.e., *Distinctiveness* is higher) in the cash reward condition than in the tangible reward condition ($t(80) = 3.61$, one-tailed $p < 0.01$, untabulated).

[Insert Table 4 here]

Consistent with the hypothesis, we find a tangible reward leads to greater performance than a cash reward.[15] We test this hypothesis using similar analyses to those used in Study 3; we compare *Post-Performance* and *Post-Attainment* across conditions while controlling for *Pre-Performance* and *Pre-Attainment*, respectively. We present the results in Table 4, Panel B (*Post-Performance*) and Panel C (*Post-Attainment*). Both *Post-Performance* (one-tailed p = 0.01) and *Post-Attainment* (one-tailed p = 0.10) are higher in the tangible reward condition. Thus, when all three differences between cash and tangible rewards are present, we find tangible rewards are more motivating than cash rewards, in a manner consistent with proponents' claims.[16] As noted earlier, this is notable given the countervailing motivational effects of cash rewards due to their greater fungibility.

VII. CONCLUSION

Many firms offer tangible rewards in lieu of cash rewards to motivate their employees. Using four studies, we examine three differences between cash and tangible rewards commonly cited by proponents of tangible rewards: (1) fungibility, (2) hedonic nature, (3) novelty, and (4) discrete framing. We find these differences each contribute to the motivational effects of tangible rewards, both individually (Study 2 and 3) and collectively (Study 4). We also find the greater fungibility of cash rewards can counteract the motivational effects of tangible rewards. One

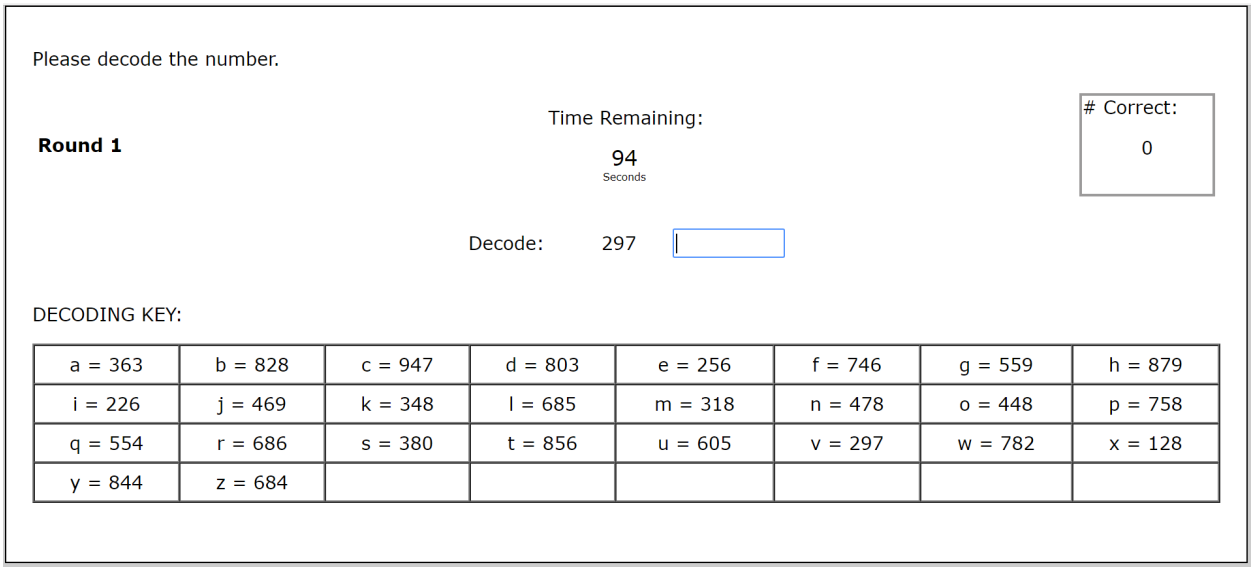
[15] Since we use a goal-based compensation scheme, we expect the effect of cash versus tangible rewards on performance will operate through participants' goal commitment. To measure participants' goal commitment, we ask the following question immediately before round 9: "How committed are you to correctly positioning at least 39 sliders in a 2-minute round?" Participants indicate their commitment using a 7-point scale with endpoints of 1 (Not Committed) and 7 (Very Committed). Consistent with our expectations, we find goal commitment is higher in the tangible reward condition (Mean = 6.15, Standard Deviation = 1.29) than in the cash reward condition (Mean = 5.67, Standard Deviation = 1.49) (t = 1.56, one-tailed p = 0.06).

[16] When we define *Pre-Attainment* and *Pre-Performance* as performance/goal attainment in rounds 1-8 and not rounds 5-8, we continue to find directional support (albeit weaker) for the hypothesis (*Post-Performance*: one-tailed p = 0.04; *Post-Attainment*: one-tailed p = 0.16). For both analyses, however, the adjusted R^2 is lower for this alternative specification than for the analyses reported in Table 3 (*Post-Performance* R^2 = 0.67; *Post-Attainment* R^2 = 0.69), indicating the analyses in Table 3 appear to be a better fit for the data.

implication is that a multitude of differences between cash and tangible rewards may be necessary in order for the motivational benefits of tangible rewards to materialize. Overall, by focusing on reward attribute differences between cash and tangible rewards, our study complements prior research by going beyond *whether* tangible rewards motivate greater effect than cash rewards and examining *why* tangible rewards motivate greater effort.

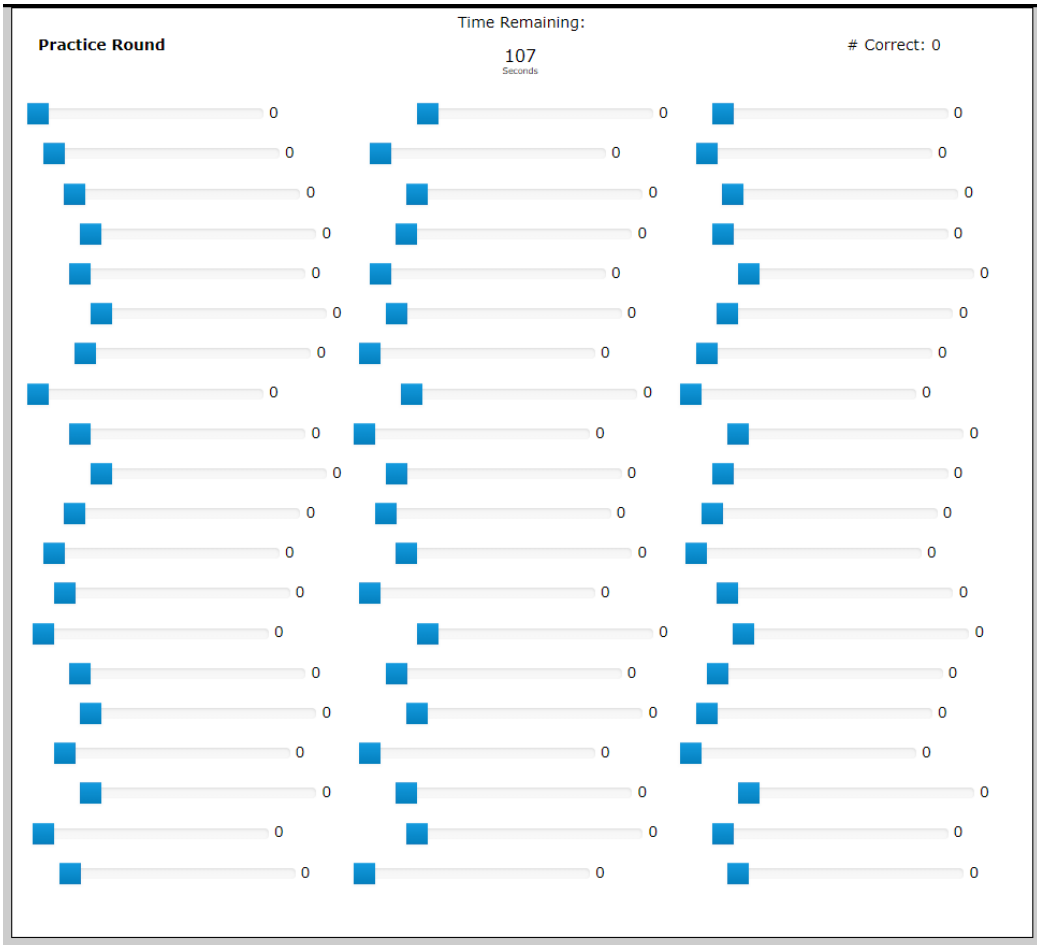
Future research can build on our study in several ways. First, while the four differences we examine in this study apply to both material and experiential tangible rewards, future research could examine other differences, including those that only apply to either material or experiential tangible rewards (e.g., tangible rewards with trophy value). Relatedly, future research could examine whether increasing the fungibility of tangible rewards (e.g., offering an Amazon gift card or allowing employees to choose from a menu of tangible reward options) could serve to neutralize the counteracting motivational effects of cash rewards. Finally, future research could examine proponents' other claims regarding the advantages from using tangible rewards. Specifically, incentive consultants claim *discontinuing* a rewards program is less damaging for tangible rewards than for cash rewards because employees develop less of an expectation for the tangible reward (Flanagan 2006).

Appendix A
Decode Task Screenshot



We adapt Chow's (1983) decode task for Study 3. Participants translate numbers into letters using a translation key, which is provided at the bottom of the screen. Participants receive a new translation key at the start of each round. Each correct translation increases performance by one. During the round, participants receive real-time information regarding their performance (number of correct translations) and the time remaining in the round.

Appendix B
Slider Task Screenshot



We adapt Gill and Prowse's (2012) slider task for Study 4. Participants see a series of sliders with endpoints of 0 and 100, and each slider has a slider box initially set at 0. The objective is to use the computer mouse and drag the slider box to the midpoint of the slider (50). During the round, participants receive real-time information regarding their performance (number of correctly positioned slider boxes) and the time remaining in the round.

Appendix C
Reward Type Manipulation in Study 4

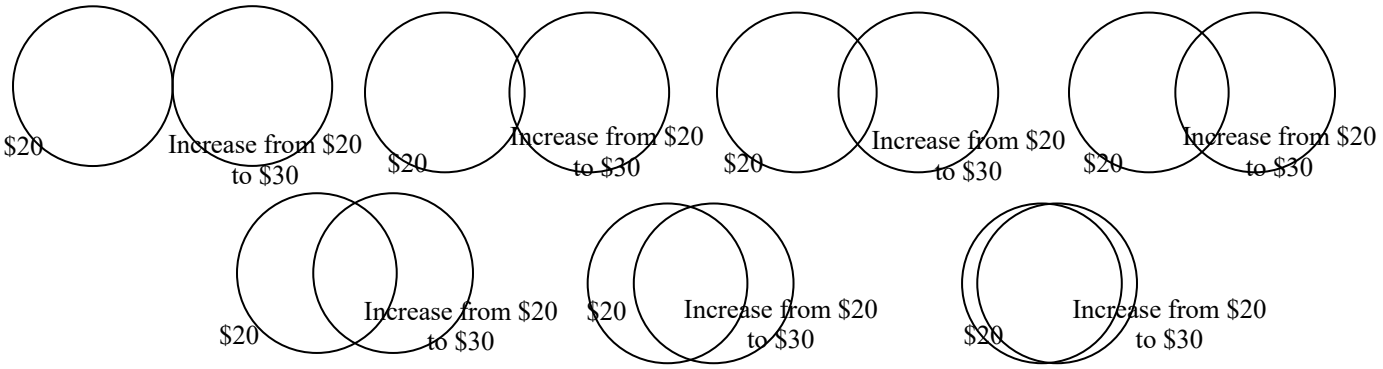
Difference Between Cash and Tangible Rewards	Cash Reward ($10 Cash for Goal Attainment)	Tangible Reward ($10 AMC Gift Card for Goal Attainment)
Fungibility (More vs. Less)	More: Cash	Less: Gift card is redeemable only at AMC movie theaters.
Hedonic Nature (Utilitarian vs. Hedonic Consumption)	Utilitarian: Reward spent on "necessary and helpful things, like paying bills and buying groceries."	Hedonic: Rewards spent on "movie tickets and to buy concession items (i.e., snacks, candy, and drinks)."
Novelty (Expected vs. Unexpected Reward Opportunity)	Expected: Immediately before round 1, participants learn about opportunity to earn the reward in rounds 1-12.	Unexpected: Immediately before round 9, participants learn about opportunity to earn the reward in rounds 9-12.
Discrete Framing (Joint vs. Discrete)	Joint: Instead of $20, participants earn "$30" for goal attainment	Discrete: Instead of $20, participants earn "$20 and an additional $10 AMC gift card" for goal attainment.

In Study 4, we use a holistic manipulation emphasizing all four differences discussed in Section II: (1) fungibility (More versus Less), (2) hedonic nature (utilitarian versus hedonic consumption), (3) novelty (expected versus unexpected reward opportunity), and (4) discrete framing (joint versus discrete).

Appendix D
Post-Experimental Questionnaire Item Capturing *Distinctiveness*

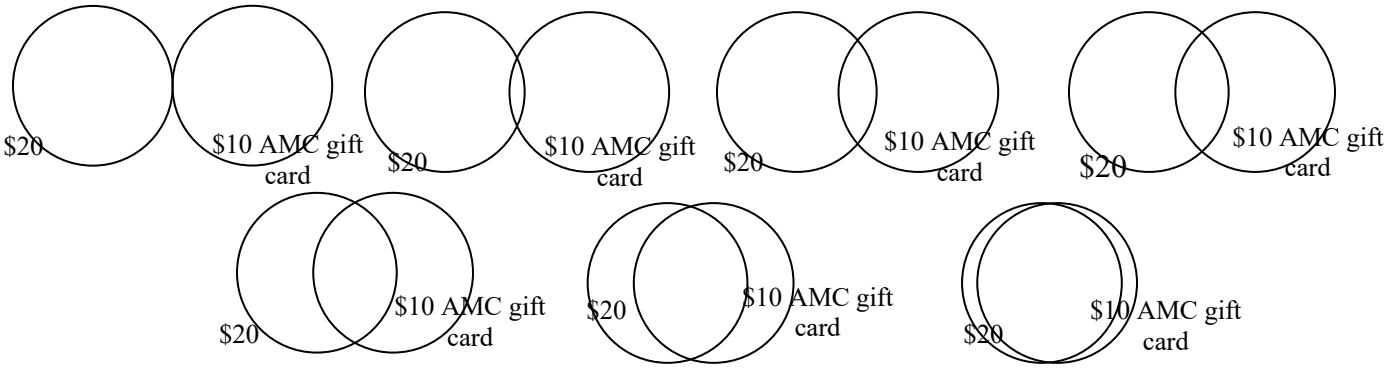
Cash Reward Condition

Below are two circles, one representing the $20 and the other representing the increase to $30 you would earn for achieving the performance goal. The greater the overlap between the two circles, the more similar those items are to one another. Which picture below best describes how you think about the two items?



Tangible Reward Condition

Below are two circles, one representing the $20 and the other representing the additional $10 AMC gift card you would earn for achieving the performance goal. The greater the overlap between the two circles, the more similar those items are to one another. Which picture below best describes how you think about the two items?



We create our measure, *Distinctiveness*, using participants' responses to this post-experimental questionnaire item. We present participants with seven pairs of circles, with one circle in each pair representing the participant's $20 fixed pay (salary), and the other circle representing the $10 reward. The seven pairs of circles vary in the degree of overlap between the circles, with a greater degree of overlap indicating greater perceived similarity. Participants choose one pair of circles that best captures how they perceive the degree of similarity between the two forms of compensation. We convert participants' choices using a numerical scale with endpoints of 1 and 7 (higher values indicate greater perceived similarity).

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Figure 1
Conceptual Model

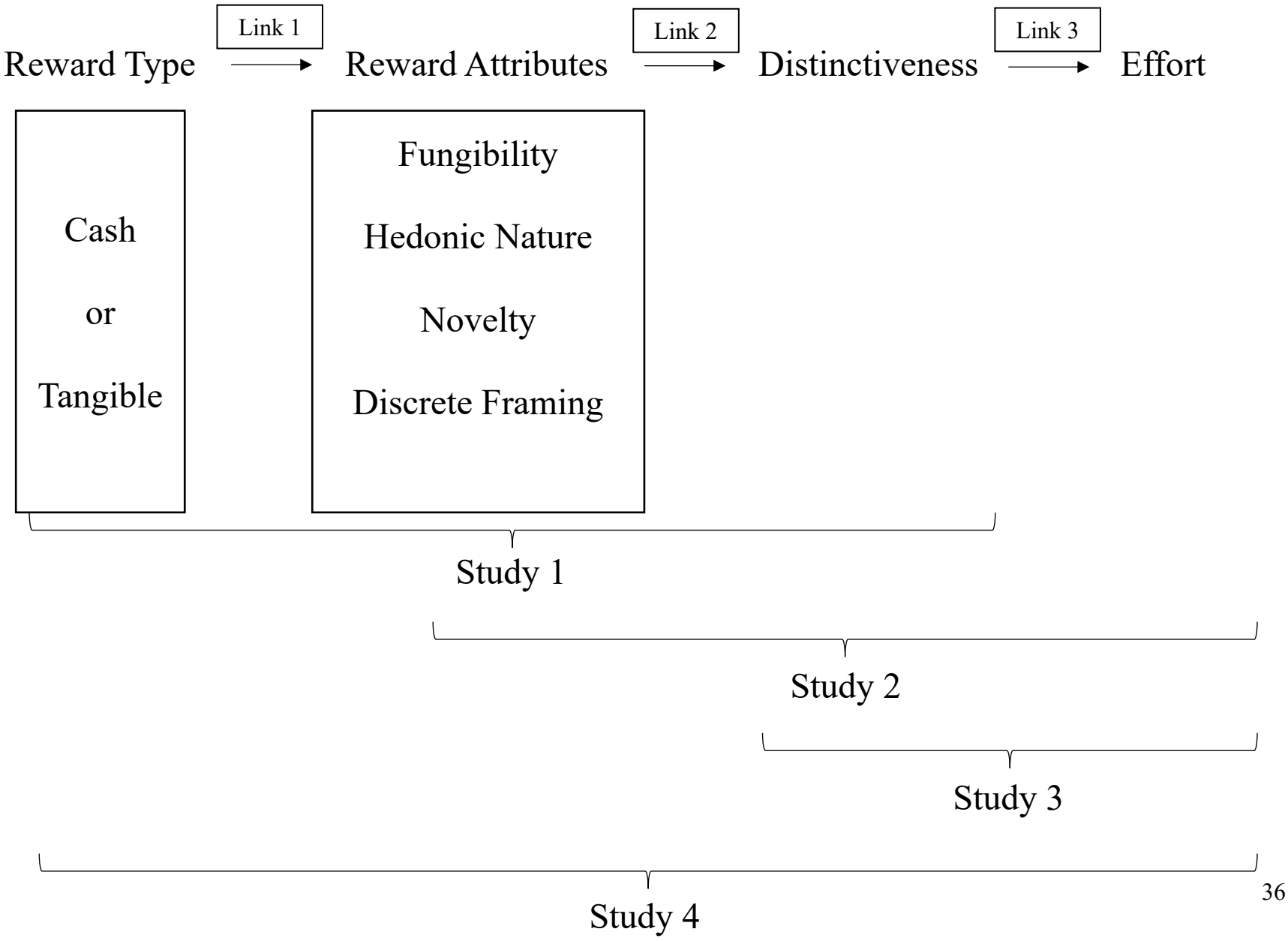

Table 1
Study 1 Results

Panel A: Mean (Standard Deviations)

	Order 1 (N = 77)		Order 2 (N =78)		Overall (N = 155)	
	Cash	Tangible	Cash	Tangible	Cash	Tangible
Fungibility	6.32 (1.01)	4.59 (1.71)	6.20 (1.21)	5.25 (1.29)	6.25 (1.12)	4.92 (1.55)
Hedonic Nature	5.30 (1.60)	5.23 (1.39)	4.60 (1.45)	5.37 (1.35)	4.91 (1.45)	5.34 (1.47)
Novelty	4.26 (1.91)	5.39 (1.32)	3.68 (2.12)	5.34 (1.34)	3.98 (2.03)	5.37 (1.32)
Distinctiveness	5.12 (1.49)	5.94 (1.13)	4.46 (1.74)	5.51 (1.63)	4.79 (1.65)	5.72 (1.41)

Panel B: Path Analysis

	Unstandardized Estimates	Standard Errors	z-stat	One-tailed p-value
Reward Type → *Fungibility*	−1.33	0.15	-9.00	< 0.01
Reward Type → *Hedonic Nature*	0.42	0.16	2.62	< 0.01
Reward Type → *Novelty*	1.40	0.17	8.36	< 0.01
Fungibility → *Distinctiveness*	-0.13	0.06	-2.08	0.02
Hedonic Nature → *Distinctiveness*	0.26	0.07	3.88	< 0.01
Novelty → *Distinctiveness*	0.23	0.06	3.77	< 0.01

Fungibility, Hedonic Nature, and *Novelty* are participants' ratings of the likelihood that cash and tangible rewards have each attribute; participants provide their ratings using a 7-point scale with endpoints of -3 (Very Unlikely) and +3 (Very Likely). *Distinctiveness* is participants' ratings of the likelihood that cash and tangible rewards feel distinct from salary and not simply "more salary." Participants provide their ratings using a 7-point scale with endpoints of -3 (Very Unlikely) and +3 (Very Likely).

In the path analysis, *Reward Type* is equal to 0 for cash rewards and 1 for tangible rewards. Standard errors are bootstrapped using 10,000 replications (Hayes 2018). We cluster standard errors by participant to address the potential for correlated error terms due to multiple observations from the same participant.

Table 2
Study 2 Results

Panel A: *Fungibility* Mean (Standard Deviation)

	Low [N = 74]	High [N = 72]	t-stat	One-tailed p-value
Fungibility	4.14 (2.19)	6.02 (1.07)	-6.60	< 0.01

Panel B: *Hedonic Nature* Mean (Standard Deviation)

	Utilitarian [N = 74]	Hedonic [N = 74]	t-stat	One-tailed p-value
Hedonic Nature	5.16 (1.69)	5.66 (1.33)	1.99	0.02

Panel C: *Novelty* Mean (Standard Deviation)

	Low [N = 71]	High [N = 76]	t-stat	One-tailed p-value
Novelty	4.99 (1.74)	5.58 (1.29)	2.36	0.01

Fungibility, Hedonic Nature, and *Novelty* are participants' ratings of how motivating they would find a reward with the given attribute. Participants provide their ratings using a 7-point scale with endpoints of -3 (Not Motivating At All) and +3 (Highly Motivating). We vary the level of each attribute, and participants provide their rating for one level of one attribute.

Table 3
Study 3 Results

Panel A: Mean (Standard Deviation) Results by Condition

Measure	Conditions: Low Distinctiveness [n = 33]	Conditions: High Distinctiveness [n = 33]
Distinctiveness	0.58	3.21
	(2.89)	(2.04)
Pre-Performance	24.44	24.63
	(5.30)	(4.20)
Post-Performance	24.92	26.14
	(4.96)	(4.28)
Performance Change	0.47	1.51
	(2.25)	(1.91)
Pre-Attainment	1.97	2.12
	(1.70)	(1.49)
Post-Attainment	2.06	2.52
	(1.50)	(1.25)
Attainment Change	0.09	0.39
	(1.10)	(1.17)

Panel B: Analysis of *Post-Performance*
Model: $Post\text{-}Performance = \beta_0 + \beta_1(Distinctiveness\ Condition) + \beta_2\,(Pre\text{-}Performance) + \varepsilon_i$

	Coef.	**S.E.**	**t-stat**	**p-value**[1]
Intercept	4.55	1.34	3.39	< 0.01
Distinctiveness Condition	0.53	0.25	2.14	0.02
Pre-Performance	0.88	0.05	16.65	< 0.01
Adjusted R^2 = 81.2%				

Panel C: Analysis of *Post-Attainment*
Model: $Post\text{-}Attainment = \beta_0 + \beta_1(Distinctiveness\ Condition) + \beta_2\,(Pre\text{-}Attainment) + \varepsilon_i$

	Coef.	**S.E.**	**t-stat**	**p-value**[1]
Intercept	1.20	0.23	5.17	< 0.01
Distinctiveness Condition	0.18	0.12	1.51	0.07
Pre-Attainment	0.62	0.08	8.23	< 0.01
Adjusted R^2 = 51.6%				

Table 3 (Continued)

Distinctiveness is a post-experimental questionnaire item capturing participants' agreement with the following statement: "I consider [the bonus of $10 cash/wage increase] for achieving the performance goal in rounds 5-8 as being separate from my [$25 salary/$25 wage]." Participants respond using an 11-point scale, with endpoints of -5 (strongly disagree) and +5 (strongly agree). *Pre-Performance* is the average number of correct translations in a round over the first four rounds. *Pre-Attainment* is the number of times a participant attains the performance goal in the first four rounds. *Post-Performance* is the average number of correct translations in a round over the last four rounds. *Post-Attainment* is the number of times a participant attains the performance goal in the last four rounds. *Performance Change* is equal to *Post-Performance – Pre-Performance*. *Attainment Change* is equal to *Post-Attainment – Pre-Attainment*.

[1] *Distinctiveness Condition* is equal to 0 for the low distinctiveness condition and 1 for the high distinctiveness condition. The p-values for *Distinctiveness Condition* are one-tailed. All other p-values are two-tailed.

Table 4
Study 4 Results

Panel A: Mean (Standard Deviation) Results by Condition

	Reward Type	
	Cash	Tangible
Measure	[N = 42]	[N = 40]
Distinctiveness	4.36	2.95
	(1.91)	(1.60)
Pre-Performance	35.87	35.20
	(7.07)	(7.76)
Post-Performance	35.65	37.98
	(9.04)	(7.19)
Performance Change	-0.22	2.77
	(5.28)	(3.41)
Pre-Attainment	1.73	1.80
	(1.82)	(1.60)
Post-Attainment	1.95	2.48
	(1.77)	(1.66)
Attainment Change	0.21	0.68
	(0.68)	(1.12)

Panel B: Analysis of *Post-Performance*

Model: $Post\text{-}Performance = \beta_0 + \beta_1(Reward\ Type) + \beta_2\,(Pre\text{-}Performance) + \varepsilon_i$

	Coef.	**S.E.**	**t-stat**	**p-value**[1]
Intercept	0.64	2.30	0.28	0.78
Reward Type	1.52	0.66	2.29	0.01
Pre-Performance	0.96	0.06	15.60	< 0.01
Adjusted R^2 = 73.0%				

Panel C: Analysis of *Post-Attainment*

Model: $Post\text{-}Attainment = \beta_0 + \beta_1(Reward\ Type) + \beta_2\,(Pre\text{-}Attainment) + \varepsilon_i$

	Coef.	**S.E.**	**t-stat**	**p-value**[1]
Intercept	0.45	0.22	2.08	0.04
Reward Type	0.19	0.14	1.32	0.10
Pre-Attainment	0.86	0.06	14.90	< 0.01
Adjusted R^2 = 71.1%				

Table 4 (Continued)

Distinctiveness is participants' responses to a post-experimental questionnaire item in which participants see seven pairs of circles, with one circle in each pair representing the participant's $20 fixed pay and the other circle representing the reward. The seven pairs of circles vary in the degree of overlap between the circles, with greater overlap indicating greater perceived similarity between the two forms of compensation. Participants choose one pair of circles that best captures how they perceive the similarity between the two forms of compensation. We convert participants' choices using a numerical scale with endpoints of 1 and 7 (higher values reflect greater perceived similarity). *Pre-Performance* is the average number of correct translations in rounds 5-8. *Pre-Attainment* is the number of times a participant attains the performance goal in rounds 5-8. *Post-Performance* is the average number of correct translations in rounds 9-12. *Post-Attainment* is the number of times a participant attains the performance goal in rounds 9-12. *Performance Change* is equal to *Post-Performance – Pre-Performance*. *Attainment Change* is equal to *Post-Attainment – Pre-Attainment*.

[1] *Reward Type* is equal to 0 for the cash reward condition and 1 for the tangible reward condition. The p-values for *Reward Type* are one-tailed. All other p-values are two-tailed.