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The Effects of Reward Type and Relative Performance Information on Budget Slack and Performance

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

To motivate effort, organizations commonly use budget-based tangible rewards (e.g., gift cards, merchandise) in lieu of or in addition to cash rewards and they can distribute tangible rewards to employees either directly (employees are given merchandise directly) or indirectly (via a redeemable points program). In conjunction with various budget-based financial rewards, employees can receive feedback about how they performed relative to other employees. However, employees can intentionally misstate their expected performance (i.e., create budget slack) when participating in the budgeting process, impairing the usefulness of budgets for planning and motivation. This dissertation investigates the effects of different types of budget-based rewards (cash, tangible, or redeemable points) on budget slack creation and performance, and whether relative performance information [RPI] moderates these effects. As predicted, results from an experiment completed by 166 undergraduate students show that participants eligible to earn redeemable points create less slack (i.e., set more difficult performance budgets) than those eligible for cash or direct tangible rewards. Further, RPI provides participants with a descriptive norm that slack creation is socially acceptable, resulting in more slack. Although I do not find support for the predicted indirect relationship between reward type or RPI on performance via their effects on budget slack, I do find that the provision of RPI has a direct positive effect on performance. Finally, supplemental analysis shows that those provided with RPI and cash rewards outperform all others. These results suggest that firms choosing to provide budget-based tangible rewards and allowing employees to participate in the budgeting process should consider using a redeemable points system rather than providing rewards directly to eligible employees. Further, before deciding whether to provide RPI to employees, firms should weigh the positive direct effects of RPI on performance against its negative effects on budget slack creation. Last, if a firm does choose to provide employees with RPI because of its positive effects on employee effort, firms may be well-advised to offer employees budget-based cash rewards instead of budget-based tangible rewards or budget-based points rewards.

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Chapter 1: Introduction

Organizations often use performance-based tangible rewards such as gift cards, trips, and merchandise in addition to, or instead of, cash to motivate and control employee effort (Long and Shields 2010; Peltier et al. 2005). Tangible rewards are non-cash incentives that are restricted in use but still have a measurable monetary value (Condly et al. 2003; Presslee et al. 2013). Two methods of distributing tangible rewards include providing them directly (e.g., eligible employees receive merchandise) or providing them indirectly through a redeemable-points program where employees earn points that can be used to acquire tangible rewards of their choosing. In multi-agent firms, budget-based rewards are often distributed in conjunction with feedback about others relative performance as a means to increase knowledge sharing and competition among employees (Fisher et al. 2002; Gino and Staats 2011; Nordstrom et al. 1990). Organizations spend billions of dollars annually on performance-based tangible rewards (Incentive Federation 2007; Peltier et al. 2005) and there is evidence that individuals think and perform differently when eligible for these rewards compared to cash (e.g., Jeffrey 2009; McGraw et al. 2010; Presslee et al. 2013; Shaffer and Arkes 2009). However, few studies have examined the motivational properties of tangible rewards or the factors, such as relative performance information, that moderate their effectiveness.

Budgets are important tools for organizational planning and control, and employers regularly involve employees in the budgeting process in an effort to collect their private information and to increase their motivation toward target attainment (Covaleski et al. 2003; Shields and Shields 1998). Employers also often reward employees when their performance

meets or exceeds these budgets. However, an unintended consequence of offering employees budget-based rewards and involving them in the budgeting process is that they have both the financial incentive and the opportunity to understate their productive capability (i.e., create slack) by setting easily attainable budgets (Dunk and Nouri 1998).[1] Given the well-documented association between budget difficulty and performance, it is important to examine the factors that influence employees' budgeting behavior and slack creation (Luft and Shields 2009). Presslee et al. (2013) provide initial evidence that employees think differently about cash and redeemable points, and show that these differences can affect their risk-based decisions in terms of goal setting, and their performance. I extend their study by investigating whether and how the type of budget-based rewards (cash, tangible, or redeemable points) affects slack creation and performance.

In conjunction with budget-based rewards, employees regularly receive information about other employees' performance as a mechanism to improve information exchange and motivation (Gino and Staats 2011; Mas and Moretti 2009; Nordstrom et al. 1990; Vidal and Nossel 2011). Fisher et al. (2002) find that relative performance information [RPI] about others' budget proposals and performance impacts budgeting behaviour by encouraging less slack creation. Moreover, theory suggests that the type of budget-based rewards may impact how employees interpret ambiguous RPI. Accordingly, I examine how the provision of RPI in

[1] In my study, budget slack has negative implications because it allows participants to earn excess rents and could negatively affect planning that relies on budgeted numbers. However, budget slack can also have positive implications for an organization and may be necessary in some settings that contain environmental uncertainty (see Covaleski et al. (2003) for discussion). For example, Merchant and Manzoni (1989) find that more achievable performance targets, or targets containing more slack, lead to improved corporate reporting, resource planning, and employee motivation.

the form of budget variance (i.e., performance above or below budget) directly affects budgeting behaviour as well as its role in moderating the effects of reward type on budgeting.[2]

Prior research characterizes budget slack as dishonest reporting in settings when employees possess private information and there is limited environmental uncertainty (e.g., Church et al. 2012; Hannan et al. 2006). Typically, people derive utility from obeying the personal norm of honesty (Evans et al. 2001) and they behave dishonestly only to the extent that they can rationalize doing so (Ariely 2012). Compared to cash rewards, tangible rewards are viewed as more attractive and generate greater positive affect because they are used more for "wants" than for "needs" (Jeffrey 2009, p. 144). Thus, I expect that people pursuing tangible rewards will be better able to rationalize their dishonesty because they will anticipate experiencing greater positive emotion with respect to receiving the rewards (Vincent et al. 2012). As a result I predict that individuals pursuing tangible rewards will create more budget slack than those pursuing cash rewards. Next, I argue that redeemable points are a medium that diminishes the saliency and attractiveness of a financial outcome (Hsee et al. 2003). Consequently, I predict redeemable points will *reduce* people's ability to rationalize dishonesty and will lead to lower slack creation relative to both cash and tangible rewards.

I also predict that the provision of RPI in the form of budget variances will lead to more budget slack because RPI creates a descriptive norm that dishonest reporting is acceptable. Further, I predict the personal norms associated with reward type and the descriptive norm associated with RPI will interact to affect slack creation. Specifically, the effects of reward type on making salient a personal norm of honesty diminishes the effect of

[2] Relative performance evaluation (RPE) incorporates RPI in the evaluation and compensation of employees. I consider a setting where employees' evaluation and compensation does not depend on RPI.

RPI on budget slack. Thus, I predict RPI will lead to more slack for those pursuing tangible rewards than those pursuing either cash rewards or points rewards.

Regarding performance, I predict that reward type and RPI will indirectly affect performance through their effects on budget slack. Budget slack by definition decreases the difficulty of budgets and there is extensive empirical support for the positive association between budget (goal) difficulty and performance (Bonner and Sprinkle 2002; Waller and Chow 1985). Thus, because tangible rewards are predicted to lead to more slack than either cash rewards or points rewards, I expect tangible rewards will have a negative indirect effect on performance compared to cash rewards and points rewards. I also consider the direct effects of reward type and RPI on performance. Because theory and empirical evidence are mixed regarding the performance effects of various reward types (e.g., Jeffrey 2009; Presslee et al. 2013; Shaffer and Arkes 2009), I explore the direct effects of reward type on performance. Finally, I predict that RPI will have a positive direct effect on performance because employees are likely to compete against one another by working harder to exceed their budget (Mas and Moretti 2009; Tafkov 2013).

I test my predictions with 166 undergraduate students who participated in a 2 x 3 between subjects experiment where they completed online concession stand orders using an effort-sensitive task. After completing three training periods, participants performed three, two-minute rounds of the same task, with minimal task uncertainty. For these three production rounds, participants were randomly assigned to one of three reward type conditions (cash rewards, tangible rewards, or redeemable points rewards) and one of the two RPI conditions (absent or present). Prior to each round, participants budgeted their performance for that

round. During each round, participants earned a reward ($1 cash, $1 on a gift card, or 1 point redeemable for $1 on a gift card) for each order they completed above budget. After each round, participants were provided with RPI on the budget variance (correct orders above (below) budget) for the other two members of their work group. Budget slack is calculated as the difference between individuals performance in practice round 3 and their budget, and performance is calculated as the number of orders correctly completed in each round.

Results show that those compensated with redeemable points created less budget slack than those compensated with either cash or tangible rewards. As predicted, participants assigned to the points-based reward condition view the reward as less attractive, have a weaker affective response, and thus create less slack. Results also show that the provision of RPI leads participants to create more slack by providing them with evidence that dishonest reporting is more acceptable. I also find that reward type and RPI interact such that the personal norms made salient by reward type influence how participants interpret RPI feedback; thus, of those provided RPI, those pursuing tangible rewards create more slack than those pursuing cash rewards or points rewards. Regarding performance, I do not find the predicted negative association between budget slack and performance nor do I find a direct effect of reward type on performance. However, as predicted, I do find that RPI has a positive direct effect on performance and that those pursuing cash and receiving RPI outperform all other conditions.

My findings have implications for theory and practice. First, results suggest that an organization's reward structure can influence employees' perceptions of social norms and that these norms can help control employee behaviour (Tayler and Bloomfield 2011). Specifically,

redeemable points rewards lead to the *most* challenging budgets (least slack), even though the monetary value of points is identical to that of cash and tangible rewards. To my knowledge, mine is the first study to show how the reward medium influences slack creation and as such should be of interest to designers of reward systems responsible for determining the types of budget-based rewards to provide employees. Moreover, this finding provides a greater theoretical understanding of the factors that influence the difficulty of self-set budgets and should be of interest to other researchers interested in budgeting behavior. Second, I extend recent research examining the effects of RPI on honesty in reporting (e.g., Church et al. 2012; Fisher et al. 2002; Hales et al. 2011; Maas and Van Rinsum 2011) and on performance (e.g., Hannan et al. 2012; Tafkov 2013). In terms of budgeting behaviour, I find that provision of RPI can lead to more slack by signaling that dishonest reporting is socially acceptable. However, I also find that provision of RPI encourages better performance by establishing a referent for social comparison, thereby encouraging greater effort. These results suggest firms should consider the relative strength of these opposing forces on planning and performance when deciding whether to provide employees with RPI. Last, my results suggest that if firms choose to provide RPI and desire improved performance, they are well-advised to offer employees budget-based cash rewards instead of tangible rewards or points rewards.

The remainder of this thesis is organized as follows. In Chapter 2, I review economic, psychology, and accounting literatures as they relate to budgeting, budget slack and honesty in reporting, reward type, and relative performance information. In Chapter 3, I develop my predictions regarding the effects of reward type and relative performance information on budget slack and performance. In Chapter 4, I present the research design. In Chapter 5, I

discuss the results of the hypotheses test, and in Chapter 6, I draw conclusions about the study's results.

Chapter 2: Literature Review

2.1 Introduction

In this chapter, I apply economics and psychology theories 1) to examine the effects of budget-based incentives on budget slack and performance and 2) to explore the effects of reward type and relative performance information [RPI] on employee behaviour. This chapter is organized as follows. In Section 2.2, I describe a general budget-based incentive contract that provides the scenario for this dissertation. In Section 2.3, I review literature on the motivational properties of budgets, on budget-based incentives, and on employee participation in the budgeting process. In Section 2.4, I review literature on budget slack and discuss the link between budget slack and dishonest reporting. In Sections 2.5 and 2.6, I review literature on how employee behaviour is affected by reward type and RPI, respectively. Lastly, I conclude in Section 2.7.

2.2 Budget Scenario

I consider a budget scenario in which an employee determines his performance budget; the employer uses this budget as a benchmark to compensate the employee for his or her actual performance (i.e., a participative budget-based incentive contract).[3] Specifically, I employ a slack-inducing incentive contract in which an employee maintains private

[3] Demski and Feltham (1978) argue that a budget-based incentive contract has three features. First, in the contract, employee compensation is, in part, a function of observable outcomes that are controllable by the employee. Second, the contract outlines a budget or standard that partitions possible outcomes into favourable or unfavourable. Finally, the contract contains a compensation function consisting of two sub-functions, one for each outcome.

information about his performance capabilities and receives a piece-rate bonus for each unit of performance in excess of his self-set budget (see equation 1):[4]

$$\text{Subordinates' Compensation} = S \quad \text{if } X \leq B$$
$$\text{Subordinates' Compensation} = S + A(X - B) \quad \text{if } X > B \qquad (1)$$

where:

S = salary (base pay)

X = actual performance

B = self-set budgeted production

A = compensation per unit of production over budget

2.3 Budgets, Budget-Based Incentives, and Participation in the Budgeting Process

Budgets are an important tool used for organizational planning and control. For planning purposes, employers use budgets to communicate the intended use of firm resources, to coordinate activities of the organization, and to uncover potential logistical issues or bottlenecks (Garrison et al. 2012; Merchant and Van der Stede 2003). For example, Davila and Foster (2005) analyze data from 78 startup companies and find that many of these companies adopt operating and cash budgets for planning purposes and that early adoption is positively associated with company growth. For control purposes, employers use the targets contained within budgets to motivate employee effort and to evaluate employee performance. In their 2010 survey, Libby and Lindsay find that approximately 80% of employers use budgets for control purposes such as performance evaluation, and 95% of them plan to

[4] A budget-linear incentive contract provides no remuneration for performance below the budget target but provides a linear piece-rate for performance exceeding the budget target (see equation 1). A budget-fixed incentive contract provides no remuneration for performance below the budget target but provides a fixed bonus for performance meeting or exceeding the budget target (i.e., the A(X-B) term in equation 1 is replaced with a fixed dollar amount).

continue using budgets as a control mechanism.[5]

In this section, I apply Goal Theory to describe how budget targets can have a considerable effect on employee effort. Then, I discuss how incentive contracts that tie employee compensation to the achievement of budget targets can enhance employees' budget commitment and effort. Last, I explain how employee participation in the budgeting process can improve both organizational planning and control.

2.3.1 Budget Targets as Personal Goals

The targets contained within performance budgets can encourage employees to set personal performance goals (Fisher et al. 2003; Kenis 1979). According to Goal Theory, personal goals represent cognitive images of desired future outcomes, and these images are the primary determinant of the level of effort an individual will exert (Locke and Latham 1990). Moreover, a well-established finding is that difficult and specific goals motivate greater effort towards goal attainment, until people reach the limits of their ability (Locke et al. 1981; Locke and Latham 1991; Mento et al. 1987).[6] Personal goals positively affect effort by directing peoples' attention towards goal-relevant activities and by increasing the duration and intensity of their effort towards goal attainment (Locke and Latham 2002).[7] Thus, budget targets influence employee effort by encouraging employees to set personal goals when they

[5] Libby and Lindsay's (2010) finding that budgets are regularly used for motivation purposes conflicts with Sivabalan et al.'s (2009) conclusion that budgets are used more for planning and control purposes (excluding performance evaluation) than for motivation purposes.

[6] Although Atkinson (1958) claims that the relationship between goal difficulty and performance reflects an inverse-U, Latham and Locke (2002) describe the relationship as concave.

[7] Personal goals can also increase performance on cognitive tasks by increasing the use of task-relevant knowledge and by improving strategy (Locke and Latham 2002). My dissertation examines performance on an effort-intensive task (i.e., low cognitive-demanding task). Thus, these features of personal goals are outside of the scope of this study.

otherwise would not or by encouraging them to set higher personal goals than they otherwise would (Latham and Locke 1991).

Central to the positive relationship between budget difficulty and employee effort is their acceptance of, and commitment to, budget targets as personal goals (Klein et al. 1999; Wright et al. 1994).[8] Goal acceptance and commitment are terms that define an individual's determination to try, and keep trying, for a desired end state or goal (Hollenbeck and Klein 1987; Locke et al. 1981).[9] The two primary determinants of goal acceptance and commitment are the attractiveness of goal attainment and the expectancy of goal attainment (Locke et al. 1988; Hollenbeck and Klein 1987). Goal attractiveness represents an individual's "anticipated satisfaction from goal attainment" (Klein 1991, p. 238). Expectancy represents an individual's perceived probability or likelihood that if sufficient effort is exerted a desired performance level or outcome is achieved (referred to as the effort-outcome relationship) (Bonner and Sprinkle 2002; Vroom 1964). Therefore, by increasing employees' perceptions that the target is both attractive and achievable, employers increase the likelihood that difficult budget targets will have a positive effect on employee effort.

[8] When goals are assigned, goal commitment moderates the effect of goal difficulty on performance (Klein et al. 1999; Wright et al. 1994). That is, the positive effect of goal difficulty on performance increases only when goal commitment is sufficiently high. However, when goals are assigned to individuals of the same ability or an individual self-selects his performance goal, goal commitment mediates the effect of personal goal difficulty on performance (Klein and Kim 1998).

[9] Goal acceptance reflects an individual's initial agreement with an assigned goal and represents a measure of goal attractiveness and expectancy of goal attainment prior to any effort being exerted (Erez and Zidon 1984). Thus, measures of goal acceptance are initial measures of goal commitment (Hollenbeck et al. 1987). Goal commitment is a point in time measure, and research shows that measures of commitment close to the end of performance are more correlated with performance than initial measures of commitment such as goal acceptance (Klein et al. 2001).

2.3.2 Budget-Based Incentives

Employees often receive a bonus for performance-to-budget (i.e., budget variance) to enhance both their commitment towards budget attainment and their performance (e.g., Indjejikian and Nanda 2002; Murphy 2001). In their meta-analysis, Locke et al. (1981) maintain that there are two ways that goal-contingent (or budget-contingent) financial incentives may affect effort.[10] First, these incentives can encourage people to set more difficult personal goals than they otherwise would because budget-relevant effort increases personal wealth (Covaleski et al. 2003; Jenkins et al. 1998). Second, goal-contingent financial incentives increase commitment by increasing the valance and attractiveness of goal attainment and stressing its importance (Klein and Wright 1994; Wright 1989; 1992). Indeed, studies find that budget-based incentives positively impact performance by increasing commitment towards goal attainment and by clearly linking pay with effort. Bonner et al. (2000) review 131 experiments and observe that budget-based incentives (referred to as quota-based incentives) have the highest likelihood of positively affecting effort compared to piece-rate, tournament, or flat-wage incentives.[11] Further, Fisher et al. (2003) find that the positive effect of budget-based incentives extends to group performance. The authors show that group budget-based contract lead to higher group performance than group piece-rate

[10] Although rare, there is some research that suggests cash incentives may alter an individual's level of expectancy in certain situations (e.g., Wright and Kacmar 1995).

[11] Webb et al. (2013) find that challenging targets and target-based pay reduce the discovery of production efficiencies (i.e., thinking "outside-the-box"), yet motivate higher conventional productive effort. Thus, target-based or budget-based incentives may be counterproductive if the desired effort is creative output rather than conventional output.

contracts do and that a group budget-linear contract leads to greater performance than a group budget-fixed contract.[12]

2.3.3 Participation in the Budgeting Process

Participative budgeting describes the "process in which [an employee] is involved with, and has influence on, the determination of his or her budget" (Shields and Shields 1998, p. 49). Anderson et al. (2010, p.92) describes participative budgeting as "visible, intentional processes of the firm that have planning, coordination, and motivational benefits." One reason for encouraging employees to participate in the budgeting process is that budget participation improves the information exchanged between employees and employers (Covaleski et al. 2003; Kren 1992). Employees typically maintain private information about their productive capabilities or the resources they need to do their job. If employees share this private information with employers, budget accuracy and the quality of budget-related decisions usually improve. In fact, Locke and Schweiger (1979, 206) argue that employees' private information is the "single most important contextual factor determining the usefulness of participative decision making." Moreover, Baiman and Evans (1983) and Penno (1984) use analytic models to show that incorporating employees' communication of their private information into the budget, regardless of how accurate the communication may be, leads to better firm performance than not incorporating that communication.[13] As long as there is

[12] In addition to their positive effects on motivation, budget-based incentives can improve organizational planning by reducing the variance in employee performance (Fisher et al. 2003).

[13] Accounting research traditionally applies an agency theory perspective (see Ross 1973 for discussion) when examining how firm value increases when participative budgeting is included in employees' incentive contracts. Similar to Brown et al. (2009, p.318), I apply agency theory to mean "formal theories that analyze the optimal design of organizational and incentive arrangements between a self-interested principal and one or more self-

some true information contained within the report, an employer is better informed than if the report was not provided in the first place. Thus, participative budgeting can serve as a valuable tool for improving the planning and coordination of firm activities.

Another reason for encouraging employees to participate in the budgeting process is that participation can increase employee effort (Argyris 1952; Kenis 1979; Merchant 1981).[14] There are two ways participation can affect employee effort. First, because budgets are more accurate and informative when employees participate, budget targets better reflect employees' performance capabilities or their resource needs (Covaleski et al. 2003). In turn, employees receive "more efficient, goal-congruent incentive contracts which increase their motivation to achieve the budget" (Shields and Shields 1998, p. 59). Second, employees who participate in the process likely remain committed to, and exert greater effort towards, budget attainment than they otherwise would because they experience a sense of responsibility for budget performance (Chong and Chong 2002; Latham and Locke 1991).

In summary, difficult, yet attainable, budget targets can have a positive effect on employee effort because they provide a performance goal. This motivational effect can be enhanced by using budget-based incentive contracts and by allowing employees to participate in the budgeting process. Further, both budget-based incentives and budget participation provide employers additional potential benefits in terms of organizational planning by

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interested agents." See Baiman (1982; 1990), Lambert (2001), and Brown et al. (2009) for reviews of accounting research applying agency theory.

[14] There is mixed evidence regarding the effect of budget participation on employee effort (see Kren and Liao 1988; Murray 1990; Shields and Shields 1998 for reviews). For instance, pseudo budget participation occurs when employees are involved with, but have no influence on, their budget. Research shows that pseudo budget participation can have demotivating effects for employees and can result in dysfunctional behaviour such as dishonest reporting (e.g., Argyris 1952; Krishnan, Marinich, and Shields 2012; Libby 1999; Pasewark and Welker 1990).

reducing the variance in employees' performance and by improving the exchange of information.

2.4 Budget Slack and Dishonesty in Reporting

2.4.1 Budget Slack

A major concern when offering employees budget-based incentives in conjunction with allowing them to participate in the budgeting process is that employees may generate budget slack (Dunk and Nouri 1998). Budget slack refers to the intentional under-statement of employees' productive capabilities or over-statement of the resources they require to complete a task (Fisher et al. 2002; Young 1985). That is, employees do not necessarily fully reveal their private information during the budgeting process. Because budgets containing slack are inherently less informative (accurate) and less difficult to attain than budgets not containing slack, they have harmful consequences for planning, control, and motivation. These harmful effects lead some to conclude that firms should avoid comparing employees' performance to participatively set targets when determining their compensation (e.g., Hope and Fraser 2003; Jensen 2001, 2003).

Research studies applying agency theory maintain that, before choosing to create budget slack, employees rationally analyze the potential financial rewards and costs (Baiman 1982; Brown et al. 2009; Eisenhardt 1989). A fundamental premise in this literature is that employees are guided strictly by economic self-interest, and they will exploit their private information to maximize personal wealth at the expense of the firm. Further, these studies typically assume that employees are risk-averse or risk-neutral (Holmstrom and Milgrom

1991; Prendergast 1999). When employees are exposed to the risk that their effort will not be rewarded (i.e., negative externality) or when they are inherently risk-averse, they will create slack in an attempt to share risk with their employer (Onsi 1973). That is, the more risk averse employees are the more slack they are likely to create (Dunk and Nouri 1998; Young et al. 1993; Young 1985).

To deter the pervasive and harmful effects of slack, research has considered ways that employers can influence employee benefits and costs of slack creation. In terms of benefits, a large body of theoretical literature explores how contracts can be designed to better align employees' financial interests with those of the organization (see Prendergast 1999). For instance, some studies show that truth-inducing incentive contracts are effective at reducing budget slack (e.g., Chow, Cooper and Waller 1988; Waller 1988). In these contracts, employees maximize their financial payoff by truthfully revealing their private information to employers because there is no financial incentive to generate budget variance (Chow et al. 2000).[15] However, studies also show that truth-inducing contracts are less effective when employees are risk-averse than when they are risk-seeking (Waller 1988) and are infrequently used in practice, likely due to their complex nature and the negative feelings associated with penalty-type contracts (Brown et al. 2009; Waller 1994; Waller and Bishop 1990).

In terms of financial costs, other studies consider how increasing the probability that slack will be detected and increasing the financial costs when slack is detected affect slack

[15] Generally, a truth-inducing scheme attempts to reduce the amount of earnings individuals obtain from exceeding their budget, while still motivating them to set challenging targets. The scheme has the following features: If y > y'' then $B = B' + b(y'' - y') + a(y - y'')$ and if y < y'' then $B = B' + b(y'' - y') + c(y - y'')$ where B is the bonus and y is performance; B' and y' are the initial bonus and budget levels, respectively; y'' is the revised budget through participation; and a, b, and c are reward/penalty coefficients such that $0 < a < b < c$ (Chow et al. 1988; Weitzman 1980).

creation (e.g., Kren 1993; Fisher et al. 2012; Webb 2002). For instance, Webb (2002) conducts an experiment and finds that the existence of a variance investigation policy decreases the amount of slack participants create. In another example, Fisher et al. (2013) find that superiors can detect and remove slack from subordinates' budgets by performing budget reviews, even though subordinates possess private information. Further, the authors show that providing superiors with financial incentives to use subordinates' budgets to plan accurately increases superiors' efforts to detect and remove slack from the budgets. Despite evidence that effective slack detection systems such as a budget review can reduce slack creation, these systems typically rely on precise performance measurement and stable operating environments (Dunk and Nouri 1998), two features that are increasingly less common in business (Fallon and Senn 2006).

Notwithstanding these efforts to deter slack creation, it remains an ongoing issue for many organizations. In fact, Libby and Lindsay (2010) find 77% of managers surveyed believe their employees are creating budget slack. Consequently, a simple economic trade-off (i.e., financial cost/benefit) model appears insufficient in explaining slack creation.

2.4.2 Budget Slack and Dishonest Reporting

By knowingly providing false or misleading information (i.e., lying), the creation of budget slack can be characterized as employees' dishonest reporting of their private information (e.g., Evans et al. 2001; Salterio and Webb 2006). For example, Lukka (1988, p. 282) refers to budgets that contain slack as "intentionally made easier to achieve in relation to an *honest* budget estimate." In terms of honesty, several experimental studies find that

individuals are motivated by more than just economic self-interest and derive utility from obeying social norms (e.g., honesty, fairness, reciprocity). Moreover, people experience a psychological disutility from feelings of shame, guilt, or embarrassment that arise when they are overly dishonest (see Luft and Shields (2009) and Sprinkle (2003) for review).[16] As a result, people create less slack (i.e., are less dishonest) than what is predicted by traditional economic theory (e.g., Chow et al. 1988; Evans et al. 2001; Waller 1988; Young 1985).[17]

Evans et al. (2001) provide experimental evidence that people show great concern for a fair distribution of rewards as they attempt to share any surplus (profits) with employers. The majority of participants in their study neither report completely dishonestly (i.e., maximize slack) nor completely honestly (i.e., no slack). Instead, participants sacrifice some wealth to make partially honest reports, and this choice in reporting is unaffected when the potential payoff is increased.[18] Hannan et al. (2006) extend these findings by arguing that people balance the economic benefits they receive from dishonest reporting with the psychological benefits they receive from appearing to be honest. Using an experiment, Hannan et al. (2006) examine how the precision of an information system affects honest reporting. Consistent with the theory relating to the costs of appearing honest, the authors find that honesty is lowest when participants work under a precise information system than when they work under a coarse information system.

[16] Cialdini and Trost (1998) define social norms as "rules [or] standards that are understood by members of a group, and that guide and/or constrain behaviour without the force law" (p.152).
[17] These findings are consistent with evidence from economics (e.g., Gneezy 2005) and marketing (e.g., Mazar et al. 2008) research, and are consistent with recent theoretic models that assume individuals have social preferences in addition to preferences for wealth (e.g. Akerlof and Kranton 2010; Mittendorf 2006; Fehr and Schmidt 1999; Rabin 1993).
[18] Evans et al. (2001) are the first to provide evidence that a trust contract, which takes into consideration an employees preference for honesty, leads to greater firm profit than a traditional hurdle contract which strictly assumes employees are wealth maximizing.

Evans et al. (2001) and Hannan et al. (2006) have laid the ground work for other behavioural accounting studies to explore ways in which various organizational control system features can improve budget accuracy by altering the point at which dishonest budgeting (i.e., slack creation) becomes psychologically costly.[19] For instance, budget authority is one feature of an organization's control system shown to affect dishonest reporting (e.g., Fisher et al. 2000; Krishnan et al. 2012; Rankin et al. 2008). Rankin et al. (2008) find that subordinates create more slack when their superior has final authority over setting the budget than when the subordinates have final authority. Further, the authors find that requiring subordinates to make factual assertions when making budget requests improves honest reporting only when the subordinate has final authority. Studies also show that peer-related reporting can affect slack creation and dishonest reporting (e.g., Fisher et al. 2002; Hales et al. 2011; Maas and Van Rinsum 2011; Zhang 2008). Zhang (2008) finds that participants report more honestly when the wage offered by their superior is perceived to be fair and that participants collude with others against superiors that offer unfair wages. Further, Zhang (2008) finds that inter-participant communication reduces honesty only for those participants who believe their superior is unfair. Other features shown to affect dishonest reporting include whether rewards earned through dishonest means are shared among fellow employees (Church et al. 2012), whether there is a potential for slack creation to affect employees' reputations (Stevens 2002; Webb 2002), and an individual's ethical predisposition (Stevens 2002; Stevens and Thevaranjan 2010).

[19] Psychology-based researchers also argue people are dishonest only to the point at which they can obtain some financial rewards while still avoiding the harmful psychological costs of thinking of themselves as being dishonest (e.g., Ariely 2012; Bandura 1999).

Citing many of these studies, Luft and Shields (2009) conclude that employees' preference for honest reporting is largely contextual, and they recommend that researchers continue to examine the effects that various features of an organization's control system have on employees' honesty in reporting. Further, Brown et al. (2009) challenge future research to consider features that lead to differential behavioural and economic predictions concerning slack creation. The two features explored in this dissertation are budget-based reward type (cash, tangible, redeemable points) and relative performance information [RPI]. Specifically, the focus is on the effects of reward type and RPI on budget slack and performance.

2.5 Reward Type: Tangible vs. Cash Rewards

2.5.1 Introduction to Reward Type

Organizations have traditionally used performance-based cash rewards to motivate and control employee behaviour. More recently, organizations have been using tangible rewards such as gift certificates, trips, and merchandise in lieu of, or in addition to, cash to reward employee performance (Peltier et al. 2005). Tangible rewards are non-cash incentives that are restricted in use, yet still have a measurable monetary value (Condly et al. 2003; Presslee et al. 2013).[20] They are distinct from cash rewards because of their reduced fungibility and their visible, concrete nature. They are also distinct from other extrinsic, non-financial rewards such as plaques or social recognition that have a trivial market value (Jeffrey and Adomdza

[20] Condly et al. (2003) make the distinction between tangible monetary (i.e., cash) and tangible non-monetary rewards; that is, they consider cash as the most liquid form of tangible reward. For expositional purposes and to remain consistent with both academic (e.g., Jeffrey and Shaffer 2007; Presslee et al. 2013) and practitioner (e.g., BI 2009; Globoforce 2008) literature, I distinguish cash from tangible rewards based on its complete fungibility.

2011).[21] Organizations can deliver tangible rewards to employees either directly, or indirectly through points programs in which employees earn points redeemable for tangible items from a list or catalogue (Presslee et al. 2013).

Regardless of how tangible rewards are delivered, survey evidence shows that organizations of all sizes, and with employees of various seniority levels are currently distributing billions of dollars annually in performance-based tangible rewards (Incentive Federation 2007; Peltier et al. 2005). Peltier et al. (2005) survey 235 managers involved in compensation-related decisions and find that tangible rewards are being used to motivate all types of employees including customer service, support staff, management, manufacturing, and sales staff.[22] Further, they find that, although managers frequently use cash rewards to motivate their employees (59%), they also frequently use tangible rewards such as gift cards (66%), merchandise (57%), and trips (21%). In another survey, the Incentive Federation (2007) contacted 1,121 company executives responsible for their firms incentive program and found that 34% of firms use tangible rewards (trips or merchandise), and this amount increases to 57% for firms with over $100 million in annual revenues. The survey results also show that respondents' firms spent $46 billion on tangible rewards in 2006.[23] Although these results suggest a significant amount of money is being spent on tangible rewards each year,

[21] Indeed, tangible rewards are often visible in nature (i.e., trophy value) and are regularly combined with social reinforcement. Jeffrey and Shaffer (2007) argues the reason tangible rewards are used in conjunction with social reinforcement is that most people feel bragging about tangible items such as golf clubs or trips more socially acceptable, whereas bragging about cash earnings is socially unacceptable. The different social norms made salient by cash and tangible rewards are discussed further in the chapter 3.

[22] Twenty-one percent of managers are from organizations with less than 100 employees, 25% are from organizations with between 100 and 1,000 employees, and 54% are from organizations with more than 1,000 employees. Industries that are represented in their sample are manufacturing (13%), financial/insurance (21%), health care (17%), hospitality/tourism (10%), professional services (10%), retail trade (6%), and other (23%).

[23] Jeffrey and Shaffer (2007) quote a senior industry executive who expects a 7% increase in the use of tangible rewards in 2007 and continuing for the foreseeable future. Using this estimate, the use of tangible rewards in 2013 may be as much as $70 billion.

little is known about their effects on employee behaviour relative to cash rewards.

According to conventional economic theory, employees should prefer, and will work harder to earn cash than tangible rewards of equivalent monetary value because cash is more fungible and offers the highest level of transaction utility (Sandel 2012; Shafir et al. 1993; Waldfogel 1993). Generally, financial incentives (cash or tangible) derive their value from being used to purchase/experience some form of tangible outcome (Banduara 1986). Cash rewards are completely fungible in so far as they are exchangeable for most goods or services. Conversely, tangible rewards are restricted in their use, which can lead to additional transaction costs if the tangible items do not perfectly reflect a person's preferences (Shaffer and Arkes 2009).[24] So, if cash is compared to a list of fair market tangible items that do not perfectly reflect the desired outcome an individual is looking for, cash should be chosen (Stajkovic and Luthans 1997).[25] Specifically, research shows that, when people compare the two reward types, they recognize the difference in fungibility and indicate a strong preference for cash over tangible rewards of equivalent economic value (Jeffrey 2009; Shaffer and Arkes 2009).[26] Further, Condly et al.'s (2003) meta-analysis finds that cash rewards are two-times more effective at improving workplace performance than tangible rewards. While many stress the need for more research examining the relative merits of the two reward types, this

[24] Many firms use gift cards as a form of tangible reward (Incentive Federation 2007). Gift card swapping websites (e.g., www.cardswap.ca, www.giftah.com, www.plasticjungle.com) help to reduce the transaction costs associated with converting undesired gift cards to cash or to other types of gift cards. However, consumers typically receive only 80%-90% of the value of their original gift card in return (Sandel 2012). Therefore, transaction costs associated with undesired gift cards are not entirely eliminated.

[25] In circumstances in which the list of tangible items perfectly reflects the desired outcome an individual is looking for, economic theory suggests that individual should be indifferent to the two reward types, assuming no conversion costs are associated with the use of cash.

[26] Conversely, several studies find that when people consider the two reward types separately, they anticipate enjoying receiving a tangible reward more than they do cash (Jeffrey 2009; Shaffer and Arkes 2009).

evidence supports conventional economic theory that cash is the most effective type of financial reward.[27]

However, according to practitioner literature tangible rewards are more effective motivators than cash (BI 2009; Globoforce 2008; Incentive Services 2003; 2006; Maritz 2009). Bearing in mind their economic incentives to promote tangible reward programs, consultants argue that employees think differently about hedonic, non-essential tangible rewards than they do about cash (Alonzo 1996; Incentive Services 2003, 2006).[28] Tangible rewards are usually physical in nature and represent "wants" that are often difficult for employees to justify otherwise purchasing. Jeffrey and Shaffer (2007) argue that these features lead employees to think about their rewards more frequently, experience greater positive affect in anticipation of their rewards, and ultimately value their rewards more than they do cash of an equivalent market value. Further, consultants claim that the distinct, physical properties of tangible rewards lead to longer-term benefits such as trophy value (Incentive Services 2003). Employees quickly forget how their cash reward was spent because they mentally group (account) the cash with their salary, yet employees typically remember a tangible reward like a plasma television for a longer period (Thaler 1999). Maritz (2009) finds that, although employees may state a preference for cash, they rarely use the cash reward in a memorable or enjoyable way, diminishing the 'trophy value' of the reward. This attribute of tangible rewards has not gone unnoticed by managers as they believe employees are likely to

[27] The authors find that the number of cash incentive studies is nearly 4 times more (52 studies) than the number of tangible incentive studies (12 studies). Further, those that have examined tangible incentives rarely report the cash value of the items offered. Thus, the authors stress that "much more research needs to be performed on the issue of cost-benefit of different types of incentives" (p.52).

[28] Many practitioners encourage the use of hedonic goods/experiences as tangible rewards rather than utilitarian goods/experiences. Dhar and Wertenbroch (2000) associate hedonic goods/experiences with "experiential consumption, fun, pleasure, and excitement" (p.60).

experience greater organizational commitment and are less likely to expect a permanent increase in rewards if they are provided tangible rewards, rather than cash (Incentive Federation 2007; Peltier et al. 2005).

2.5.2 Prior Research Comparing Tangible and Cash Rewards

Only recently has research begun to examine practitioners' claims about the relative effectiveness of tangible rewards. McGraw et al. (2010) use a variety of experiments to compare individuals' risk-based decisions (hypothetical gambles) when the related outcomes are either cash or tangible items. The authors find that changes in peoples' decisions are less sensitive to changes in risk when the outcome they are seeking is a tangible item rather than cash. Further, they find that this "probability insensitivity" (McGraw et al. 2010, p. 828) effect is not due to the affect-rich nature of the tangible item. Rather, the authors suggest tangible items lead people to frame their decisions differently, choosing to not think of the outcome in terms of cash value, despite being able to do so. To the extent exerting effort in exchange for rewards is a risk-based decision, the results of McGraw et al. (2010) have important implications for people designing reward systems. Specifically, to the extent that the employees' choice to exert effort to pursue a reward is a risk-based decision (Fredrickson and Waller 2005), employers that choose to use tangible rewards may find employee effort is less sensitive to changes in the probability that a reward will be earned. Further, to the extent the size of a reward compensates employees for taking on greater risk, employees pursuing tangible rewards may be less sensitive to changes in the value of the reward than those pursuing cash.

Shaffer and Arkes (2009) conduct various studies to examine how making visible or salient the equivalent cash alternative to a tangible reward changes how participants value that tangible reward. They argue that people focus less on fungibility and more on the unique, hedonic features associated with tangible items when evaluating tangible rewards without being provided information about the cash equivalent. Also, participants in this separate evaluation condition enjoy their rewards and their work task more when pursuing tangible rewards than when pursuing cash rewards. Conversely, when participants evaluate their tangible rewards in the presence of a salient cash alternative, the dominant attribute used to make decisions shifts to the fungibility of the reward. Thus, participants in this joint evaluation condition appear to show a preference reversal by preferring cash. Finally, the authors attempt to extend their preference reversal findings from a choice-task to an effort sensitive anagram task. However, they find no difference in performance (accuracy) for those pursuing tangible rewards compared to those pursuing cash, regardless of evaluation condition. While Shaffer and Arkes (2009) provide evidence that preferences are susceptible to reward-induced framing effects, their inability to find differences in people's performance when pursuing the two types of rewards suggests that differences in how people think about tangible rewards compared to cash may not affect effort.

Jeffrey (2009) offers the first empirical evidence that tangible rewards can lead to greater improvement in performance than cash rewards. Jeffrey conducts an experiment in which participants either work towards a cash incentive or a tangible incentive (a massage). He argues that because the tangible reward is a "treat" and is difficult for people to justify purchasing, participants will perform better in pursuit of the treat than they will in pursuit of a

cash reward. Consistent with the prediction, participants pursuing tangible rewards increase their performance (round over round) more than those pursuing cash rewards, despite stating a post-experiment preference for cash. Extending Jeffrey's (2009) study, Jeffrey and Adomdza (2011) use data from a call center to show that employees pursuing tangible rewards (merchandise and travel) think about their rewards more frequently than those pursuing cash. Further, the authors find that the frequency with which employees' think of their rewards mediates the effect of reward type on performance. Ultimately, the authors find that employees pursuing tangible rewards achieve 40% greater performance than those pursuing cash rewards.

Finally, in the study most similar to mine, Presslee et al. (2013) employ a quasi-experiment in which call center employees receive either tangible rewards (via redeemable points) or cash rewards for attaining their self-selected performance goals. Presslee et al. (2013, p. 1810) argue that employees "mentally account" for tangible rewards differently than they do cash. Mental accounting theory describes the series of cognitive operations people use to organize and evaluate their financial activities, explaining why people treat economically equivalent financial choices differently (Fennema and Koonce 2011; Thaler 1985, 1999). Presslee et al. (2013) argue that employees group their cash rewards in a mental account similar to that of cash, whereas they group their tangible rewards into a separate, seldom used mental account. Because of this difference in mental accounting, there is a smaller percentage of mental account balance at stake for employees that fail to attain a goal when rewarded cash than rewarded tangible items. As a result, the authors predict and find that employees pursuing cash are more risk seeking (i.e., set more difficult budgets) than those pursuing

tangible rewards. Further, they find that budget difficulty has a positive effect on performance. So, in Presslee et al.'s (2013) field setting, cash rewards are more effective at motivating performance than tangible rewards of equivalent economic value.

Although the evidence is mixed regarding the effectiveness of tangible rewards on performance, research consistently finds that people think differently about tangible rewards than they do about cash. Thus, it is important for employers and designers of reward systems to understand how employees perceive these two reward types and how those perceptions may impact employee behaviour. Grover (2005) states that an organization's reward system is central to promoting or preventing dishonesty in the workplace. In keeping with these argument, my dissertation examines the effects of reward type on slack creation and performance.

2.6 Relative Performance Information

2.6.1 Introduction to Relative Performance Information

Employees regularly receive information or feedback about other employees' performance either informally while working in close proximity or formally through an organization's information system. In fact, some firms actively share relative performance information [RPI] with employees to help them coordinate business-related activities and to improve their motivation through competition, even when their compensation is unaffected by others' behaviour or performance (Nordstrom et al. 1990). For instance, Vidal and Nossol (2011) provide evidence of a German wholesaler/manufacturer that shares the average employee performance and each employee's rank-order position based on productivity with

all other employees, even though they only receive fixed salaries and piece rate incentives. In another example, some branch managers in the banking industry disclose RPI to tellers by providing them with the number of new accounts opened by each teller and the funds in each of these accounts, despite tellers being compensated with a fixed wage (Tafkov 2013).

Research tends to apply social comparison theory to explain the effects of RPI on employee behaviour (e.g., Frederickson 1992; Hannan et al. 2012; Mas and Moretti 2009; Miller et al. 2011; Tafkov 2013). Social comparison theory maintains that individuals have an innate desire to compare their beliefs and their abilities with their peers in an attempt to self-evaluate (Festinger 1954; Buunk and Gibbons 2007). Further, people desire their behaviour to be above average, and they use the information about similar others (RPI) to evaluate and adjust their behaviour accordingly (Cialdini 2001; Cialdini and Goldstein 2004; Festinger 1954). In fact, when people perceive themselves to be below average they experience disutility from having to negatively revise their self-concept (Tesser 1988; Tesser and Campbell 1980).

A number of studies apply social comparison theory to examine the informational and effort effects of RPI on behaviour. In terms of informational effects, Hannan et al. (2008) use an effort-allocation task, as opposed to a real-effort task, to investigate the interactive effects that RPI and incentive compensation method have on participants' performance. They find that the provision of RPI improves performance for those pursuing individual incentives (piece rate), but worsens performance for those pursuing tournament incentives. Specifically, when participants pursue individual incentives, RPI appears to lead to more effective allocation of costly effort and to facilitate learning, regardless of the precision or information

contained in the feedback. However, when participants pursue tournament incentives, precise RPI leads low performers (i.e., bottom 80%) to adopt ineffective task strategies and devote cognitive effort to tasks unrelated to performance. Although the authors show compelling evidence that RPI is used by participants to inform their strategy-related choices, the author's use of an effort allocation task limits the test of the effect that RPI has on real-effort (i.e., duration and intensity).

Regarding effort effects, Mas and Moretti (2009) use archival data from a large supermarket to provide evidence that RPI affects employee effort duration and intensity. The authors show that employees tend to work harder when they work with other highly productive employees and that this effect is strongest when an employee's effort is visible to others. Further, the authors find that employees' productivity is more sensitive to the effects of the efforts of other employees with whom they regularly interact. Consistent with Mas and Moretti (2009), Vidal and Nossol (2011) also find that provision of RPI affects employee effort. At their research site (warehouse), the provision of daily, individual productivity information of other employees (relating to the previous two months) results in an approximately 7% increase in immediate employee productivity (the two months following the provision of RPI). This increase in output is sustained over time and does not come at the expense of a decrease in quality of production or an increase in employee turnover.

These studies, along with others, show how RPI, through social comparison, can affect individuals' strategy-related choices (e.g., Hannan et al. 2008; Hannan et al. 2012; Klugger and DeNisi 1996) and effort duration or intensity (e.g., Falk and Ichino 2006; Mas and Moretti 2009; Vidal and Noseel 2011; Tafkov 2013). In the next section, I discuss several

studies that examine how RPI affects budget-based behaviour. Specifically, I discuss prior research looking at the effects of RPI on budget slack and on honesty in reporting.

2.6.2 Prior Research on the Effects of Relative Performance Information on Budget Slack and Honesty in Reporting

Management accounting research has primarily studied budget slack and budget-related performance using single-employee scenarios. However, most organizations employ multiple employees, and there is reason to believe that information about other employees can impact employee budget-related behaviour such as slack creation and performance. Young (1985) and Chow et al. (1988) provide initial evidence that people report more honestly when they experience social pressure to do so, despite social pressure having no economic effects. Extending this finding, Fisher et al. (2002) examine whether firms can provide employees with information about their coworkers' budgets and performance (i.e., RPI) to decrease budget slack and increase employee performance. The authors find that when two individuals each negotiate their own unique performance target with the same superior, and receive RPI regarding each other's budget and performance, they create less budget slack because of the social pressure created by the setting. However, the authors are unable to link the decrease in budget slack to an improvement in employee performance and stress the need for further research to examine the social-psychological mechanisms underlying the effects of RPI.

Similarly, Maas and Van Rinsum (2011) find that participants in their study misreport their performance to a lesser degree when other participants are informed of their report as opposed to when other participants are only informed of the average group performance. Like Fisher et al. (2002), the authors conclude that reducing the horizontal information asymmetry

between coworkers through the provision of RPI can be an effective deterrent to employee misreporting because people do not want to appear dishonest to others. However, consistent with Fisher et al. (2002), Maas and Van Rinsum (2011) do not find that honest reporting leads to improved performance for participants.

Unlike Fisher et al. (2002) and Maas and Van Rinsum (2011), Hales, Hobson, and Resutek (2011) find that the mutual observation of other participants' reported performance increases participants' propensity to misreport their performance. Specifically, they find that when relative performance feedback is expressed through a rank ordering from highest performer to lowest performer, and when the highest ranked performer receives positive social recognition, most participants respond by inflating their reported performance.[29] Therefore, the competition induced by the type of RPI in their study leads participants to report *more* dishonestly than they otherwise would have.

Collectively, the findings discussed above suggest that effects of RPI on behaviour largely depend on the type of RPI provided and that other organizational factors may impact employees' interpretations of the feedback contained within RPI. Specifically, it appears that people use the type of RPI to determine what "above average" means in a given setting, and they adjust their slack creation accordingly. Similar to Fisher et al. (2002) and Maas and Van Rinsum (2011), I consider a setting where RPI is presented and participants endogenously determine how to respond to RPI feedback. Further, I consider how reward type, a central

[29] Unlike Fisher et al. (2002) and Maas and Van Rinsum (2011), Hales et al. (2011) express RPI to participants with a rank order from highest to lowest performance. This feature likely heightens competition and suggests dishonesty is acceptable/encouraged from a firms' perspective, both of which can induce more dishonest reporting.

component of an organization's reward system, can impact an employee's interpretation of RPI and, in turn, affect slack creation and performance.

2.7 Conclusion

This chapter reviews relevant psychology, economics, and accounting research relating to the effects of budgets and budget slack on planning, motivation, and control. Overall, the findings reviewed above suggest that, although budget-based incentives and participation in the budgeting process create conditions conducive to budget slack, people choose not to create the maximum amount of slack (i.e., chose not to maximize their earnings by reporting dishonestly). That is, people appear to have an innate desire for honesty in their budget reports. Further, this chapter introduces reward type (tangible or cash) and RPI, and related research on their behavioural effects. In Chapter 3, I develop predictions regarding the effects of reward type and RPI on budget slack creation and performance, given the budget scenario described in Section 2.2.

Chapter 3: Hypotheses Development

3.1 The Effects of Reward Type on Budget Slack

3.1.1 Cash vs. Tangible Rewards

Features of an organization's control system (e.g., reward type) influence which behaviours employees view as acceptable or appropriate (i.e., personal norms) in a given situation (Messick 1999; Tayler and Bloomfield 2011; Weber et al. 2004).[30] Bandura (1990, 2002) argues that people apply their personal norms and moral standards to regulate their behaviour and that they experience disutility (e.g., diminished self-concept) from violating their personal norms. However, personal norms such as honesty only regulate moral behaviour when they are activated, and often are a result of situational or contextual factors (Bandura 1996). And even if activated, the applicability of personal norms can be diminished if individuals 'morally disengage' from their self-serving behaviour (Bandura 1999).[31]

According to Ariely and his co-authors, people have a desire to think of themselves as being honest, and their use of contextual features to justify their dishonesty allows them to maintain an honest self-concept, yet still enjoy the benefits of being dishonest (Ariely 2012; Mazar and Ariely 2006; Mazar et al. 2008). In fact, "[p]eople do not engage in harmful conduct until they have justified to themselves the morality of their actions" (Bandura 1999,

[30] Personal norms are "self-based standards or expectations for behaviour that flow from our internalized values" (Cialdini and Trost 1998, p. 160). Research finds that the personal norms that are made salient by contextual features (e.g., control) or situational factors guide people's behavior to a great extent (Cialdini et al. 1991; Reno et al. 1993; Tayler and Bloomfield 2011).

[31] Personal norms or moral standards may be selectively disengaged such that people view detrimental behaviour such as dishonesty as more appropriate (Bandura et al. 1996). Some mechanisms that allow people to morally disengage include moral justification, displacing responsibility/blame, ignoring/minimizing the consequences of being dishonest, and attributing blame to someone else (Bandura 1986, p. 376).

p.194). To this end, people tend to justify or rationalize their dishonesty as appropriate when they encounter morally ambiguous situations (Mazar et al. 2008); individuals exploit the 'moral wiggle room' of situations to justify their dishonest behaviour (Dana et al. 2007).[32] Further, people use contextual features such as their emotional state (e.g., happy, angry) to justify their dishonest behaviour (Schweitzer and Hsee 2002). For example, Vincent et al. (2012) find that when people experience greater emotion, they are more likely to justify a lie by 'morally disengaging'. Therefore, the magnitude of people's harmful behaviour such as dishonesty appears to depend on contextual features (e.g., control system features) that make personal norms salient and provide opportunities for people to justify their self-serving behaviour as appropriate (Church et al. 2012; Mazar et al. 2008).

I argue that reward type, one aspect of an organization's control system, may lead to different levels of budget slack creation. Budget-based cash rewards share similar properties to other forms of cash compensation such as salary (Presslee et al. 2013), and there is a widely held social stigma associated with earning cash through dishonest means (Ariely 2012). That is, people seem to maintain personal norms against stealing cash. Further, cash rewards tend to be more utilitarian and less vivid than tangible rewards because employees often spend these rewards on necessities such as groceries and rent (Jeffrey and Adomdza 2011; Jeffrey and Shaffer 2007). Therefore, employees likely visualize spending their cash rewards on items that will result in affect-neutral outcomes. Jeffrey (2009) argues it is these properties that lead choices involving cash to be less influenced by emotion and to be made with less concern for instant gratification than those involving tangible rewards. This less emotional,

[32] The ability to rationalize behaviour to protect one's self-concept is only effective to a point; beyond that point, people are unable to avoid the moral implications of their behaviour (Mazer et al. 2008).

more rational approach to decisions involving cash likely increases the saliency of and adherence to personal norms such as honesty thus reducing people's ability to justify lying.

Conversely, the personal norms that govern behaviour relating to tangible items allow people to more easily rationalize dishonest behaviour. Mazar et al. (2008) argue that differences in how people think about tangible goods, such as office supplies or merchandise, relative to cash, lead to an "incomparably excessive contribution of employee theft and fraud" (p.638). Jeffrey (2009) maintains that unlike cash, tangible rewards are evaluated without regard for social factors when determining how to act. Further, people tend to experience positive affect when thinking about potential tangible rewards because the rewards are typically used for "wants" that are often easy to visualize and difficult to otherwise justify purchasing (Jeffrey and Shaffer 2007; Shaffer and Arkes 2009; Presslee et al. 2013). Because positive affect often leads people to desire instant gratification (e.g., Hsee 1996; Loewenstein 1996; Loewenstein, Weber, Hsee, & Welch 2001; Schwarz and Clore 1988) and to morally disengage (Vincent et al. 2012), people are better able to rationalize dishonest, self-serving behaviour. Thus, the distinct, hedonic nature of tangible goods likely explains why people tend to find it easier to justify stealing merchandise from their employer than cash (Ariely 2012).

To summarize, reward types (cash vs. tangible) may influence peoples' ability to justify dishonesty by 1) affecting their perceptions of applicable personal norms and 2) affecting their affective responses. My first hypothesis stated in the alternative form is as follows:

> H1: Individuals pursuing budget-based cash rewards will create less budget-slack than individuals pursuing budget-based tangible rewards.

Hypothesis 1 is not without tension. First, traditional agency theory predicts that people will report dishonestly up to the point at which the marginal benefits equal the marginal costs associated with being caught (Baiman 1982; Brown et al. 2009). Because there are no financial costs and no risk of detection in my study, agency theory suggests that people will be completely dishonest in their reporting regardless of the type of financial reward. Second, other studies show that increasing the dollar value of cash rewards that can be earned through dishonest means does not increase the magnitude of people's dishonesty (Evans et al. 2001; Mazar et al. 2008). Thus, assuming people perceive the economic value of tangible rewards as greater than $0, there should not be a difference in the magnitude of their dishonesty based on financial reward type. That is, although tangible rewards may have additional transaction costs associated with them, there should be no difference in dishonesty to earn higher valued cash reward than to earn a lower valued tangible reward. Both of these streams of research support the null hypothesis that there will be no difference in slack creation across cash and tangible reward types.

3.1.2 Points Redeemable for Tangible Rewards

The Effect of Direct Tangible Rewards vs. Points Rewards on Budget Slack

Instead of paying tangible rewards directly, many organizations distribute tangible rewards using 'point programs' through which employees earn points that are then redeemable for tangible items chosen from a catalog of options (e.g., Presslee et al. 2013). Theory suggests that how tangible rewards are distributed, whether directly or indirectly via a points program, may impact employees' ability to justify the creation of budget slack.

Specifically, research on narrow bracketing and on psychological myopia finds that people tend to rely on the unique features of a medium (e.g., redeemable points) when deciding how to behave (Hsee et al. 2003; Read et al. 1999); they often ignore less salient yet more fundamental information regarding the final outcome or its consequences. As a result, employees likely frame the budgeting context differently when they pursue budget-based tangible rewards than when they pursue budget-based points redeemable for tangible items.

Financial rewards (e.g., cash, tangible items) tend to generate an economic frame, whereas non-financial rewards (e.g., social recognition) tend to generate a social frame (Heyman and Ariely 2004).[33] An economic frame is characterized by an ongoing financial cost-benefit analysis, where the magnitude of rewards directly influences individuals' behaviour (Clark & Mills 1993; Rabin 1993) and likely reduces the saliency of personal norms such as honesty. Conversely, a social frame prompts individuals' to be less concerned with the magnitude of their rewards and more concerned with adhering to personal norms (Batson et al. 1997). Thus, adding points as an intermediary step in the provision of tangible rewards likely reduces the financial nature of the exchange, in turn reducing employees' tendency for dishonest reporting.[34] Further, rewarding employees with redeemable points

[33] It could be argued that cash rewards create an economic frame, while tangible rewards create a social frame because of their gift-like nature, regardless of whether they are delivered directly or indirectly. To the extent this argument applies, it biases against hypotheses 1 and 2. However, I argue that the saliency of the cash value of the tangible reward (i.e., a gift card worth $X) is more likely to prompt an economic rather than a social frame.

[34] How employees frame the budgeting process (i.e., social exchange vs. economic exchange) can also influence their perceptions of the managers' motives for offering budget-based rewards (Hannan 2005; Fehr and Falk 2002). As documented by various gift-exchange studies (e.g., Charness 2004; Hannan et al. 2002; Kuang and Moser 2009), the theory of reciprocity describes people as inherently caring about other people's motives or intentions; for this reason, people respond to others' treatment in-kind (Akerlof 1982; Cialdini 1993; Fehr and Falk 2002; Falk and Fischbacher 2006). For example, workers tend to reciprocate the gift of higher unconditional wages from employers with the gift of greater effort (Akerlof 1982; Hannan 2005). While these prior studies were with respect to cash wages, there is reason to believe points bonus may induce more reciprocity than cash bonus or tangible bonus. Specifically, to the extent points rewards are framed more as a

likely reduces the appeal and the resultant affect that employees experience when thinking about their potential financial rewards (Urminsky and Kivetz 2011). As a result, employees are likely to view their potential points rewards as less hedonically attractive than a direct tangible reward.[35] Therefore, to the extent that the use of redeemable points leads people to focus on the medium rather than the financial dimension of a tangible reward, their use is likely to increase the saliency of the personal norm of honesty. For this reason, I pose the following hypothesis, stated in the alternative form:

> H2: Individuals pursuing budget-based points redeemable for tangible rewards will create less budget slack than individuals pursuing budget-based tangible rewards directly.

There is tension regarding hypothesis 2. If point rewards lead employees to frame the budgeting process as a game, a point system may result in greater budget slack than direct tangible rewards. That is, employees may attempt to maximize what they perceive to be a "worthless" medium (i.e., points) with little regard for the honesty norm associated with the financial outcome (Hsee, Yu, Zhang, and Zhang 2003; Mazar et al. 2008). However, I believe that the incremental effect that points have on creating psychological distance between acts of dishonesty and related financial outcomes is likely minimal compared to the distance that exists when tangible items are rewarded directly.

The Effect of Cash vs. Points Rewards on Budget Slack

The theory leading to hypothesis 1 argues that budget-based cash rewards will result in less slack than tangible rewards because people are less able to justify violating a personal

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social exchange and as kindness by the employer, employees are likely to budgeting more honestly. Although my study is not designed to test concerns for reciprocity because the employer (others) are not made salient in the instructions, I do measure these concerns post-experiment.

[35] By using rewards of equal monetary value, economic attractiveness is held constant between reward type condition.

norm of honesty to earn cash than they are to earn tangible rewards. Further, an honesty norm (vs. a dishonesty norm) is made less salient when pursuing an affect-rich tangible reward than when pursuing cash. The theory leading to hypothesis 2 argues that budget-based redeemable points will result in less budget slack than direct tangible rewards because 1) the non-financial nature of points leads people to frame the exchange as social instead of financial and 2) point rewards lead people to experience less affect. Because theory does not suggest an answer as to which of these effects will be the strongest when I compare budget-based cash and budget-point rewards, I pose the following research question:[36]

> RQ1: Does budget slack creation differ for individuals pursuing budget-based points redeemable for tangible rewards than for individuals pursuing budget-based cash rewards?

3.2 The Effect of RPI on Budget Slack

In addition to wanting to adhere to their personal norms, people have preferences to compare and conform their behaviour to that of their peers (Cialdini et al. 1990; Tayler and Bloomfield 2011). People have an innate desire to compare themselves to their peers, and this comparison provides them with a descriptive norm of how others are actually behaving (Cialdini 2001; Festinger 1954; Salancik & Pfeffer 1978; Tesser et al. 1983).[37] These

[36] Mazar et al. (2008) find that participants pursuing tokens redeemable for cash were more dishonest than those pursuing just cash. The authors argue that redeemable tokens create psychological distance (via categorization malleability) between acts of dishonesty and the associated financial outcomes, which is claimed to reduce the moral implications of dishonesty. However, Mazer et al.'s (2008) experiment setting contains potential confounds whereby the level of dishonesty in their token condition could be a function of tokens as a medium, of method of redemption which differed from the cash condition, or of participants' lack of understanding of the token-cash exchange rate. Specifically, their study biases in the direction of their findings by providing participants with actual tokens and then having them redeem those tokens with a second experimenter for a cash reward. To address these issues, in my experiment setting, all reward types are paid using the same method, and participants must correctly identify the exchange rate of points-tangible rewards before completing the task.

[37] Descriptive norms are "derived from what other people do" and provide a "social reality" regarding what constitutes normal behaviour (Cialdini and Trost 1998, p.155). According to Cialdini (1993), people rely on descriptive norms as social support for behaviour that has the highest probability of being *effective*, all the while

descriptive norms offer social proof of what is acceptable in a given social situation, providing people with an understanding of how to effectively respond during times of uncertainty (Cialdini 2001; Cialdini and Trost 1998; Goldstein and Caildini 2007). This understanding encourages people to conform to a standard of behaviour set by others. Thus, salient descriptive norms can have a dramatic effect on the level and variance of people's dysfunctional behaviour by affecting their views on what is appropriate.

Descriptive norms disseminated by an organization's culture or climate can either stress the importance of honest behaviour or legitimize the level of dishonest behaviour for employees (Greenberg and Scott 1996; Payne 1989). One feature of an organization's control environment that can provide employees with evidence of descriptive norms is the provision of RPI. Employees can use RPI to determine the prevalence of behaviour and to determine a standard of behaviour they do not want to deviate from. In fact, RPI can either threaten or protect employees' self-concepts by disseminating descriptive norms against which they can compare their behavior (Miller et al. 2011; Tesser and Campbell 1980). Consequently, employees may choose to conform to the norm to protect their self-concepts.

A number of recent experiment-based studies examine how the interaction with (dis)honest others and the presence of (dis)honest descriptive norms impacts people's behaviour (e.g., Gino et al. 2009; Hales et al. 2011; Huddart and Qu 2012; Maas and Van Rinsum 2011; Paz et al. 2013). For example, Gino et al. (2009) find that the magnitude of participants' cheating is strongly influenced by their exposure to a confederate who is cheating and by whether participants' view the confederate as an in-group member (i.e.,

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conserving time, cognitive effort, and accountability relating to any negative outcomes. People tend to rely on descriptive norms more so in ambiguous or novel setting.

similar) or an out-group member (i.e., dissimilar). That is, the degree to which people identify others as in-group members significantly impacts the way they interpret feedback about others' inappropriate or unethical behaviour (Tajfel 1982). Viewing unethical behavior of in-group members represents a more applicable descriptive norm and is likely to weaken an individual's moral objections to behaving dishonestly (Ariely 2012); Gino et al. (2009) refer to this as the contagious nature of dishonesty. Conversely, viewing unethical behavior of out-group members likely raises the saliency of the dishonest act, making people pay more attention to the importance of their own moral standard (Mazar et al. 2008); people will respond by being more honest than out-group members in an attempt to differentiate themselves. Regardless of an individual's identity, this evidence suggests that observing peers behaving dishonestly can affect individuals' understanding of the descriptive norms as they relate to their own moral behaviour.

Traditionally, management accounting texts have supported the use of budget variance (i.e., performance over budget) as a means of performance measurement and evaluation (Garrison et al. 2012; Hobbs 1964; Webb 2002).[38] The provision of RPI regarding others' budget variances naturally arises in settings with multiple employees and when competition among them is desired (Brown et al. 2013; Fisher et al. 2002). Employees can generate positive budget variances by either exerting effort or by creating budget slack. In their seminal paper on budget slack, Evans et al. (2001) find that 70% of individuals create some slack

[38] In practice, evaluating managers on budget variance alone can be problematic because a number of exogenous (i.e., uncontrollable) factors could have led to the variance. Thus, if the operating environment is unpredictable, firms should avoid managing by exception through the use of budget variance alone because budgets may not be reliable (Garrison et al. 2012; Lukka 1988; Webb 2002). For the purpose of this study, the operating environment for participants is void of uncertainty.

when reporting (Evans et al. 2001). Thus, most employees viewing the budget variance of others are likely to view RPI suggesting (or could be interpreted as suggesting) that some members of the group are reporting dishonestly. In fact, when RPI is provided only about other's budget variances, theory suggests people will make asymmetric, self-serving assumptions about how others generated that variance. People are motivated to interpret others' behaviour as dishonest because this interpretation reduces the constraint that descriptive norms have on their own self-serving behaviour (Cialdini and Trost, 1998). That is, people tend to interpret ambiguous feedback as evidence of others' dishonesty so they can better justify behaviour that would otherwise violate a personal norm (Emett et al. 2013; Shu et al. 2011; Steven and Qu 2013). Thus, RPI in the form of budget variance information provides people with evidence that their own misreporting is acceptable.[39] Given the arguments above, I pose the following prediction, stated in the alternative form:[40]

> H3: Individuals provided with information about their coworkers' budget variance will create more budget slack than individuals not provided with the same information.

3.3 The Interactive Effect of Reward Type and RPI on Budget Slack

There is reason to expect that the effect of RPI on budget slack, via the provision of descriptive norms, depends on the personal norms that are activated by budget-based reward type. That is, the extent to which people make self-serving interpretation of descriptive norms is likely influenced by salient personal norms (Cialdini and Trost 1998; Cialdini et al. 1990,

[39] Theory underlying hypothesis 3 relies on the receipt of the information contained in RPI to form the descriptive norm rather than simply the anticipation that RPI will be provided.

[40] Indeed, the provision of RPI in the form of budget variance could increase the competitive behaviour of participants, which may induce them to cheat in an attempt to perform well (Brown et al. 2013). This alternative explanation suggests that budget variance feedback does not provide additional information (i.e., descriptive norm). Therefore response to RPI should not differ depending on the amount of slack contained in the feedback. This is examined further in Chapter 4.

1991). Theories used to develop hypothesis 1 and 2 suggest that budget-based cash and budget-based redeemable points make salient stricter personal norms against dishonest reporting than do budget-based tangible rewards. Tayler and Bloomfield (2011) argue that activated personal norms frame people's perceptions of descriptive norms, making more salient concerns about the social cost of their behaviour in a given setting. When people have lax personal norms (i.e., less salient) regarding honesty, they are likely to interpret RPI that contains positive budget variance as evidence supporting the appropriateness of dishonesty. However, when people have more concern for behaving honestly, they are likely to interpret the outcomes of others as evidence of effort rather than dishonesty. Thus, I make the following predictions, stated in the alternative form:

> H4a: The positive effect of providing relative performance information about coworkers' budget variance on budget slack creation will be greater for individuals pursuing budget-based tangible rewards than for individuals pursuing budget-based cash rewards.
>
> H4b: The positive effect of providing relative performance information about coworkers' budget variance on budget slack creation will be greater for individuals pursuing budget-based tangible rewards directly than for individuals pursuing budget-based points redeemable for tangible rewards.

There is tension regarding hypothesis 4a and 4b. If a descriptive norm is clearly established, there is reason to expect cash and redeemable points will lead to greater conformity in behaviour than tangible rewards. Tayler and Bloomfield (2011) argue that people who have a salient social-oriented personal norm tend to conform their behaviour to that of others to a greater extent than people who have a salient personal norm of self-interest. To the extent RPI in my setting provides an unambiguous descriptive norm (if at all) of the acceptability of dishonesty, this biases against finding support for hypothesis 4.

Last, because I pose a research question regarding the effect of budget-based cash versus budget-point rewards on slack creation, I raise the following research question regarding the interaction of these two reward types with RPI:

> RQ2: Will the positive effect of providing relative performance information about coworkers' budget variance on budget slack creation be greater for individuals pursuing budget-based cash rewards or for individuals pursuing budget-based points redeemable for tangible rewards?

3.4 The Mediating Effects of Budget Slack on Performance

Research has demonstrated that performance targets contained within traditional budget-based incentive contracts can provide employees with performance goals (Bonner et al. 2000; Hirst 1987; Locke and Latham 1990). A well-established finding is that difficult and specific goals motivate greater effort, resulting in greater performance until people reach the limits of their ability (Bonner and Sprinkle 2002; Locke and Latham 2002; Webb et al. 2010). *Ceteris paribus*, budgets that contain slack are less difficult to attain than budgets that do not contain slack. Given my previous hypotheses regarding the interactive effects of reward type and RPI on budget slack and given that budget slack by definition is negatively correlated with budget difficulty, I predict the following mediation, stated in the alternative form:

> H5: Budget slack will mediate the interactive effects of reward type and relative performance information on performance.

3.5 The Direct Effects of Reward Type and RPI on Performance

Waller and Chow (1985) argue that, when people self-select their contract (e.g., self-set their performance budget), they fully consider the effects of their skills and other exogenous factors (e.g., reward type, RPI) before making their selection; thus, contract selection is a predictor of an individual's subsequent performance. However, people may not

fully incorporate these factors into their selection due to either cognitive constraints or the desire to create slack, and there may be competing effects of exogenous factors on contract selection versus on performance. Complicating matters, in a setting with no punishment for slack creation, people maximize their earnings by setting a budget low; thus, contract selection may be negatively correlated with desired outcome (i.e., subsequent performance). For these reasons, exogenous factors may have a direct effect on performance in addition to their indirect effect via contract selection. In this subsection, I discuss theory as it relates to the direct effect of reward type and RPI on performance.

3.5.1 The Direct Effect of Reward Type on Performance

As previously discussed, research provides mixed results regarding the effectiveness of tangible rewards versus cash rewards on performance (e.g., Jeffrey 2009; Presslee et al. 2013; Shaffer and Arkes 2009). Further, Hsee et al. (2005) argue that, once a reward has been received, people gain more utility from each additional unit of an affect-neutral reward such as points or cash than they gain from each additional unit of an affect-rich reward such as tangible items. The authors suggest that affect rich rewards result in people conducting a valuation by *feeling* rather than by *calculation*. Under *calculation*, each increment increase of reward has a relatively constant value (i.e., value function is relatively steep and linear), whereas under *feeling*, each increment increase of reward varies with affect (i.e., initial value function is very steep and then flattens quickly, appearing concave) (Hsee and Rottenstreich 2004). Thus, while *feeling* valuation may translate to more effort initially, *calculation* valuation should translate to more effort over time. Conversely, others suggest that affect-rich rewards may translate into greater intrinsic motivation for employees to perform, regardless of

magnitude or frequency (Ryan and Deci 2000). Finally, evidence is inconclusive regarding the nature of direct effects of cash versus tangible rewards on performance in a budgeting setting (Presslee et al. 2013). For all of these reasons, I pose the following research question:

> RQ3: Controlling for the effects of budget-slack, does performance differ between individuals pursuing budget-based cash rewards, tangible rewards, and redeemable point rewards?

3.5.2 The Direct Effect of RPI on Performance

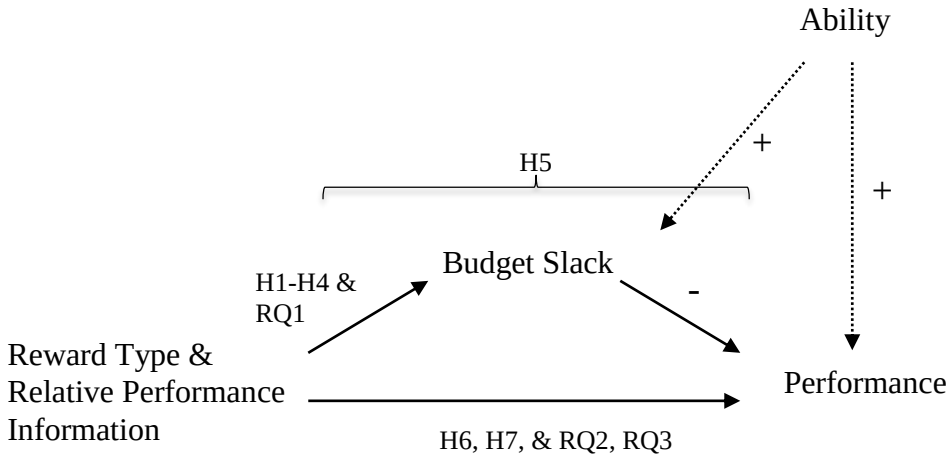
Unlike reward type, there is a theoretical basis for predicting directional effects of RPI on performance. People have an innate desire to appear more motivated or capable than their peers (Festinger 1954; Buunk and Gibbons 2007). Relative performance information provides employees with feedback that can increase their motivation to perform by allowing for social comparison (Hannan et al. 2012). That is, the natural inclination people have to compete with others may lead them to view RPI as a standard against which to compare their performance (Kluger and DeNisi 1996). Goal theory maintains that people are motivated to achieve personal goals relating to performance (Latham and Locke 1991). Accordingly, if RPI leads employees to adopt more difficult personal performance goals than they otherwise would, they will exert greater effort to perform, regardless of the amount of budget slack created. Indeed, many studies find that RPI has a positive effect on performance by creating competition among employees, despite rewards being independent of others' performance (e.g., Falk and Ichino 2006; Mas and Moretti 2009; Tafkov 2013; Vidal and Nossel 2011). Accordingly, I make the following prediction stated in the alternative form:

> H6: Controlling for the performance effects of budget slack, individuals provided with information about their coworkers' budget variance will outperform individuals not provided with the same information.

3.6 Conclusion

This chapter makes predictions regarding the interactive effects of reward type and RPI on budget slack creation and performance. These predictions and their relationships are summarized in Figure 1. Further, prior research shows a positive association between individuals' ability and both budget slack creation and performance (Bonner and Sprinkle 2002; Locke and Latham 1990; Presslee et al. 2013). Therefore, the Figure 1 model includes the effects of individual ability on slack and performance. The next chapter provides details about the research design I use to test this predictive model.

Figure 1: Predicted Model



Chapter 4: Research Method

4.1 Overview

I employed a 3 x 2 x 3 mixed factorial laboratory experiment with *Reward Type* (three levels: cash, tangible, and points) and *RPI* (two levels: absent and provided) as between-subject factors with *Round* as a within-subjects factor (see Figure 2). In this experiment, participants completed a computer-based, effort-sensitive task and earned a bonus reward in each of three, two-minute *Rounds* for performance that exceeded their self-set budgets. My dependent variables include the amount of budget slack participants created (i.e., their dishonest reporting) and their performance.

Figure 2: Experimental Design[1]

Reward Type / RPI	Cash Rewards	Tangible Rewards	Points Rewards
Absent	A	B	C
Present	D	E	F

[1] See Appendix F for variable definitions; Reward Type and RPI are manipulated between subjects.

This chapter is organized as follows. Section 4.2 describes the task and provides details of the participants. Section 4.3 describes the experimental procedures used. Section 4.4 describes the independent variables that were manipulated. Section 4.5 describes the

dependent variables of budget slack and performance, and various process measures asked. This chapter concludes in Section 4.6.

4.2 Task Details and Participants

4.2.1 Task Details

Prior experimental research uses effort-sensitive tasks that require limited cognitive effort (e.g., Chow (1983) letter-decode task) to test participants' effort duration and intensity (e.g., Kelly et al. 2013; Fisher et al. 2002). Kluger and DeNisi (1996) argue that, when testing duration and intensity, experimental tasks should be primarily mechanical because these tasks require limited strategy. Further, tasks should be easily learned, allowing participants to quickly develop expectations regarding their performance and reducing the effects that innate skill has on performance. Therefore, I created a custom computer-based, mechanical task to meet these conditions.

In this study, I employed a task in which participants were assigned the role of a virtual concession-stand clerk. The task required participants to accurately complete online concession orders over multiple rounds. Each round, the concession program generates and displays three-item orders. Items vary over four product types and three product sizes (12 product/size combinations). The four product types include popcorn, drink, candy, and ice cream, and the three product sizes are small (S), medium (M), and large (L). For example, one order could read "large popcorn, small ice cream, small drink." To obtain the three items necessary to fill the order, participants move their clerk icon in front of the requested product using the left or right arrow key on their keypad. Once the icon is moved in front of the item,

participants must type the letter that corresponds with the size of the product being ordered. Products are selected one at a time, and, after each selection, the clerk icon automatically returns to the starting position at the center of the screen. Once an order is filled, the program checks whether the order is accurate. If the order is correct, participants receive a new three-item order. If the order is incorrect, an error message informs participants that they must re-try until the order is correct.[41] At all times during the round, the screen shows participants the total number of correct orders completed and the time remaining for that round. An example of the task screen is presented in Appendix A.

4.2.2 Participants

Bonner et al. (2000) stress the importance of appropriately matching participants with the experiment task. There is little evidence to suggest that higher educated or more experienced participants perform effort-sensitive experimental tasks differently than less-educated participants (see Ball & Cech 1996). Thus, undergraduate students are appropriate participants in this experiment given the features of the concession task described in Section 4.2.1.

One hundred sixty-six undergraduate business students from a large Canadian public university participated in one of 12 experimental sessions, with each session consisting of between 10-20 participants. The number (percentage) of females that participated was 86 (52%) and the mean (standard deviation) age of all participants was 18.4 (1.2) years.

[41] In order to discourage participants from adopting a strategy of randomly typing to complete an order, their cumulative score for the round is reset to zero if they enter five consecutive incorrect responses for an individual order. The program warns participants about the number of attempts remaining before their score is reset to zero. Kelly et al. (2013) use this same control in their letter-decode task.

Consistent with the prior research finding that men are more likely to be dishonest and act in their own self-interest than women (Cohen et al., 1998; O'Fallon and Butterfield 2005), men overall generated more budget slack in this study (b = 1.82, p = 0.03, two-tailed).[42] In addition, men performed better than women at the concession task (b = 1.78, p < 0.01, two-tailed).[43] Participant age, however, was not associated with either budget slack (b = 0.50, p = 0.28, two-tailed) or performance (b = 0.12, p = 0.63, two-tailed). Neither the number of female participants (p = 0.40, two-tailed) nor the average age of participants differed by experiment condition (p = 0.22, two-tailed).

4.3 Experimental Procedures

On arrival, participants consented to participate in the study and were each provided a unique user name/password. After participants entered their user names, the program provided instructions on how to fill orders in the concession task. Participants first completed three practice rounds of the task, each round lasting for two minutes and consisting of three-item orders. To encourage them to learn the task and learn their maximum performance capabilities, participants were informed they could earn $0.05 per order completed during these practice rounds. The program informed participants of the number of orders they accurately filled and the total amount they earned after each practice round. Research shows that participants' risk attitudes influence slack creation when there is task uncertainty

[42] There is no difference is budget slack by gender when RPI is absent (β=1.35, p = 0.32, two-tailed), but men create more slack than women when RPI is present (β = 2.55, p = 0.06, two-tailed).
[43] Although gender meets the necessary conditions to be included as a covariate in further analysis (correlated with the dependent variable but not correlated with the independent variable), its inclusion does not change any conclusions made regarding the direction of results or the level of significance. Thus, gender is excluded from further analysis.

(Merchant 1985; Waller 1988; Young 1985). To remove the effects of participants' risk perceptions, task uncertainty was removed by telling participants, prior to starting the concession task, that all rounds would consist of three-item orders and that all rounds would last two minutes. Further, the sequence of the three-item orders was the same for all participants in each round, and participants in the RPI condition were made aware that everyone within their work group would face the same task environment and would also be working on three-item orders. The practice rounds and task features allow participants to receive feedback regarding their productive capabilities, thus decreasing their perception of risk relating to the relationship between effort and rewards (Webb 2002).[44]

After all three practice rounds were completed, the program randomly assigned participants to groups of three and randomly distributed each group to one of the six conditions as described in Section 4.4.1: 1) Cash/ RPI absent, 2) Tangible/RPI absent, 3) Points/ RPI absent, 4) Cash/RPI present, 5) Tangible/RPI present, and 6) Points/RPI present. If the number of participants in a session was not divisible by three, 1 (or 2) participants were randomly assigned to conditions 1, 2, or 3 (i.e., no RPI condition). Participants were informed that they would complete three additional rounds of the concession task, with each round lasting two minutes, and that they would have an opportunity to earn a bonus reward for performance in excess of their self-set budget in each round, as described below.

[44] Pilot testing of the concession task showed that three, two-minute practice rounds are sufficient for participants to learn their performance capabilities There is modest variation in performance in the third practice round (prior to treatment) as the mean performance is 17.7 orders and the standard deviation is 2.9 orders or 15% of average performance. To evaluate whether or not randomization led to similar productive capabilities (i.e., as determined by innate ability and effort) across conditions, the average number of orders completed by participants in the third practice round by condition is considered. The number of orders in the third practice round does not differ by either *Reward Type* or *RPI* conditions ($p>0.43$ two-tailed).

Before starting the first production round, participants answered a series of questions designed to test their understanding of the bonus rewards, details regarding the task, and if applicable, their RPI condition (see Appendix D). Participants had to answer each question correctly before proceeding to the production rounds. Before the start of each production round, the program asked participants to accurately budget their maximum performance capabilities for that round (as described in Section 4.5). Once participants completed concession orders for each of the production rounds, they responded to a series of post experiment questions (as described in Section 4.4.3). After completing these questions, the program randomly selected one round from which to pay participants their bonus, in addition to their practice-round earnings.[45] To allow the study administrator to acquire the necessary tangible rewards, participants were paid 4-6 days after completion of their session.

4.4 Independent Variables and Process Measures

4.4.1 Independent Variables

I manipulated two variables between participant groups: *Reward Type* (cash, tangible, or redeemable points) and *RPI* (absent or present). The program randomly assigned participant groups to one of six conditions after their third practice round. Participants remained in the same condition throughout the study. Importantly, in the RPI condition, all participants within the same workgroup received the same type of reward and remained in the

[45] Participants were informed prior to round 1 that they were going to be paid based on their performance in one randomly selected round. This design choice was made to allow for greater financial value of budget-based rewards, while still offering greater statistical power through a repeated-measures design.

same group for the remainder of the study.

Reward Type

Participants had the opportunity to earn rewards for their performance above their self-set budgets (i.e., budget variance).[46] This type of incentive contract incentivizes participants to understate their performance capabilities by creating slack when participating in the budgeting process (i.e., slack-inducing incentive contract) (Waller 1988; Young 1985).[47] Those in the cash rewards condition earned $1 for each order they completed above their self-set budgets. Those in the tangible rewards condition earned a gift card, the value of which was based on earning one dollar for each order completed above budget. Fifty-five percent of organizations that employ tangible rewards to compensate employees use gift cards that employees can use towards merchandise or services (Incentive Federation 2007). Consulting firms stress the importance of giving employees a choice when using tangible rewards and recommend that the rewards take the form of hedonic, non-essential items (BI 2009;

[46] Participants did not receive a wage for participating. The design choice to exclude a wage was an attempt to increase the tension between participants' preferences for honesty and for wealth (Rankin et al. 2008). The exclusion of a wage has no effect on economic predictions of behaviour in this setting. For example, if a $5 wage (i.e., show-up fee) were provided to participants, an individual in the cash condition that created 10 units of slack would earn $15 plus their practice round pay, whereas an individual that created no slack would earn only their practice round pay. In my study, an individual in the cash condition that created 10 units of slack would earn $10 plus their practice round pay, whereas an individual that created no slack would earn only their practice round pay. Thus, a show up fee results in earnings (excluding practice round pay) ranging from $5 to $15, whereas no show up fee results in earnings (excluding practice round pay) ranging from $0 to $10; both offer a $10 range of earning possibility.

[47] Prior studies examining honesty in terms of budget slack tend to use a slack-inducing incentive contract (e.g., Evans et al. 2001). However, prior studies examining both budget slack and performance simultaneously tend to also use a review mechanism such as superiors' acceptance as a way to improve the link between budget level and performance (e.g., Fisher et al. 2002). Chow et al. (1988) is the only study other than mine (that I am aware of) that examines both budget slack and performance using a slack-inducing incentive contract. In their study, they compare the relative effects of a slack-inducing contract versus a truth-inducing contract on budget slack and performance. Notably, the authors find that budget slack and performance are positively correlated, which is opposite to my prediction in hypothesis 5. While use of a slack-inducing incentive contract allows for greater power regarding my study of honest budgeting, it biases against finding that budget slack has a negative effect on performance. Thus, my incentive contract choice may result in a budget that has greater implications for planning (via its effect on budget slack) than employee motivation and effort.

Globoforce 2008; Incentive Services 2003; 2006; Maritz 2009). Based on pilot testing, Second Cup, Chapters, Cineplex Odeon, and Marble Slab were identified as hedonic gift card locations from which participants could select their tangible reward (see Appendix C for description of locations). Finally, in the redeemable points condition, participants earned 1 point for each order they completed above budget. At the end of the study, participants in this condition redeemed their points for a gift card of equivalent dollar value for one of the four locations listed above.

Prior to the first production round, participants from both the tangible and points conditions selected the gift card they would like to receive; however, both conditions allowed participants to change this selection once the task was completed. This design choice attempted to avoid any structural differences between the two conditions (i.e., to avoid differences in behaviour that can be attributed to selecting tangible rewards at a different time). Importantly, the economic value of the budget-based rewards were equal in all three reward conditions, and participants were made aware of the economic value of their tangible reward prior to completing the task (McGraw et al. 2010).[48] By maintaining the same dollar value of rewards between conditions, any difference in participants' behaviour should be the result of how they perceived their reward type as described in the hypotheses development rather than differences related to the dollar value of those rewards.

Relative Performance Information

[48] Those in the redeemable points condition were reminded twice that each point earned was equivalent to an additional dollar on a gift card of their choosing. Further, prior to round 1, participants in this condition were asked, "At what rate are points redeemable for a balance on a gift card?" All but one participant accurately answered this question on their first try.

At the end of each round, for those not provided with RPI (i.e., RPI absent condition), the program informed each participant of his own budget variance, calculated as performance over (under) his self-set budget. Each participant was also informed of the rewards (type and amount) he earned in that round. For those provided with RPI, the program also informed participants of the budget variances (and compensation) of the other two members of their work group.[49] The provision of budget variance only (not budget level or actual performance as separate items) provided sufficient ambiguity around whether others' budget variance was generated by effort or by understating their performance capabilities.[50]

4.4.2 Process measures

Recall, theory suggests people use various contextual factors such as personal norms, affective state, and descriptive norms, to rationalize their dishonest behavior. To gain a better understanding of how participants rationalized their behaviour in this experiment, I asked them to respond to a series of statements by rating their level of agreement on a 7-point Likert scale labeled from strongly disagree to strongly agree (see Appendix E). These measures include statements of the following: whether rewards will be spent on wants or needs (*Want*), whether rewards are thought of as separate from everyday cash (*Separate*), perceptions of reward attractiveness (*Attractive*), affect caused by thinking about potential rewards (*Affect*: adopted from Vincent et al. 2012), whether the reward is framed more as an ethical decision

[49] Although most firms do not communicate relative performance information about others' pay and rewards, there are some notable exceptions (Day 2006). Some firms adopt an open management policy to improve control and motivation whereby the secrecy around others compensation is removed (Colella et al. 2007).
[50] A number of other accounting experiments that examine the effects of peer influence on individual behaviour consider groups of two to four people (e.g., Chen et al. 2012; Fisher et al. 2002; Fisher et al. 2003; Kelly 2010). Goldberg (1954) finds that the degree of conformity in groups of four is no different than the degree of conformity in groups of two, and regardless of whether groups consist of two or four people, conformity occurs within the first few exposures (i.e., rounds).

or a business decision (*Frame*: adopted from Heyman and Ariely 2004), feelings of reciprocity (*Reciprocity*), whether creating slack is unethical (*Unethical*: adopted from Schatzberg and Stevens 2008), and whether others close to them would approve of their budgeting decision (*Approve*).

4.5 Dependent Variables

The two dependent variables in this study were participants' *Budget Slack* and their *Performance* over rounds two and three of production. I excluded round 1 from my analysis because those in the RPI condition did not receive feedback about others behaviour until after round 1. Further, after round 1, participants were reassured that budget slack would not be detected nor punished. As in Fisher et al.'s (2002) study, *Budget Slack* was calculated as:

$$Budget\ Slack_{ji} = Ability_{ji} - Budget\ Level_{ji} \quad [1]$$

where $Budget\ Level_{j}$ is participant j's budgeted performance in production round i (i is either round two or three). Participants self-set their *Budget Level* before each production round by responding to the following statement:

> To help with planning and to determine your potential **[enter reward type]** for the round, set a performance target of the maximum number of orders you think you will correctly complete this round:
>
> I target that I will correctly complete _____ orders this round.

$Ability_{ji}$ represented an individual's knowledge of his performance capability or skill based on his performance in the last practice round (i.e., round 3) (Fisher et al. 2002). For purposes of analysis, instances of negative slack (i.e., Budget Slack < 0) were adjusted (Evans et al. 2001;

Huddart and Qu 2013) because the choice is inconsistent with participants trading wealth for honesty. That is, if *Budget Level* was greater than *Ability*, then *Budget Level* was made equal to *Ability* (i.e., *Budget Level* ≤ *Ability*).[51] $Performance_{ji}$ was the second dependent variable and was measured as the number of correct orders that participant j completed in round i.

Given the operationalization of *Budget Slack*, those higher in *Ability* have an opportunity to create more slack than those lower in *Ability*. Regarding *Performance*, those higher in *Ability* are likely to outperform those lower in *Ability* (Bonner and Sprinkle 2002). Thus, when analyzing *Budget Slack* and *Performance* as dependent measures, I use participants' *Ability* as a covariate.

4.6 Conclusion

I employed a 2 x 3 x 3 mixed factorial experiment to test the effects of *Reward Type* and *RPI* on *Budget Slack* and *Performance*. A summary of the experimental procedures used is presented in Appendix B and specifics regarding the programming of the instrument are presented in Appendix G. The next chapter provides the results of this experiment.

[51] Five of 166 (3%) budgets resulted in negative slack in either round 2 or 3. Of these ten negative slack budgets, three where in the cash condition, one was in the tangible condition, and six were in the points condition. Further, five were in the *RPI* absent condition and five were in the *RPI* present condition. Three participants reported negative slack in both periods (6 of 10). Inferences of results are unaffected by excluding these three participants from analysis.

Chapter 5: Results

5.1 Introduction

This chapter provides the results of the experiment described in Chapter 4. The effects of *Reward Type* on *Budget Slack* (i.e., Hypothesis 1 and 2, and Research Question 1) are tested in Section 5.2 and the effect of *RPI* on *Budget Slack* (i.e., Hypothesis 3) is tested in Section 5.3. Section 5.4 examines the process measures used to explain results in Section 5.2 and 5.3. The interactive effects of *Reward Type* and *RPI* on *Budget Slack* (i.e., Hypothesis 4 and Research Question 2) are tested in Section 5.5. Section 5.6 examines whether budget slack mediates the interactive effects of *Reward Type* and *RPI* on *Performance* (i.e., Hypothesis 5). The direct effects of *Reward Type* on *Performance* (i.e., Research Question 3) are tested in Section 5.7, and the direct effect of *RPI* on *Performance* (Hypothesis 6) is tested in Section 5.8. Supplemental analysis is discussed in Section 5.9. The chapter concludes in Section 5.10.

5.2 The Effects of Reward Type on Budget Slack

Hypotheses 1 to 4 and Research Questions 1 and 2 examine *Budget Slack* as the dependent variable.[52] Panel B of Table 1 provides descriptive results for *Budget Slack* by experiment condition. Table 2 provides the results of a repeated measure ANCOVA with *Reward Type* and *RPI* as independent variables, *Round* as the repeated measure, *Budget Slack*

[52] I could have developed hypotheses 1 to 4 using budget difficulty instead of *Budget Slack* as the theoretical construct for the dependent variable, with the directional prediction changing (i.e., higher slack results in less difficult budgets). However, I only examine and report results based on *Budget Slack*. I find budget difficulty and *Budget Slack* are highly negatively correlated (not tabulated, $r = -0.91$; $p < 0.01$). Moreover, inferences regarding hypotheses 1 to 4 are unchanged if budget difficulty is used instead of *Budget Slack*.

(for each of the last two production rounds) as the dependent variable, and *Ability* as a covariate.[53] Results show that *Round* is the only within-subject effect that is significant (Table 2: F = 3.17, p = 0.08; two-tailed).[54] Specifically, *Budget Slack* is greater in round 3 than in round 2 (Panel B of Table 1: M(round 3) = 9.5 vs. M(round 2) = 8.7). Because *Round* does not interact with any of the between-subject factors, I use participants' *Average Budget Slack* over rounds 2 and 3 to test hypotheses and research questions relating to *Budget Slack.*

Table 1: Descriptive Results [N=162] [1]

Panel A: Total Number of Participants

	Cash	Tangible	Points	Total
RPI Not Provided	29	28	25	82
RPI Provided	27	27	30	84
Total	56	55	55	166

Panel B: Mean (Standard Deviation) Budget Slack

	Round 1	Round 2	Round 3	Avg. Last 2[2]
RPI Absent				
Cash	7.0 (5.9)	9.0 (6.7)	9.3 (6.8)	9.1 (1.1)
Tangible	6.6 (5.0)	7.6 (5.7)	8.9 (5.8)	8.4 (1.2)
Points	6.8 (6.1)	7.2 (6.5)	7.4 (6.7)	7.2 (1.2)
Average	6.8 (5.6)	8.0 (6.3)	8.6 (6.4)	8.2 (0.7)
RPI Present				
Cash	7.8 (6.0)	10.0 (6.6)	11.2 (6.3)	10.8 (1.2)
Tangible	6.5 (6.1)	9.9 (6.8)	11.4 (6.3)	10.6 (1.2)
Points	6.4 (5.8)	8.6 (6.9)	8.9 (6.2)	8.7 (1.1)
Average	6.9 (5.9)	9.5 (6.7)	10.4 (6.3)	10.0 (0.7)

[53] There are two potential alternatives for measuring *Ability*. 1) *Ability* could be measured as participants' maximum performance prior to setting their *Budget* in any particular round. For example, if an individual completed more correct orders in his third practice round than his first actual production round, $Ability_{ji}$ for calculating budget slack in the second production round would be performance in the third practice round. However, if he performed better in his first actual production round than in any of his practice rounds, then performance in his first actual production round would be his *Ability* in the second production round. Results are unaffected by using this measure of *Ability*. 2) *Ability* could be measured as a participant's maximum performance in the three practice rounds. Inferences are unaffected by using this measure of *Ability*.

[54] All F-stats from ANCOVA models are reported two-tailed regardless of the directional nature of predictions.

Table 1 (Continued):

Average Cash	7.4 (5.9)	9.5 (6.6)	10.2 (6.5)	10.0 (0.8)
Average Tangible	6.5 (5.6)	8.8 (6.3)	10.2 (6.2)	9.5 (0.8)
Average Points	6.6 (5.9)	8.0 (6.6)	8.2 (6.5)	8.0 (0.8)
Average Total	6.8 (5.8)	8.7 (6.5)	9.5 (6.4)	9.1 (6.2)

Panel C: Mean (Standard Deviation) Performance

	Ability	Round 1	Round 2	Round 3	Avg. Last 2[2]
RPI Absent					
Cash	18.0 (3.0)	18.5 (3.5)	19.5 (4.0)	19.4 (3.0)	19.2 (0.4)
Tangible	17.4 (2.6)	18.0 (2.6)	18.8 (2.7)	19.1 (2.7)	19.2 (0.4)
Points	18.1 (3.0)	18.9 (2.9)	19.6 (2.8)	19.8 (3.1)	19.4 (0.4)
Average	17.8 (2.8)	18.5 (3.0)	19.3 (3.2)	19.4 (2.9)	19.3 (0.2)
RPI Present					
Cash	17.0 (2.1)	18.4 (2.1)	20.2 (2.9)	20.4 (2.1)	20.9 (0.4)
Tangible	18.0 (3.5)	19.1 (2.8)	20.2 (3.8)	19.9 (3.5)	19.9 (0.4)
Points	17.8 (3.3)	19.5 (3.1)	20.2 (3.1)	20.3 (3.2)	20.2 (0.3)
Average	17.6 (3.0)	19.0 (2.7)	20.2 (3.3)	20.2 (3.0)	20.3 (0.2)
Average Cash	17.5 (2.6)	18.4 (2.9)	19.8 (3.5)	19.9 (2.7)	20.1 (0.3)
Average Tangible	17.7 (3.0)	18.5 (2.7)	19.5 (3.3)	19.5 (3.1)	19.5 (0.3)
Average Points	17.9 (3.1)	19.2 (3.0)	20.0 (3.0)	20.0 (3.2)	19.8 (0.3)
Total Average	17.7 (2.9)	18.7 (2.9)	19.8 (3.3)	19.8 (3.0)	19.8 (0.2)

[1] See Appendix F for variable definitions. One hundred sixty-six participants attended one of 12 sessions. The number of participants varied in each session (9 participants to 26 participants).
[2] Means reflect Average for rounds 2 and 3, and are covariate-adjusted for participants' ability. Therefore, instead of standard deviations, the brackets report the delta-method standard error.

Panel A of Table 3 reports ANCOVA results with *Reward Type* and *RPI* as independent variables, *Average Budget Slack* (over the last two production rounds) as the dependent variable, and *Ability* as a covariate.[55] Consistent with prior research (e.g., Fisher et al. 2002; Webb 2002), I observe that those higher in *Ability* generate more slack than those

[55] In section 4.5, I argue that excluding round 1 from the analysis is appropriate because participants were still familiarizing themselves with the task and *RPI* feedback had yet to be provided. However, if *Average Budget Slack* also includes round 1 (i.e., average across all three rounds) results differ such that there is no difference in *Budget Slack* between *Reward Type* conditions (not tabulated: $t < 1.55$; $p > 0.12$) or *RPI* conditions (not tabulated: $F = 2.26$; $p = 0.13$).

lower in *Ability* (Panel A of Table 3: F = 3.46, p = 0.06; two-tailed).[56] I use planned contrast tests, without reference to the non-significant ANOVA F-test (Panel A of Table 3; F = 1.60, p = 0.20; two-tailed), to test hypotheses 1 and 2, and research question 1 because there are three levels of *Reward Type* (Buckless and Ravenscroft 1990; Keppel 1991).

Table 2: The Effects of Reward Type and RPI on Budget Slack [N=166] [1]

Panel A: Repeated Measures ANCOVA (n=332)

Source	df	MS	F-stat	p-value
Between-Subjects Effects				
Reward Type	2	118.73	1.60	0.20
RPI	1	278.94	**3.76**	**0.05**
Reward Type * RPI	2	3.53	0.05	0.95
Ability	1	256.79	**3.46**	**0.06**
Residual	159	74.11		
Within-Subjects Effects				
Round	1	24.00	**3.17**	**0.08**
Reward Type * Round	2	8.08	1.16	0.31
RPI * Round	1	2.76	0.37	0.55
Reward Type * RPI * Round	2	0.61	0.08	0.92
Ability * Round	1	14.39	1.90	0.17
Residual	159	7.57		
Total	331	41.67		

[1] See Appendix F for variable definitions. Repeated ANCOVA analysis of 166 participants' *Budget Slack* for rounds 2 and 3 resulted in 332 observations; p-values are two-tailed.

5.2.1 Cash vs. Tangible Rewards

Hypothesis 1 predicts that those pursuing tangible rewards will generate more *Budget Slack* than those pursuing cash rewards.[57] Inconsistent with hypothesis 1, *Average Budget*

[56] *Ability* is positively correlated with *Average Budget Slack* (not tabulated: r = 0.13; p = 0.09; two-tailed).
[57] Consistent with economic theory regarding the transaction costs associated with tangible rewards, on average participants feel that a $10 gift card to the four locations used in the study is worth less than $10 cash (Table 4, *Least*: M(cash) = $8.66, M(tangible) = $8.65, M(points) = $8.93, and M(overall) = $8.74; M(overall) vs. $10.00,

Slack for those in the cash condition is 10.0 orders and for those in the tangible condition is 9.5 orders (Panel B of Table 1). This difference in *Average Budget Slack* is insignificant (Planned Contrast 1, Panel B of Table 3: t = 0.41, p = 0.68; two-tailed).[58] Thus, I do not find support for hypothesis 1.

Table 3: The Effects of Reward Type and RPI on Average Budget Slack [N=166][1]

Panel A: ANCOVA[2]

Source	Df	MS	F-stat	p-value
Reward Type	2	59.36	1.60	0.20
RPI	1	139.47	**3.76**	**0.05**
Reward Type * RPI	2	1.77	0.05	0.95
Ability	1	**128.39**	**3.46**	**0.06**
Residual	159	37.06		
Total	165	37.89		

Panel B: Planned Contrasts[3]

Comparison	Contrast	t-stat	p-value
1. *H1*: Tangible vs. Cash	-0.48	0.41	0.68
2. *H2*: Tangible vs. Points	1.52	**1.30**	**0.08**
3. *RQ1*: Points vs. Cash	-1.99	**1.72**	**0.08**
4. *H3*: RPI Absent vs. RPI Present	-1.83	**1.94**	**0.03**
5. H4a: (Tangible - Cash) when RPI Absent < (Tangible - Cash) when RPI Present	9.24	**1.46**	**0.07**
6. H4b: (Tangible - Points) when RPI Absent < (Tangible - Points) when RPI Present	12.81	**2.02**	**0.02**
7. *RQ2*: (Points - Cash) when RPI Absent vs. (Points -Cash) when RPI Present	12.58	**1.89**	**0.06**

t = 7.37, p < 0.01; one-tailed). There is no difference in *Least* by *Reward Type* (not tabulated: t < 0.66, p > 0.54; two-tailed). Also consistent with economic theory, participants in the tangible and points condition would rather receive cash than a gift card of equivalent value (Table 4, *Rather*: M(tangible) = 5.9 and M(points) = 5.9; M(overall) vs. 4.0 (neutral), t = 16.05, p < 0.01; one-tailed).

[58] Hypothesis 1 is a directional prediction but descriptive results are in the opposite direction of the prediction. Thus, the contrast p-value has been shown as two-tailed.

Table 3 (Continued):

[1] See Appendix F for variable definitions. ANCOVA analysis of 166 participants' *Average Budget Slack* for rounds 2 and 3.
[2] p-values are two-tailed.
[3] p-values are one-tailed with the exception of Contrasts 3 and 7 because of their non-directional prediction. Contrasts 5 to 7 use a {-3 1 -2 4} contrast based on main effects predicted in hypothesis 1 and 2, and on the findings in research question 1. The contrast order reflects {Reward Type 1/RPI Absent, Reward Type 1/RPI Present, Reward Type 2/RPI Absent, Reward Type 2/RPI Present}. See Panel A of Figure 3 for graphical representation of covariate adjusted means.

The theory underlying hypothesis 1 argues that people view stealing cash as more serious a crime compared to stealing tangible items. Consistent with theory, on average, participants feel stealing $10 cash is a more serious crime than stealing a $10 gift card (*Steal*: M(overall) = 4.7, M(overall) vs. 4.0, t = 7.35, p < 0.01; one-tailed).[59] Theory underlying hypothesis 1 also argues that people pursuing tangible rewards will use their rewards more for purchasing/enjoying wants than for purchasing/enjoying needs (*Want)* and will think of their rewards as more separate (*Separate*) from their everyday cash than those pursuing cash; higher levels of *Want* and *Separate* are expected to lead to greater *Budget Slack.* As shown in Table 4, those in the tangible condition maintain higher levels of *Want* (Table 4, *Want*: M(cash) = 4.8 vs. M(tangible) = 5.6, t = 2.40, p = 0.01; two-tailed) and higher levels of *Separate* (Table 2: M(cash) = 5.4 vs. M(tangible) = 6.1, t = 2.47, p < 0.01; one-tailed). However, inconsistent with expectations, *Want* and *Separate* are uncorrelated with *Average Budget Slack* (not tabulated: respectively, r = 0.07, p = 0.39 and r = -0.09, p = 0.23; two-tailed).

[59] *Steal* does not differ by reward type conditions (not tabulated: p > 0.37; two-tailed) or by RPI condition (not tabulated: p = 0.53; two-tailed).

Table 4: Mean (Standard Deviation) Process Measures[1]

	Want	Separate	Attractive	Affect	Desire[2]	Distinct[2]	Gift	Reciprocity	Value	Rather	Care
RPI Absent											
Cash	4.7	5.2	6.3	5.8	0.1	-0.4	4.6	4.8			
	(1.7)	(1.8)	(0.8)	(1.3)	(0.9)	(1.2)	(2.0)	(2.2)			
Tangible	5.4	6.1	6.2	6.3	0.1	0.2	5.2	4.7		5.6	
	(1.9)	(1.3)	(0.9)	(0.9)	(1.0)	(1.0)	(1.8)	(1.8)		(1.5)	
Points	5.2	5.5	5.8	5.7	-0.3	0.0	5.0	4.2	3.7	6.2	
	(1.7)	(1.4)	(1.2)	(1.2)	(1.3)	(0.8)	(1.5)	(2.0)	(2.0)	(1.0)	
Average	5.1	5.6	6.1	5.9	0.0	-0.1	4.9	4.6		5.9	
	(1.8)	(1.6)	(1.0)	(1.1)	(1.1)	(1.0)	(1.8)	(2.0)		(1.3)	
RPI Present											
Cash	5.0	5.6	6.6	6.4	0.5	-0.2	4.6	3.6			3.3
	(2.2)	(1.8)	(0.7)	(0.8)	(0.7)	(1.3)	(1.9)	(1.8)			(1.7)
Tangible	5.9	6.0	6.0	6.2	0.0	0.4	4.0	4.0		6.1	3.4
	(1.1)	(1.3)	(1.1)	(0.8)	(0.9)	(0.7)	(2.0)	(2.2)		(1.0)	(1.9)
Points	5.2	5.6	5.8	5.6	-0.4	0.0	4.9	4.4	4.2	5.7	3.2
	(1.7)	(1.3)	(1.2)	(1.1)	(1.0)	(0.8)	(1.5)	(1.7)	(1.8)	(1.3)	(1.7)
Average	5.3	5.7	6.1	6.0	0.0	-0.1	4.5	4.0		5.9	3.3
	(1.7)	(1.6)	(1.0)	(1.0)	(1.0)	(1.0)	(1.8)	(1.9)		(1.2)	(1.7)
Total											
Cash	4.8	5.4	6.4	6.1	0.3	-0.3	4.6	4.2			3.3
	(2.0)	(1.8)	(0.8)	(1.0)	(0.9)	(1.2)	(1.9)	(2.0)			(1.7)
Tangible	5.6	6.1	6.1	6.2	0.1	0.3	4.6	4.3		5.9	3.4
	(1.5)	(1.3)	(1.0)	(0.9)	(0.9)	(0.9)	(1.9)	(2.0)		(1.3)	(1.9)
Points	5.1	5.6	5.8	5.6	-0.4	0.0	4.9	4.3	4.0	5.9	3.2
	(1.6)	(1.4)	(1.1)	(1.2)	(1.1)	(0.8)	(1.5)	(1.8)	(1.9)	(1.2)	(1.7)

Table 4 (Continued):

	Unethical	Justify	Frame	Steal	Least
RPI Absent					
Cash	4.9	4.7	4.7	4.6	$8.75
	(2.0)	(1.8)	(2.1)	(1.2)	($2.42)
Tangible	5.2	4.5	4.6	4.8	$8.38
	(1.8)	(1.9)	(2.0)	(1.1)	($2.03)
Points	4.8	4.3	4.5	4.5	$8.35
	(2.1)	(1.7)	(2.1)	(1.3)	($2.41)
Average	5.0	4.5	4.6	4.6	$8.50
	(2.0)	(1.8)	(2.0)	(1.2)	($2.27)
RPI Present					
Cash	4.3	5.0	5.4	4.7	$8.56
	(2.0)	(1.9)	(1.9)	(1.2)	($2.14)
Tangible	4.4	4.7	4.7	4.8	$8.96
	(1.8)	(1.8)	(2.3)	(1.2)	($1.79)
Points	4.4	4.7	4.9	4.6	$9.40
	(1.7)	(1.6)	(1.7)	(1.1)	($2.10)
Average	4.3	4.8	5.0	4.7	$9.00
	(1.8)	(1.8)	(2.0)	(1.1)	($2.03)
Total					
Cash	4.6	4.8	5.1	4.6	$8.66
	(2.0)	(1.8)	(2.0)	(1.2)	($2.28)
Tangible	4.8	4.6	4.6	4.8	$8.65
	(1.8)	(1.8)	(2.1)	(1.1)	($1.93)
Points	4.6	4.5	4.7	4.6	$8.93
	(1.9)	(1.7)	(1.9)	(1.2)	($2.28)

[1] See Appendix F for description of process measures; *Least* is missing 5 observations (n = 161) because it was an open-ended question and 5 students choose not to answer.
[2] *Desire* and *Distinct* are created using exploratory factor analysis and factor loadings. See Table 3 for description of how variables were calculat

Theory underlying hypothesis 1 also argues that people pursuing tangible rewards will view their potential rewards as more attractive (*Attractive*) and experience greater emotion or affect when thinking about their potential rewards (*Affect*); higher levels of both *Attractive* and *Affect* are expected to lead to greater *Budget Slack.*[60] Consistent with expectations, *Attractive* and *Affect* are both correlated with *Average Budget Slack* (not tabulated: respectively, r = 0.14, p = 0.07 and r = 0.16, p = 0.05; two-tailed). However, the effect of *Reward Type* (Cash vs. Tangible) on *Attractive* and *Affect* is inconsistent with expectations. Specifically, participants in the cash condition experienced levels of *Affect* similar to those in the tangible condition (Table 4: M(cash) = 6.1 vs. M(tangible) = 6.2, t = 0.52, p = 0.30; one-tailed), and they find their potential rewards to be similarly *Attractive* as those in the tangible condition (Table 4: M(cash) = 6.4 vs. M(tangible) = 6.1: t = 1.61, p = 0.12; two-tailed).

Measures of *Want* and *Separate* are correlated with measures of *Attractive* and *Affect* (not tabulated: r > 0.16, p < 0.05; two-tailed). As shown in Table 5, exploratory factor analysis indicates that two of these four measures (*Affect*, and *Attractive)* represent a single construct (*Desire)* with all loadings greater than 0.81 and an eigenvalue (variance explained) of 1.9 (48%).[61] Further, *Want* and *Separate* represent a second construct (*Distinct*) with loadings greater than 0.70 and an eigenvalue of 1.0 (26%). I use factor scores to calculate measures of *Desire* and *Distinct* for each participant. *Desire* is correlated with *Average Budget Slack* (not tabulated: r = 0.19, p = 0.01; two-tailed), while *Distinct* is uncorrelated with *Average Budget Slack* (not tabulated: r = 0.00, p = 0.99;

[60] *Affect* and *Attractive* are highly correlated (not tabulated; r = 0.50, p < 0.01; two-tailed).
[61] The Cronbach alpha for *Desire* and *Distinct* is low at 0.61 and 0.54.

two-tailed). Although participants in the tangible rewards condition score higher on *Distinct* than those in the cash condition (Table 4: M(cash) = -0.3 vs. M(tangible) = 0.3, t = 3.17, p < 0.01; two-tailed), participants in the tangible condition appear to *Desire* their budget based rewards similar to those in the cash condition (Table 4: M(cash) = 0.3 vs. M(tangible) = 0.1, t = 0.87, p = 0.39: two-tailed).

Table 5: Exploratory Factor Analysis [N=166][1]

	Factor Loadings	
	Desire	Distinct
Item		
1. Want	0.41	**0.71**
2. Separate	-0.02	**0.90**
3. Attractive	**0.87**	0.09
4. Affect	**0.82**	0.09
Eigenvalue	1.9	1.0
% of Variance explained	48%	26%

[1] See Appendix F for variable definitions. All items measured using a 7-point scale with endpoints labeled "strongly disagree" (1) and "strongly agree" (7). Exploratory factor analysis was conducted with factors rotated using varimax.

5.2.2 Tangible Rewards vs. Point Rewards

Hypothesis 2 predicts that those pursuing tangible rewards will generate more *Budget Slack* than those pursuing redeemable points. As shown in Panel B of Table 1, those in the tangible condition have *Average Budget Slack* of 9.5 compared to 8.0 for those in the points condition. As shown in Panel B of Table 3 (Planned Contrast 2), this difference in *Budget Slack* is significant (t = 1.30, p = 0.08; one-tailed). Thus, I find support for hypothesis 2.

Psychological myopia theory provides two reasons to expect points would lead to less *Budget Slack* than tangible rewards. First, points (compared to tangible rewards) likely lead people to frame the budgeting task as more of an ethical decision than an economic decision. Second, tangible rewards (compared to points) likely lead people to experience greater positive emotion, diminishing the saliency of personal norms of honesty and leading to more justification of their dishonest behavior (i.e., *Budget Slack* creation). Although participants that frame the budgeting task as more of an economic task than an ethical task (*Frame*) generate more *Budget Slack* (not tabulated: $r = 0.46$, $p < 0.01$; two-tailed), *Frame* for those in tangible condition is similar to those in the redeemable-points condition (Table 4: M(tangible) = 4.6 vs. M(points) = 4.7, $t = 0.19$, $p = 0.42$; one-tailed). Rather, it appears that support for hypothesis 2 results from participants in the tangible condition experiencing higher levels of *Desire* than those in the points condition (Table 4: M(tangible) = 0.1 vs. M(points) = -0.4, $t = 2.53$, $p < 0.01$; one-tailed). In fact, results in Table 6 show that *Desire* mediates the effect of tangible vs. point rewards on *Budget Slack* (Baron and Kenny 1986).[62] First, *Desire* has a significant effect on *Budget Slack* (Panel A of Table 6; $F = 4.82$, $p = 0.03$; two-tailed). Second, upon including *Desire* in the model, there is no longer a significant difference between the two reward types in terms of *Budget Slack* (Planned Contrast 2, Panel B of Table 6: $t = 1.14$, $p = 0.19$; one-tailed).[63]

[62] All mediation tests in this study control for *Ability*. Inferences regarding the effects of *Ability* are no different in mediation tests as compared to those reported for the hypotheses tests. Thus, the effects of *Ability* in the mediation tests are not further discussed.

[63] A potential alternative explanation is that point rewards are viewed more as a *Gift* than tangible rewards and participants reciprocate the gift with less *Budget Slack*. Although *Gift* is not correlated with *Budget*

Table 6: The Effects of Reward Type and RPI on Average Budget Slack Controlling for Desire [N=166][1]

Panel A: ANCOVA[2]

Source	Df	MS	F-stat	p-value
Reward Type	2	51.20	0.71	0.49
RPI	1	126.21	**3.49**	**0.06**
Reward Type * RPI	2	3.77	0.10	0.90
Ability	1	134.45	**3.72**	**0.06**
Desire	1	174.33	**4.82**	**0.03**
Residual	158	36.19		
Total	165	37.89		

Panel B: Planned Contrasts[3]

Comparison	Contrast	t-stat	p-value
1. *H1*: Tangible vs. Cash	-0.29	0.26	0.80
2. *H2*: Tangible vs. Points	1.04	1.14	0.19
3. *RQ1*: Points vs. Cash	-1.34	0.90	0.26

[1] See Appendix F for variable definitions. ANCOVA analysis of 166 participants' *Average Budget Slack* for rounds 2 and 3.
[2] p-values are two-tailed.
[3] p-value are one-tailed for contrast 1 and 2 based on the directional prediction; p-value is two-tailed for contrast 3.

5.2.3 Cash Rewards vs. Point Rewards

Research question 1 considers whether those pursuing cash rewards will generate a different amount of *Budget Slack* than those pursuing points rewards. The *Average Budget Slack* for cash and points rewards is 10.0 and 8.0, respectively (Table 1, Panel B), and this difference is significant (Planned Contrast 3, Panel B of Table 3: t = 1.72, p =

Slack (not tabulated: r = 0.01, p = 0.84; two-tailed), *Reciprocity* is correlated with *Budget Slack* (not tabulated: r = -0.59, p < 0.01, two-tailed). However, *Reciprocity* does not differ between points rewards and tangible rewards (Table 4: M(tangible) = 4.3 vs. M(points) = 4.3, t = 0.19, p = 0.84; two-tailed). Thus, support for hypothesis 2 is not related to either *Gift* or *Reciprocity*.

0.08; two-tailed). Thus, those pursuing cash rewards generate significantly more slack than those pursuing points rewards.

The greater amount of *Budget Slack* under cash vs. points rewards relates to differences in *Desire* for the rewards. Those pursuing cash rewards *Desire* their rewards more than those pursuing point rewards (Table 4: M(cash) = 0.3 vs. M(points) = -0.4, t = 1.65, p = 0.09; two-tailed). Moreover, the significance of the difference between the two reward types with respect to *Budget Slack* is eliminated when *Desire* is included in the analysis (Planned Contrast 3, Panel B, Table 6: t = 0.90, p = 0.26; two-tailed). Thus, *Desire* fully mediates the effects of these two reward types on *Budget Slack* creation.

5.3 The Effect of RPI on Budget Slack

Hypothesis 3 predicts that the presence of *RPI* will result in a greater amount of *Budget Slack* compared to the absence of *RPI*. As reported in Panel A of Table 3, there is a significant main effect of *RPI* on *Average Budget Slack* (F = 3.76, p = 0.05; two-tailed). Those in the *RPI* absent condition have average *Budget Slack* of 8.2 compared to 10.0 those in the *RPI* present condition (Panel B of Table 1). These results support Hypothesis 3.[64]

Theory underlying Hypothesis 3 argues that *RPI* provides people with a descriptive norm regarding whether dishonest reporting is acceptable. I conduct two

[64] A potential alternative explanation is that those in the *RPI* present condition create more *Budget Slack* than those in the *RPI* absent condition in an attempt to compete with others in terms of budget variance. I conduct a regression with *RPI*, *Ability*, and round 1 slack (prior to seeing *RPI* feedback) as independent variables, and Average *Budget Slack* in rounds 2 and 3 as the dependent variable. While round 1 slack does have a positive association with *Budget Slack* (not tabulated: β = 0.74, p < 0.01; two-tailed), the presence of *RPI* continues to have a positive effect on *Budget Slack* (not tabulated: β = 1.61, p = 0.02; two-tailed).

supplemental tests to evaluate participants' reasoning for creating greater slack when *RPI* is present. First, I examine whether those in the *RPI* present condition respond to information suggesting different descriptive norms regarding the acceptability of reporting dishonesty contained within the *RPI* feedback. For those in the RPI present condition, I calculate a new variable called *Norm Difference* as participants' round 1 *Budget Variance* minus the average round 1 *Budget Variance* for all three participants in their *RPI* group. So, those with a negative *Norm Difference* view a descriptive norm suggesting dishonesty is acceptable (i.e., others in their group are creating more slack), while those with a positive *Norm Difference* view a descriptive norm of honesty (i.e., others in their group are creating less slack). I then conduct a linear regression with *Norm Difference* and *Ability* as independent variables and *Average Budget Slack* in rounds 2 and 3 as the dependent variable. *Norm Difference* has a negative effect on subsequent *Budget Slack* (not tabulated: b = -4.76, $p < 0.01$; one-tailed). This finding is consistent with participants using the information contained within *RPI* feedback to form a descriptive norm, which is then used to determine an appropriate level of *Budget Slack* in subsequent rounds. Those viewing a 'dishonest' descriptive norm increase their *Budget Slack* after round 1 more than those viewing an 'honest' descriptive norm.[65]

Second, I consider participants' level of agreement with the statement "In this task, it is unethical for someone to set a target significantly below his or her known

[65] The operationalization of *RPI* may have created an experimental confound such that results could be due to 1) *RPI* providing participants with information about the descriptive norms of budget slack or 2) *RPI* making salient the grouping of the participant with two other participants. The analysis on *Norm Difference* mitigates the latter concern since it demonstrates that slack creation is sensitive to the descriptive norm provided in the RPI.

performance" (*Unethical*). As shown in Table 4, *Unethical* is 5.0 for those in the *RPI* absent condition and 4.3 for those in the RPI present condition; this difference in *Unethical* is significant (not tabulated: t = 2.13, p = 0.02; one-tailed). Further, *Unethical* is negatively correlated with *Average Budget Slack* (not tabulated: r = -0.46, p < 0.01; two-tailed), and results reported in Table 7 show that *Unethical* fully mediates the effect of *RPI* on *Budget Slack. Unethical* is a significant factor in the model (Panel A of Table 7: F = 47.58, p < 0.01; two-tailed), while *RPI* is no longer significant (Panel A of Table 7: F = 1.12, p = 0.29; two-tailed).

Table 7: The Effects of Reward Type and RPI on Average Budget Slack Controlling for Unethical [N=166][1]

Panel A: ANCOVA[2]

Source	Df	MS	F-stat	p-value
Reward Type	2	68.38	**2.40**	**0.09**
RPI	1	32.23	1.12	0.29
Reward Type * RPI	2	0.04	0.00	0.99
Ability	1	249.48	**8.70**	**< 0.01**
Unethical	1	1363.74	**47.58**	**< 0.01**
Residual	158	28.66		
Total	165	37.89		

Panel B: Planned Contrasts[3]

Comparison	Contrast	t-stat	p-value
1. *H3*: RPI Absent vs. RPI Present	-0.89	1.06	0.15

[1] See Appendix F for variable definitions. Repeated ANCOVA analysis of 166 participants' *Average Budget Slack* for rounds 2 and 3.
[2] p-values are two-tailed.
[3] Planned comparisons use the mean-squared error term from the ANOVA in panel A to calculate p-values (Peecher 1996). p-value is one-tailed based on the directional prediction.

5.4 The Combined Mediated Effects of Reward Type and RPI on Budget Slack

This section examines whether *Desire* and *Unethical* continue to mediate the effects of *Reward Type* and *RPI* on *Budget Slack* when both factors are considered simultaneously in the analysis. *Desire* and *Unethical* are uncorrelated with one another (not tabulated: r = -0.07, p = 0.34; two-tailed). Further, *Desire* does not differ by *RPI* condition (Table 4; M(RPI absent) = 0.0 vs. M(RPI present) = 0.0, t = 0.80, p = 0.43; two-tailed) and *Unethical* does not differ by *Reward Type* condition (Table 4: M(cash) = 4.6 vs. M(tangible) = 4.8 vs. M(points) = 4.6; t < 0.53, p > 0.60; two-tailed). Thus, *Desire* and *Unethical* appear to be unique constructs. However, previous tests in section 5.1 and 5.2 of the mediating effect of *Desire* and *Unethical* are conducted separately for each construct. Table 8 reflects a more conservative test of mediation with the inclusion of both *Desire* and *Unethical* in the same ANCOVA examining the effects of *RPI* and *Reward Type* on *Budget Slack*. Consistent with Panel A of Table 6 and Panel A of Table 7, both *Desire* and *Unethical* (respectively) are significant predictors of *Average Budget Slack* (Panel A of Table 8: respectively, F = 3.50, p = 0.06 and F = 45.65, p < 0.01; two-tailed). Further, the effects of *Reward Type* (Contrasts 2 and 3, Panel B of Table 8: respectively, t =1.40, p = 0.10, one-tailed; t = 1.48, p = 0.14, two-tailed) and *RPI* (Contrast 4, Panel B of Table 8: t = 1.02, p = 0.16; one-tailed) are no longer significant. Thus, evidence of the mediating effects of *Desire* and *Unethical* persist when both measures are included in the same model.

Table 8: The Effects of Reward Type and RPI on Average Budget Slack Controlling for Desire and Unethical [N=166][1]

Panel A: ANCOVA[2]

Source	Df	MS	F-stat	p-value
Reward Type	2	38.56	1.37	0.26
RPI	1	29.15	1.04	0.31
Reward Type * RPI	2	0.52	0.02	0.98
Ability	1	252.30	**8.94**	**< 0.01**
Desire	1	98.65	**3.50**	**0.06**
Unethical	1	1288.05	**45.65**	**< 0.01**
Residual	157	28.22		
Total	165	37.89		

Panel B: Planned Contrasts[3]

Comparison	Contrast	t-stat	p-value
1. *H1*: Tangible vs. Cash	-0.10	0.10	0.92
2. *H2*: Tangible vs. Points	1.45	1.40	0.09
3. *RQ1*: Points vs. Cash	-1.55	1.48	0.14
4. *H3*: RPI Absent vs. RPI Present	-0.85	1.02	0.16
5. H4a: (Tangible - Cash) when RPI Absent < (Tangible - Cash) when RPI Present	4.23	0.75	0.23
6. H4b: (Tangible - Points) when RPI Absent < (Tangible – Points) when RPI Present	7.62	1.37	0.09
7. RQ2: (Points - Cash) when RPI Absent < (Points - Cash) when RPI Present	7.99	1.35	0.18

[1] See Appendix F for variable definitions. ANCOVA analysis of 166 participants' *Average Budget Slack* for rounds 2 and 3.
[2] p-values are two-tailed.
[3] p-values are one-tailed with the exception of Contrast 3 and 7 because of their non-directional prediction. Contrasts 5-7 use a {-3 1 -2 4} contrast based on main effects predicted in hypothesis 1 and 2, and on the findings in research question 1. The contrast order reflects {Reward Type 1/RPI Absent, Reward Type 1/RPI Present, Reward Type 2/RPI Absent, Reward Type 2/RPI Present}.

5.5 The Interactive Effect of Reward Type and RPI on Budget Slack

Hypothesis 4 and research question 2 consider the interactive effects of *Reward Type* and *RPI* on *Budget Slack*. Theory suggests that the overarching descriptive norm contained within *RPI* will encourage *more* dishonesty for those pursuing reward types that already allow people to rationalize lying. As shown in Panel A of Table 3, the interaction between *Reward Type* and *RPI* is insignificant (F = 0.05, p = 0.95; two-tailed). However, given that there are three levels of *Reward Type* and that the specific nature of certain aspects of the *Reward Type x RPI* interaction is hypothesized, planned contrasts represent the appropriate test rather than an ANOVA (Buckless and Ravenscroft 1990; Keppel 1991).[66]

Hypothesis 4a predicts that RPI will lead to more budget slack for individuals pursuing tangible rewards than for those pursuing cash rewards. Given the main effect prediction in hypothesis 1, I use the following contrast coding to test hypothesis 4a: Cash/RPI Absent (-3), Cash/RPI Present (1), Tangible/RPI Absent (-2), and Tangible/RPI Present (4). Consistent with hypothesis 4a and the graphed means in Panel A of Figure 3, there is a significant ordinal interaction between *Reward Type* (Cash vs. Tangible) and *RPI* such that the presence of *RPI* increased slack more for those pursuing tangible rewards than pursuing cash rewards (Contrast 5, Panel B of Table 3: t = 1.46, p = 0.07; one-tailed). Hypothesis 4b predicts that provision of *RPI* will lead to a greater increase in *Budget Slack* for individuals pursuing tangible rewards than for those pursuing points

[66] "Using the main and interaction effects of ANOVA to explain the pattern of relationships (interactions) among cell means is appropriate only when the pattern hypothesized is testable by the conventional ANOVA (i.e., disordinal relationship) and no variable has more than two levels (Buckless and Ravenscroft 1990, p. 934)."

rewards. Given the main effect prediction in hypothesis 2, I use the following contrast coding to test hypothesis 4b: Points/RPI Absent (-3), Points/RPI Present (+1), Tangible/RPI Absent (-2), and Tangible/RPI Present (+4). Consistent with hypothesis 4b and the graphed means in Panel A of Figure 3, there is a significant ordinal interaction between *Reward Type* (Points vs. Tangible) and *RPI* such that the presence of *RPI* increased slack more for those pursuing tangible rewards than points rewards (Contrast 6, Panel B of Table 3: F = 2.02, p = 0.02; one-tailed).

Figure 3: Graphical Representations of Results

Panel A: The Effects of Reward Type and RPI on Budget Slack[1]

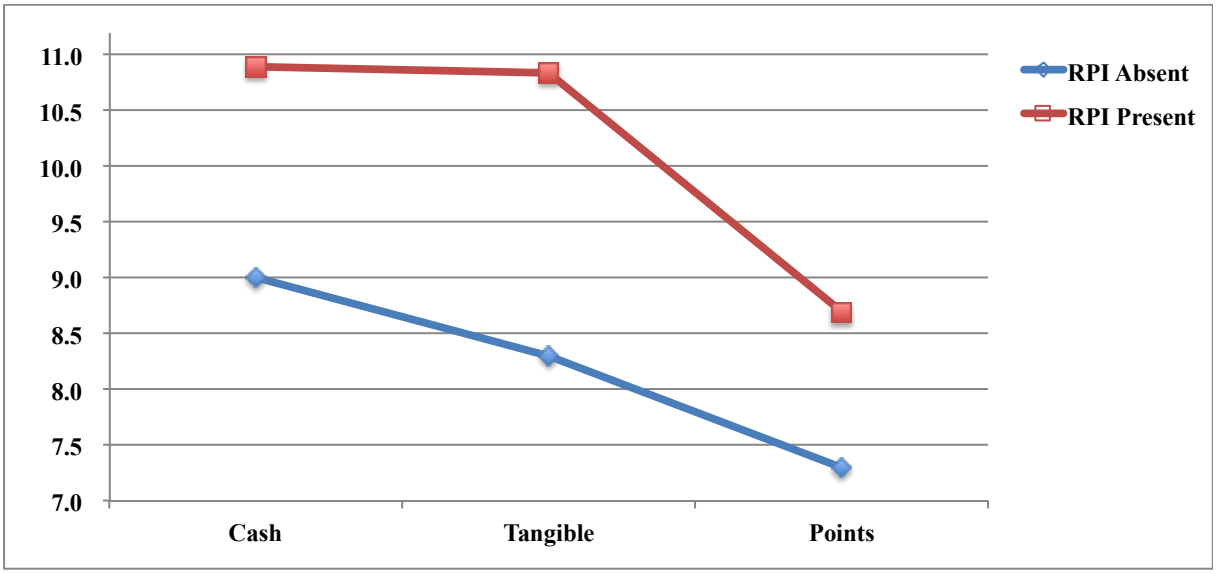
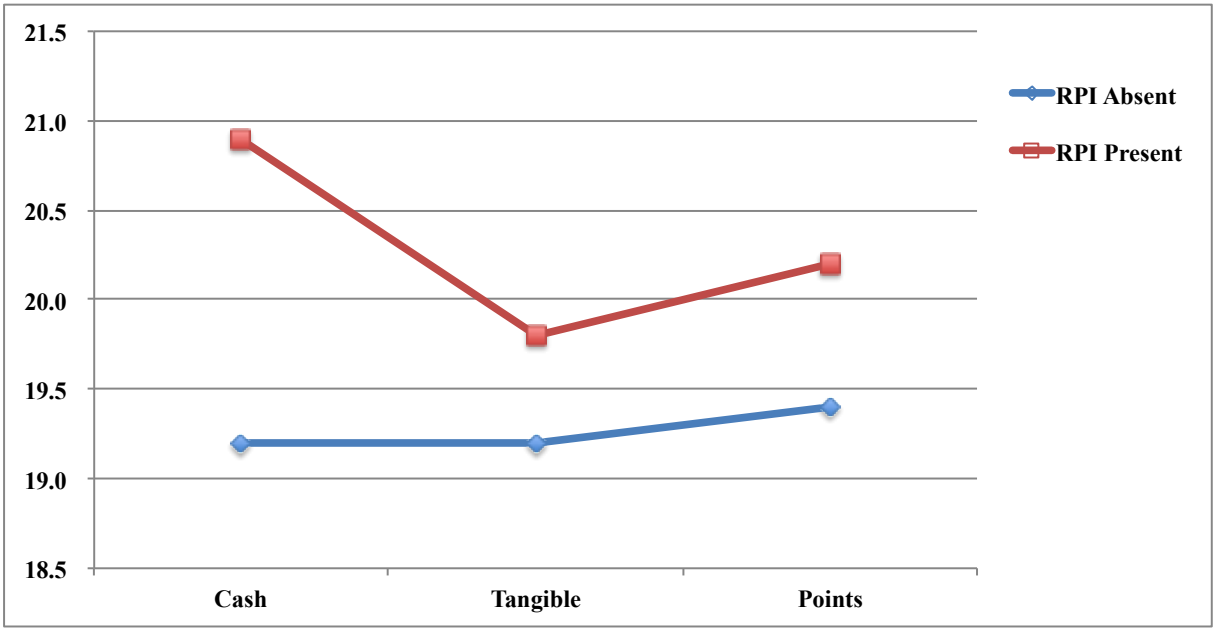


Figure 3 (Continued):

Panel B: The Effects of Reward Type and RPI on Performance[2]



[1] See Appendix F for variable definitions; Means reflect *Average Budget Slack* for rounds 2 and 3 (N=166) and are adjusted for participants' ability. See Panel B of Table 1 for Descriptive results.
[2] See Appendix F for variable definitions; Means reflect *Average Performance* for rounds 2 and 3 (N=166) and are adjusted for participants' ability. See Panel C of Table 1 for Descriptive results.

Finally, research question 2 asks whether *Reward Type* (Cash vs. Points) interacts with *RPI* to affect *Budget Slack*. Given the results for research question 1, I use the following contrast coding to evaluate research question 2: Points/RPI Absent (-3), Points/RPI Present (+1), Cash/RPI Absent (-2), and Cash/RPI Present (+4). Results for Contrast 7 in Panel B of Table 3 show a significant ordinal interaction between *Reward Type* (Cash vs. Points) and *RPI* such that the presence of *RPI* increased slack more for those pursuing cash rewards than pursuing points rewards ($t = 1.89$, $p = 0.06$; two-tailed). Overall, these results are consistent with theory regarding the interactive effects of descriptive norms provided by *RPI* and the personal norms made salient by *Reward*

Type.[67] Specifically, these results suggest that peoples' salient personal norms bias their interpretations of the descriptive norms contained within *RPI.* That is, peoples' interpretation of whether others are behaving dishonestly depends on their personal beliefs (made salient by reward type) that dishonesty is an acceptable way to earn rewards.[68]

5.6 The Mediating Effects of Budget Slack on Performance

Hypothesis 5 predicts that *Budget Slack* will mediate the interactive effects of *Reward Type* and *RPI* on *Performance*. Sections 5.1 to 5.4 provide evidence of the interactive effects of *Reward Type* and *RPI* on *Budget Slack.*[69] The next step in testing for mediation is showing that *Budget Slack* is associated with *Performance*. Results from an OLS regression reported in Panel A of Table 9, show that *Average Budget Slack* is not associated with *Performance* ($t = -0.14$; $p = 0.44$; one-tailed) when controlling for the positive effects of *Ability* ($\beta = 0.75$, $t = 13.78$, $p < 0.01$; one-tailed). Without a direct relationship with *Performance*, *Budget Slack* cannot mediate the interactive effects of *Reward Type* and *RPI*. Therefore, I do not find support for hypothesis 5.[70]

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[67] I conducted separate ANCOVAs to test hypotheses 4a, 4b, and research question 2 (i.e., three ANCOVAs excluding one of the reward type conditions). Although the untabulated results show the interaction term in each of these ANCOVA models is insignificant ($F < 0.09$, $p > 0.76$), the nature of the predicted interaction (see contrast code) is not reflected by the ANCOVA interaction.

[68] The global contrast that reflects hypotheses 1 to 4 [contrast code (*Reward Type, RPI*): -3 4 -2 7 -5 -1] is significant (not tabulated; $t = 2.40$; $p < 0.01$; one-tailed).

[69] Baron and Kenny (1986) argue that the first step in testing for mediation *should be* testing for an overall (total) association between the predictor and the criterion variables in order to establish an effect to be mediated. However, a number of researchers, including David Kenny, argue that establishing a total effect is not required before proceeding with tests of mediation (e.g., Hayes 2009; Kenny 2013; Mackinnon et al. 2000; Shrout and Bolger 2002).

[70] If *Average Budget Slack* and *Average Performance* also include data from round 1 (i.e., average across all three rounds), *Average Budget Slack* still has an insignificant effect on *Average Performance* (not tabulated: $p = 0.13$, one-tailed).

Table 9: The Effect of Budget Slack on Performance [N=166] [1]

Panel A: Regression of Average Performance on Average Budget Slack and Ability

	Unstandardized	Standard Error	t-stat	p-value
Budget Slack	0.00	0.03	-0.14	0.44
Ability	0.75	0.05	**13.78**	< **0.01**

$R^2 = 0.54$

Panel B: Regression of Round 1 Performance on Round 1 Budget Slack and Ability

	Unstandardized	Standard Error	t-stat	p-value
Budget Slack	-0.05	0.03	**1.78**	**0.04**
Ability	0.71	0.05	**13.01**	< **0.01**

$R^2 = 0.51$

Panel C: Regression of Round 2 Performance on Round 2 Budget Slack and Ability

	Unstandardized	Standard Error	t-stat	p-value
Budget Slack	-0.01	0.03	0.47	0.32
Ability	0.77	0.06	**11.99**	< **0.01**

$R^2 = 0.47$

Panel D: Regression of Round 3 Performance on Round 3 Budget Slack and Ability

	Unstandardized	Standard Error	t-stat	p-value
Budget Slack	0.01	0.03	0.23	0.82
Ability	0.72	0.06	**12.77**	< **0.01**

$R^2 = 0.50$

[1] See Appendix F for variable definitions; p-values expressed one-tailed because of directional prediction.

To further understand the relationship between *Budget Slack* and *Performance*, I conduct a separate regression analysis for each round of the experiment with the results

reported in Panels B to D of Table 9. In round 1, as expected, *Budget Slack* has a negative effect on *Performance* (Panel B of Table 9: $\beta = -0.05$, $t = 1.78$, $p = 0.04$; one-tailed). However, this negative effect does not persist in rounds 2 and 3 (Panels C and D: $t \leq 0.23$, $p \geq 0.32$; one-tailed). One explanation for these results, consistent with goal theory, is that participants quickly developed personal goals in my task setting (i.e., after round 1), and it is those personal goals rather than an easy budget (i.e., one that contains a high level of slack) that motivated effort (Latham and Locke 2002). For instance, on average, participants understated their *Ability* by 38% in round 1 and by 52% in the average of rounds 2 and 3;[71] this increase from round 1 to rounds 2 and 3 is significant (not tabulated: $t = 3.06$, $p < 0.01$; two-tailed). Thus, by round 2, participants' budgets likely have limited motivational effects, which results in *Budget Slack* not being significantly associated with *Performance*.

5.7 The Direct Effects of Reward Type on Performance

Research Question 3 considers the direct effects of *Reward Type* on *Performance*. Panel A of Table 10 provides the results of a repeated measure ANCOVA, with *Reward Type* and *RPI* as independent variables, *Performance* (for each of the last two production rounds) as the dependent variable, and *Ability* as a control. I exclude *Budget Slack* as a control from the ANCOVA because, as shown in Section 5.6, *Budget Slack* is not a mediator in this setting.[72] Results show that *Round* has no significant within-subject

[71] Calculated as (*Ability* – Budget)/*Ability*. Evans et al. (2001) refer to this variable as percentage slack.
[72] *Budget Slack* is insignificant if included in the Table 10 or Table 11 ANCOVA models (not tablulated: $F < 0.69$, $p > 0.40$; two-tailed). Further, the inclusion of *Budget Slack* does not change any inferences with regards to Research Question 3, Hypothesis 6, or supplemental analysis.

effects (Panel A of Table 10: ≤ 0.65, $p \geq 0.42$; two-tailed). Because *Round* does not interact with any of the between-subject factors, I use participants' *Average Performance* over rounds 2 and 3 to test Hypothesis 6 and Research Question 3 (a-c) regarding *Performance.*[73]

Table 10: The Effects of Reward Type and RPI on Performance [N=166][1]

Panel A: Repeated Measures ANCOVA (n=332)

Source	df	MS	F-stat	p-value
Between-Subjects Effects				
Reward Type	2	7.78	1.03	0.35
RPI	1	90.83	**12.00**	**< 0.01**
Reward Type * RPI	2	7.45	0.98	0.37
Ability	1	1605.06	**212.12**	**< 0.01**
Residual	159	7.57		
Within-Subjects Effects				
Round	1	1.35	0.65	0.42
Reward Type * Round	2	0.04	0.02	0.99
RPI * Round	1	0.38	0.18	0.67
Reward Type * RPI * Round	2	1.32	0.64	0.52
Ability * Round	1	1.26	0.60	0.43
Residual	159	2.08		
Total	331	1605.07		

[1] See Appendix F for variable definitions. Repeated ANCOVA analysis of 166 participants' *Average Performance* for rounds 2 and 3 resulted in 332 observations; p-values are two-tailed.

Panel A of Table 11 reports ANCOVA results with *Reward Type* and *RPI* as independent variables, *Average Performance* (over the last two production rounds) as the dependent variable, and *Ability* as a covariate. I observe that those higher in *Ability* out

[73] If *Average Budget Slack* and *Average Performance* also include data from round 1 (i.e., average across all three rounds), there is no significant difference in *Average Performance* between *Reward Type* conditions (not tabulated: $t < 1.10$; $p > 0.27$), but there is a difference in *Average Performance* between *RPI* conditions ($F = 11.26$; $p < 0.01$).

perform those lower in *Ability* (Panel A of Table 11: F = 212.12, p < 0.01; two-tailed).

Next, I test research question 3 and hypothesis 6 regarding the direct effects of *Reward Type* and *RPI* on *Performance*.

Table 11: The Effects of Reward Type and RPI on Average Performance [N=166][1]

Panel A: ANCOVA[2]

Source	df	MS	F-stat	p-value
Reward Type	2	3.90	1.03	0.36
RPI	1	45.41	**12.00**	**< 0.01**
Reward Type * RPI	2	3.72	0.98	0.38
Ability	1	802.53	**212.12**	**< 0.01**
Residual	159	3.78		
Total	165	8.75		

Panel B: Planned Contrasts[3]

Comparison	Contrast	t-stat	p-value
1. *RQ3a*: Tangible vs. Cash	-0.53	1.43	0.15
2. *RQ3b*: Tangible vs. Points	-0.29	0.77	0.44
3. *RQ3c*: Points vs. Cash	-0.24	0.66	0.51
4. *H6*: RPI Absent vs. RPI Present	1.05	**3.46**	**< 0.01**
5. *Supplemental*: (Cash - Tangible) when RPI Absent < (Cash - Tangible) when RPI Present	5.74	**3.54**	**< 0.01**
6. *Supplemental*: (Points - Tangible) when RPI Absent < (Points - Tangible) when RPI Present	3.32	**2.39**	**0.02**
7. *Supplemental*: (Cash - Points) when RPI Absent < (Cash - Points) when RPI Present	5.40	**3.16**	**< 0.01**

[1] See Appendix F for variable definitions. ANCOVA analysis of 166 participants' *Average Performance* for rounds 2 and 3. *Budget Slack* is not controlled for in the ANCOVA because, as shown in Table 9, *Budget Slack* has no effect on *Average* Performance.
[2] p-values are two-tailed.
[3] Because of their non-directional prediction, all contrasts (with the exception of contrast 4) are reported with p-values as two-tailed. Contrasts 5-7 use a {-2 3 -2 1} The contrast reflects order reflects Reward Type 1 (RPI Absent), Type 1 (RPI Present), Type 2 (RPI Absent), and Type 2 (RPI Present). See Panel A of Figure 3 for graphical representation of covariate adjusted means.

Because there are three levels of *Reward Type*, planned contrasts, without reference to the non-significant ANOVA F-test (Panel A of Table 10; F = 0.20, p = 0.20; two-tailed) are used to test Research Question 3 (Buckless and Ravenscroft 1990; Keppel 1991). As shown in Panel B of Table 11, there are no significant performance differences between any of the reward conditions (Contrasts 1-3, Panel B of Table 10: $t \leq 1.43$, $p \geq 0.15$; two-tailed).[74] Thus, *Reward Type* does not have any direct effects on *Performance*.

5.8 The Direct Effects of RPI on Performance

Hypothesis 6 predicts that the presence of *RPI* will lead to greater performance than the absence of *RPI*. As shown in Panel A of Table 11, there is a significant main effect of *RPI* on *Performance* (F = 12.00, p < 0.01; two-tailed). Those in the *RPI* absent condition complete on average 19.3 orders compared to 20.3 for those in the *RPI* present condition (Panel C of Table 1). Thus, I find support for Hypothesis 6 that *RPI* motivates greater effort.[75]

5.9 Supplemental Analysis: Interactive Effects of Reward Type and RPI on Performance

The graphical summary of *Performance* shown in Panel B of Figure 3 suggest that *RPI* improves performance more for those in the cash condition than it does for those in either the tangible or points conditions. To test for these apparent interaction effects, I

[74] *Desire* is uncorrelated with performance (not tabulated: r = -0.04, p = 0.59; two-tailed). Further, *Distinct* is uncorrelated with performance (not tabulated: r = -0.09, p = 0.22; two-tailed). Neither factor is significant if included as a covariate in the Table 11 ANCOVA (not tabulated: F < 0.02, p > 0.87; two-tailed).

[75] *Unethical* is uncorrelated with performance (not tabulated: r = 0.07, p = 0.34; two-tailed) and is not significant if included as a covariate in the Table 11 ANCOVA (not tabulated: F = 0.08, p = 0.77; two-tailed).

conduct *post hoc* contrasts in Panel B of Table 11. First, using the following contrast: Cash/RPI Absent (-2), Cash/RPI Present (+3), Tangible/RPI Absent (-2), and Tangible/RPI Present (+1) I find evidence of a significant ordinal interaction between *Reward Type* (Cash vs. Tangible) and *RPI* (Contrast 5: $t = 3.54$, $p < 0.01$; two-tailed). Second, using the following contrast: Cash/RPI Absent (-2), Cash/RPI Present (+3), Points/RPI Absent (-2), and Points/RPI Present (+1) I find evidence of a significant ordinal interaction between *Reward Type* (Cash vs. Points) and *RPI* (Contrast 6: $t = 2.39$, $p = 0.02$; two-tailed). Thus, results support the observation in Figure 3 that providing RPI to those pursuing cash improved performance more than it did for those pursuing either tangible or points rewards.[76] In fact, those in the cash/RPI present condition outperformed all others conditions (not tabulated; $t > 1.65$, $p < 0.10$; two-tailed).

5.10 Conclusion

This chapter provides results for my six hypotheses and three research questions. Hypotheses 1 to 4 and research questions 1 and 2 consider the effects of *Reward Type* and *RPI* on *Budget Slack*. Consistent with hypothesis 2 and in answer to research question 1, I find that redeemable points lead to lower *Budget Slack* than either tangible rewards or cash rewards, respectively. Consistent with hypothesis 3, I find that the absence of *RPI* leads to lower *Budget Slack* than the presence of *RPI*. Also, I find support for hypothesis 4 in that the presence of *RPI* leads to a greater increase in slack for

[76] Figure 3 also suggests that RPI improved performance more for those in the points condition than it did for those in the tangible condition. To assess this, I conduct the following contrast: Points/RPI Absent (-2), Points/RPI Present (+3), Tangible/RPI Absent (-2), and Tangible/RPI Present (+1). I find evidence of a significant ordinal interaction between Reward Type (Points vs. Tangible) and RPI (Panel B of Table 11: $t = 3.16$, $p < 0.01$; two-tailed).

those pursuing tangible rewards than for those pursuing either cash or points rewards. In answering research question 2, I find that the presence of *RPI* leads to a greater increase in slack for those pursuing cash rewards than for those pursuing points rewards. However, contrary to hypothesis 1, I do not find that those pursuing tangible rewards create more *Budget Slack* than those pursuing cash.

Hypotheses 5 and 6, research question 3, and the supplemental analysis consider the effects of *Reward Type* and *RPI* on *Performance*. In terms of its direct effect on *Performance*, and in support of hypothesis 6, the presence of *RPI* leads to greater *Performance* than the absence of *RPI*. Further, supplemental analysis suggests that *RPI* leads to greater improvement in performance for those pursuing cash than for those pursuing either tangible or points rewards. In fact, those pursuing cash and provided *RPI* outperformed participants in all other conditions. However, contrary to hypothesis 5, I do not find that *Reward Type* and *RPI* have an indirect effect on *Performance* via *Budget Slack*. Further, in response to research question 3, I do not find *Reward Type* has any direct effects on *Performance*.

Figure 4 provides a summary of the results as they relate to hypotheses and research questions. The next chapter discusses the implication these results may have on future research and practice. Further, the next chapter outlines potential limitations of this study.

Figure 4: Summary of Results[1]

H1 (DV: Budget Slack): Cash Rewards < Tangible Rewards (main effect) – **Not supported**

H2 (DV: Budget Slack): Tangible Rewards > Point Rewards (main effect) – **Supported**

RQ1 (DV: Budget Slack): Cash Rewards vs. Point Rewards (main effect) – **Cash leads to greater slack**

H3 (DV: Budget Slack): Presence of RPI > Absence of RPI (main effect) – **Supported**

H4a (DV: Budget Slack): Increase in slack with the Presence of RPI for Tangible > Cash (interaction) – **Supported**

H4b (DV: Budget Slack): Increase in slack with Presence of RPI for Tangible > Points (interaction) – **Supported**

RQ2 (DV: Budget Slack): Increase in slack with Presence of RPI for Cash vs. Points (interaction) – **Cash leads to a greater increase in slack**

H5 (Mediation): Budget Slack mediates the Effects of Reward Type and RPI on Performance (mediation) – **Not supported**

RQ3 (DV: Performance): **Marginal evidence that cash rewards lead to greater performance than tangible rewards**

H6 (DV: Performance): Presence of RPI > Absence of RPI (main effect) – **Supported**

Supplemental (DV: Performance): **RPI increases performance more for those pursuing cash than either tangible or points rewards; cash rewards and the presence of RPI leads to best performance.**

[1] See Appendix F for variable definitions.

Chapter 6: Conclusion

6.1 Introduction

In Section 6.2 of this chapter, I discuss the results of hypotheses and research question testing. In Section 6.3, I discuss limitations of this study and I identify opportunities for future research. Finally, I conclude in Section 6.4.

6.2 Discussion of Hypotheses Testing and Research Question Results

This study considers the interactive effects of *Reward Type* (cash, tangible, or redeemable points) and *RPI* on *Budget Slack* and *Performance*. Regarding *Budget Slack*, I find that the provision of redeemable points leads to lower levels of *Desire* than cash or tangible rewards. Theory suggests that those higher in *Desire* are likely to maintain less salient personal norms for honesty. Thus, individuals eligible for points-based rewards create less *Budget Slack* than those eligible for either cash or tangible rewards. I also find evidence that *RPI* affects budgeting behaviour by encouraging people to view budget slack as more acceptable (less unethical); it appears RPI provided participants with "social proof" that dishonest reporting is acceptable. So, participants who receive *RPI* create more *Budget Slack* than those who do not. Last, I find that the descriptive norms provided by *RPI* increases slack creation more for those pursuing reward types that allow people to rationalize their dishonest reporting. Specifically, the provision of *RPI* leads to a greater increase in slack for those pursuing tangible rewards than those pursuing cash, and for those pursuing cash than for those pursuing points.

I do not find that *Reward Type* or *RPI* have indirect effects on *Performance* via *Budget Slack*. It appears in my study that participants set personal goals, and it was those goals that motivated effort and performance. However, I do find that *RPI* has a significant direct effect on *Performance* as well as significant direct *RPI x Reward Type* interactive effects. Specifically, the provision of *RPI* motivates greater performance than the absence of *RPI*. Further, supplemental analysis suggests that *RPI* improves performance more for those pursuing cash than for those pursuing either tangible rewards or points rewards. In fact, those pursuing cash and receiving RPI outperform all other conditions.

6.3 Limitations and Opportunities for Future Research

Like all studies, mine is subject to limitations that provide opportunities for future research. My application of economic and psychology theory generalizes only to the extent that my experimental setting captures important elements of the budgeting process observed in practice. By necessity, some of my design choices abstracted from practice. First, participants unilaterally set their budgets without input or approval from 'superiors', despite budget negotiation being common in practice (Anthony and Govindarajan 2006; Fisher et al. 2000, 2006) and despite preliminary evidence that superiors are able to detect and adjust for budget slack (Fisher et al. 2013). Future research could consider whether the presence of RPI impacts superiors' detection of budget slack and their likelihood of adjusting employee budgets accordingly.

Second, participants were rewarded using a slack-inducing, budget-linear incentive contract whereby they were paid a salary of $0. Although this contract was an intentional design choice and consistent with how Rankin et al. (2008) study honesty in

reporting, it encourages participants to create some slack if they wish to earn anything during the production rounds. Thus, the incentive contract may have inflated slack-levels, which diminishes the likelihood that slack reflects personal goals that could influence effort choices. Moreover, the piece-rate reward provided for performance in excess of the budget may have motivated individuals to exert high effort, regardless of the budget amount they selected. Future research could offer participants a salary or use an alternative incentive contract such as a 'bang-bang' contract to avoid issues that may have resulted from using an incentive contract that does not provide a salary.

Third, I operationalized tangible rewards by using gift cards to four locations that undergraduate students chose as highly desired. Because participants were fully aware of the in-store cash value of each gift card, this operationalization biases against finding differences in behavior between those pursuing cash and those pursing tangible rewards. Moreover, gift cards may not capture the distinct, physical properties often associated with tangible rewards. Future research could operationalize tangible rewards by using attractive, physical goods, and create a menu of options for people to choose from as observed in practice (e.g., Presslee et al. 2013). Further, it may be that undergraduate students lack sufficient cash to cover their basic necessities, so they desire cash more than tangible rewards. Future research could re-examine differences in slack creation and performance for individuals with higher initial wealth and whether behaviour differs for those pursuing cash rewards and those pursuing tangible rewards.

Fourth, to maintain face validity, I examine only points redeemable for tangible rewards rather than points redeemable for cash. However, it may be that points

redeemable for tangible rewards versus points redeemable for cash would yield different results. This argument could explain why I find that points redeemable for tangible rewards lead to less dishonesty relative to direct cash rewards, whereas Mazar et al. (2008) finds that points redeemable for cash rewards lead to more dishonesty relative to direct cash rewards. Future research could consider whether reward type moderates the effects of redeemable points on honesty in reporting.

Fifth, participants provided with RPI only viewed the budget variance of others rather than more detailed information such as others' budgets and/or their actual performance. Future research could consider more precise types of RPI (e.g., both budget difficulty and performance) might influence slack creation and performance.

Last, two results are inconsistent with expectations based on prior research: 1) *Budget Slack* does not influence *Performance,* and 2) *Desire,* consisting of reward *Attractiveness* and *Affect, is* not positively correlated with *Performance*. Future research could examine the circumstances when *Budget Slack* is more or less likely to have negative effects on *Performance*. For instance, it may be that the positive effect of self-set budget difficulty on *Performance* depends on the presence of some environmental uncertainty; otherwise, budgets that contain slack are unlikely to reflect personal goals, which are the true motivator of effort. In terms of examining the link between the attractiveness of various financial rewards and *Performance,* future research could use a more common and complete measure of goal commitment (e.g., Klein et al.'s (2001) a five-item measure). It may be that the measure of *Attractiveness* used in this study was insufficient to reflect any associated *Performance* effects.

6.4 Conclusion

I believe my study makes a valuable contribution to the incentive contracting and management control literatures. First, the use of performance based tangible rewards, whether distributed directly or indirectly (via points programs), is prevalent in organizations (Incentive Federation 2007; Peltier et al. 2005). My findings highlight the importance of reward type on employees' perceptions of the applicable social norms such as honesty when it comes to budgeting. Specifically, my findings caution employers against rewarding employees directly with budget-based financial rewards (tangible or cash) when employees are also permitted extensive participation in the budgeting process. If an organization chooses to use tangible rewards in lieu of cash, they may be well-advised to provide them using a redeemable points program given that points rewards led to the least amount of budget slack in my setting.

Second, RPI is regularly provided by organizations to improve employee coordination and to motivate effort (Mas and Moretti 2009; Nordstrom et al. 1990). My study offers evidence that RPI can have negative effects on planning by providing employees with a descriptive norm that budget slack is acceptable. However, RPI has a positive effect in terms of prompting performance. To the extent that slack has negative consequences for organizations (i.e., misallocation of resources, shirking, etc.), organizations should weigh these consequences against the performance benefits of providing RPI to employees.

Last, my study is the first that I am aware of to show how the personal norms made salient by various types of budget-based rewards can interact with the descriptive

norms expressed through the provision of RPI. In fact, reward type and RPI interact to affect both budget slack creation and performance. Given that the provision of RPI is common organizations may be well-advised to offer budget-based points rewards if budget slack is of great concern. However, in most organizations, it seems reasonable to assert that performance concerns are greater than budget slack concerns. Therefore, this study provides evidence that organization may want to offer budget-based cash rewards rather than budget-based tangible rewards (either directly or indirectly via redeemable points).

Appendix A: Concession Task Screen

Appendix B: Experimental Procedures

Each participant in this study participated in the following procedures:

1. Participants arrived at the designated on-campus computer lab.
2. Participants were assigned a computer terminal by the experiment facilitator.
3. Participants read and electronically agreed with the information letter required by the university's human research ethics policies.
4. Participants were each assigned a unique user name and password by the experiment facilitator.
5. Participants were informed of the session rules regarding talking, deception, and anonymity by the experiment facilitator.
6. Participants logged onto the concession task.
7. Participants read information about how to complete orders using the concession task.
8. Participants completed three practice rounds of the task with each round lasting two minutes. After each practice round, the program informed participants of the number of orders they completed and their earnings.
9. The computer program randomly assigned participants to one of six conditions.
10. Participants were provided information about budgeting prior to starting the three additional rounds. They were also provided information about their budget-based incentives and information specific to their experimental condition.
11. Participants were asked a series of multiple choice and short answer questions about their understanding of the experimental task and their treatment condition.
12. Participants completed three actual rounds. Prior to each round, they self-set their own performance budget. After each round, they were provided feedback about budget variance and performance based on their experiment condition.
13. At the end of the third additional period, participants were asked a series of process measures and demographic information.
14. The program randomly selected one actual round to pay a participant from and informed him of his total earnings.
15. Participants were given receipts so that they could pick up their rewards 4-6 days later.

Appendix C: Gift Card Locations[1]

The Second Cup Ltd is a specialty coffee café that serves a variety of products from simple whole bean coffee to more than 30 premium coffees, specialty beverages, and fine desserts.

Canada's largest bookstore, Chapters/Indigo carries a wide variety of books, magazines, toys, and games for both children and adults.

Marble Slab Creamery offers premium ice cream that is made fresh daily in each store, with no additives or preservatives. In addition to ice cream treats, they also offer delicious milkshakes and tasty ice cream cakes.

Cineplex Odeon provides Canada's leading movie theater experience. Gift cards to Cineplex can be used to purchase movie tickets and concession stand items.

[1] These 4 locations were selected based on a survey of 64 undergraduate students. The survey measured students' hedonic responses to the possibility of receiving a $10 gift card to a variety of different locations. The top three locations were Second Cup, Chapters, and Cineplex. Further, students were asked an open-ended question about whether there were locations that were not identified but that they would be excited to receive a $10 gift card from. A number of students identified Marble Slab as one such location.

Appendix D: Task and Rewards Understanding Questions

Task Understanding Questions

1) I will complete 3 production rounds of the concession task.
   a) Yes
   b) No
[Correct answer: a) Yes]

2) Prior to each round, I will be asked to accurately target the maximum number of orders I think I can complete in that round.
   a) Yes
   b) No
[Correct answer: a) Yes]

3) I will be paid a reward based on my performance relative to my self-set performance target from one randomly selected round.
   a) Yes
   b) No
[Correct answer: a) Yes]

4) The length of each production round will be.
   a) 1 minute
   b) 2 minutes
   c) 3 minutes
   d) 5 minutes
[Correct answer: b) 2 minutes]

5) Concession orders will always contain 3 items.
   a) Yes
   b) No
[Correct answer: a) Yes]

[RPI Condition Only]
6) I am assigned to work in a group with 2 other people in this room.
   a) Yes
   b) No
[Correct answer: a) Yes]

[RPI Condition Only]
7) Similar to me, the other 2 members of my group will set an individual target each round and will be paid a reward based on their individual performance relative to their self-set performance target from one randomly selected round.

a) Yes
b) No

[Correct answer: a) Yes]

[RPI Condition Only]
8) The other 2 members of my group will be asked to fill the same 3-item orders in same sequence as me.

a) Yes
b) No

[Correct answer: a) Yes]

Reward Understanding Questions

[Conditions 1 and 3: Cash]
1a) I have an opportunity to earn **a cash reward** for **exceeding** my self-set performance target.

a) Yes
b) No

[Correct answer: a) Yes]

[Conditions 2 and 5: Tangible]
1b) I have an opportunity to earn **a card reward** for **exceeding** my self-set performance target.

a) Yes
b) No

[Correct answer: a) Yes]

[Conditions 3 and 6: Points]
1c) I have the opportunity to earn **points reward** for **exceeding** my self-set performance target.

a) Yes
b) No

[Correct answer: a) Yes]

Appendix D (Continued)

[Condition 3 and 6: Points]
2) At what rate are **points** redeemable for a balance on a gift card?

a) 1 point = $0.50 added to the gift card balance
b) 1 point = $1 added to the gift card balance
c) 1 point = $1.50 added to the gift card balance
d) 1 point = $2 added to the gift card balance

[Correct answer: b) 1 point = $1 added to the gift card balance]

[Conditions 4: Cash/RPI]
3a) At the end of each round, all members of my group (including myself) will receive information about the **cash rewards** earned by everyone else in the group.
a) Yes
b) No
[Correct answer: a) Yes]

[Conditions 5: Tangible/RPI]
3b) At the end of each round, all members of my group (including myself) will receive information about the **card rewards** earned by everyone else in the group.
a) Yes
b) No
[Correct answer: a) Yes]

[Conditions 6: Points/RPI]
3c) At the end of each round, all members of my group (including myself) will receive information about the **points rewards** earned by everyone else in the group.
a) Yes
b) No
[Correct answer: a) Yes]

[After each answer, if the answer is correct, show the following message:
"CORRECT!"
If the answer is incorrect, show the following message:
"INCORRECT". Highlight the correct answer with "The answer is __". Participants must get the answer correct before proceeding]

Appendix E: Post-Experiment Questionnaire

Questions about the Task

Please rate your degree of agreement with the following statements:

1) I like the reward I could earn because I will spend it on things that I <u>want rather than on necessities.</u> [want] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Neither Strongly Disagree Agree or Disagree Agree
2) I consider the reward I could earn to be <u>attractive.</u> [attractive] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Neither Strongly Disagree Agree or Disagree Agree
3) I consider the reward I could earn to be <u>separate</u> from my other sources of cash. [separate] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Neither Strongly Disagree Agree or Disagree Agree
4) Thinking about the reward I could earn makes me <u>feel happy</u> [affect] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Neither Strongly Disagree Agree or Disagree Agree
5) Most people who care about me would <u>approve of the targets</u> I set in this task. [injunctive] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Neither Strongly Disagree Agree or Disagree Agree

Appendix E (Continued)

6) I consider the reward I could earn to be a gift or an act of kindness. [gift]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

7) It was important that I returned the generosity I received with regards to my potential rewards by accurately setting my performance target. [reciprocity]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

[Conditions 3 and 6: Points Condition]
8) When setting my budget, I thought of 1 point as being worth much less than $1. [value]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

[Conditions 2, 3, 5, and 6: Tangible and Points Condition]
9) If I had a choice, I would rather receive cash as my reward for performance above my self-set performance target. [rather]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

[Conditions 4, 5, and 6: RPI condition only]
10) I care about the overall impression the other two members of my group have of me. [care]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

Appendix E (Continued)

[Conditions 4, 5, and 6: RPI condition only]
11) It is more likely that the other two members of my group earned their rewards by understating their target rather than by working hard. [understate]

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

12) In this task, it is unethical for someone to set a target significantly below his or her known performance capability. [unethical]

○ 1	○ 2	○ 3	○ 4	○ 5	○ 6	○ 7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

Questions about the Task Continued

Please answer the following additional questions:

1) How justifiable is it for other participants in this task to set their targets below their maximum capabilities to earn additional rewards? [justifiable]

○	○	○	○	○	○	○
Completely Unjustified			Neutral			Completely Justified

2) Is setting your performance target in this task more of an ethical decision or a financial decision? [frame]

○	○	○	○	○	○	○
Ethical Decision			Equally Ethical and Financial			Financial Decision

3) If you had a $10 gift card to your choice of 1 of 4 locations (Second Cup, Marble Slab, Cineplex Odeon, or Chapters), what is the least amount of cash you would be willing to accept in exchange for your gift card? $ _____.

Appendix E (Continued)

Questions about you

Please rate your degree of agreement with the following statements regarding how you generally make decisions:

1) I often consult other people to help choose the best alternative when making a decision. [influence1] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
2) It is important that others like the decisions I make. [influence2] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
3) When making a decision, I generally choose the alternative that I think will be approved of by others. [influence3] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
4) I feel a sense of belonging whenever I am with my classmates. [belong] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
5) As a whole, I like my other classmates in this room. [like] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
6) It's okay to steal to take care of your family's needs [disengage1] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree

Appendix E (Continued)

7) Stealing some money is not too serious compared to stealing a lot of money [disengage2]

○ ○ ○ ○ ○ ○ ○
1 2 3 4 5 6 7
Strongly Disagree — Neither Agree or Disagree — Strongly Agree

8) Compared to other illegal things people do, taking some things from a store without paying for them is not very serious. [disengage3]

○ ○ ○ ○ ○ ○ ○
1 2 3 4 5 6 7
Strongly Disagree — Neither Agree or Disagree — Strongly Agree

9) I regularly think about the ethical implications of my decisions [attentive]

○ ○ ○ ○ ○ ○ ○
1 2 3 4 5 6 7
Strongly Disagree — Neither Agree or Disagree — Strongly Agree

10) It is important to me that I am honest in everything I say and do [identity]

○ ○ ○ ○ ○ ○ ○
1 2 3 4 5 6 7
Strongly Disagree — Neither Agree or Disagree — Strongly Agree

Finally, we ask for your opinion on a particular social issue, and we ask you to respond to two demographic questions. Your responses are confidential and anonymous. However, you may decline to answer these questions by leaving them blank:

1) Is it a more serious crime to steal a gift card worth $10 to your choice of 1 of 4 locations (Second Cup, Marble Slab, Cineplex Odeon, or Chapters) or to steal $10 cash? [steal]

○ ○ ○ ○ ○ ○ ○
$10 Gift Card — Equally Serious — $10 Cash

2) What is your gender? ○ Female [0] ○ Male [1] [Gender]

3) What is your age? [Age] ☐

Appendix F: Variable Definitions

Ability – Performance in the 3rd Practice round (i.e., prior to treatment of reward type or RPI).

Average Budget Slack (i.e., Average Last 2 Slack) – Average budget slack for actual rounds 2 and 3.

Average Performance (i.e., Average Last 2 Performance) – Average performance for actual rounds 2 and 3.

Budget Slack – The difference between a participant's ability and his self-set budget.

Desire – The average response to 3 measures: *Want*, *Affect*, and *Attractive*. See appendix E for definitions.

Performance – The number of orders accurately completed during a 2-minute production round.

Reward Type – Rewards are provided for performance above budget. The three types of rewards are: Cash (coded as 0), Tangible (coded as 1), and Points redeemable for tangible rewards (coded as 2). Tangible rewards are gift cards from one of four places: Second Cup, Chapters, Marble Slab, and Cineplex Odeon (see Appendix C for descriptions). Points are redeemable for 1 point = $1 on a gift card. Importantly, the value of rewards is equivalent in all three conditions.

RPI [Relative Performance Information] – The two RPI conditions are RPI absent (coded as 0) and RPI present (coded as 1). When RPI is absent, participants only view their own budget variance (i.e., performance minus budget) at the end of each round. When RPI is present, they also view the budget variance of two other co-workers after each round.

Round – From rounds 2 and 3.

Unethical – Represents level of agreement on a 7-point likert scale to the statement: "In this task, it is unethical for someone to set a target significantly below his or her known performance capability?"

Appendix G: Experiment Instrument (Programming Instructions)

[Condition 1: Cash/No RPI
Condition 2: Tangible/No RPI
Condition 3: Points/No RPI
Condition 4: Cash/RPI
Condition 5: Tangible/RPI
Condition 6: Points/RPI

Screen A [FOR ADMINISTRATOR]

Enter Session Number [session]:
Enter Number of Participants [participantno]:

List User Names and Passwords

Appendix G (Continued)

Screen 0 [Same for all conditions]

Participation in this Study

You are invited to participate in a research study conducted by Adam Presslee from the School of Accounting and Finance at the University of Waterloo. This study will form part of Adam Presslee's PhD dissertation and is conducted under the supervision of Professor Alan Webb. Your participation is critical in learning more about people's performance on a work task when they earn a reward based on their performance relative to a performance target.
Participation in this study is voluntary. You may withdraw your participation at any time during the study and you may decline to answer any question asked. There are no known or anticipated risks from participating in this study. If you decide to participate, you will complete a series concession orders through a computerized task. You will also be asked a few questions about your thoughts about the task and general demographic information, such as age and gender. You will receive remuneration based on your performance in the task, paid out in 3-5 days of completion, with the value of your remuneration ranging between $5 and $30. Please note that any amount that you receive from participating in this study is taxable and it is your responsibility to report the amount received for income tax purposes. Your participation will take approximately 30 minutes.

To ensure confidentiality and the anonymity of your responses, you have been assigned a unique user name and password. The data obtained from this study will be summarized and no individual will be identifiable from the summarized results. Furthermore, the web site used in this study is programmed to collect responses alone, and will not collect any information that could potentially identify you or personally match you with your responses. The data, with no personal identifiers, collected from this study will be maintained on a password-

protected computer database in a restricted access area of the university. As well, the data will be electronically archived after completion of the study and maintained indefinitely.

I assure you that this study has been reviewed and received ethics clearance through the Office of Research Ethics at the University of Waterloo. However, the final decision to participate is yours. If you have any comments or concerns resulting from your participation in this study, please feel free to contact Dr. Maureen Nummelin, Director, Office of Research Ethics, at 1-519-888-4567 ext. 36005 or by email at maureen.nummelin@uwaterloo.ca. Should you have any questions about the study or if you would like to receive a copy of the results of this study, please contact Adam Presslee (capressl@uwaterloo.ca) or Professor Alan Webb (a2webb@uwaterloo.ca).

Appendix G (Continued)

Consent to Participate

With full knowledge of the previous information and of my own free will:

[insert check box or radio button] "I agree to participate."

[insert check box or radio button] "I do not wish to participate (please close your web browser now)."

Screen 1 [Same for all conditions]

Introduction

1. NO TALKING WITHIN OR BETWEEN SESSIONS
Help us maintain control over the study by refraining from comments or other communication with your fellow participants in this session, or with other students who might participate in future sessions. There is no need to communicate with other participants during this study. If you have any questions, just raise your hand and we will assist you.

2. NO DECEPTION ON OUR PART
We promise to carry out the study in the manner described in these instructions, with no deception. We will pay you any remuneration you earn from this study within 3-5 days (to allow for collection of your remuneration), in the exact way as described in the study.

3. CONFIDENTIALITY AND ANNONYMITY
We assure you that any information obtained in connection with this study will be kept confidential. Further, your participation and all of your responses will be completely anonymous.

In this study, please proceed through instructions and each screen sequentially. Once you have finished a paragraph or screen, continue to the next paragraph or screen by clicking **Next**. Do not go back to previous screens unless there is a **Previous** button on screen that allows you to do so.

To begin, log in with **your assigned** user name and password.

User name:	
Password:	

Appendix G (Continued)

Screen 2 [Same for all conditions]

Task Instructions

This task requires you to correctly fill orders at a virtual concession stand over several rounds. In each round, you will be given a series of orders with **each order containing 3 food items**.

Potential food items are **popcorn, candy, drink**, and **ice cream**. Each food item can range in size between **small, medium,** and **large**.

For example, an order could be*:* **Small candy, Large popcorn, Medium drink**. An example of how this order will appear on screen is provided on the screen below:

To select an item, move your concession clerk (wearing the white hat) in front of the appropriate item using the <- and -> arrows on your keypad.

Once in front of an item, type the letter 's' (for small), 'm' (for medium) or 'l' (for large) to add the item to your tray. Once an item has been added, your clerk will automatically return to the middle of the counter.

If your filled order is **incorrect**, you may try again. If your filled order is **correct**, you will be given a new 3-item order.

Each round will last **2 minutes,** and a progress bar will show you how much time is remaining in your round. Further, a counter will show you in real-time the number of correct orders you have filled during the round.

IMPORTANT:
If you exceed 5 tries on any given **order**, your total score for the round will be **reset to 0**.

NEXT

Appendix G (Continued)

Screen 3 [Same for all conditions]

Practice Rounds

To familiarize you with filling orders, you will now complete **3 practice rounds**.

In these practice rounds, you will earn **$0.05 for each order** you correctly fill.

Each practice round will last **2 minutes**.

When you are ready, click **Next** to begin your first practice round.

Next

Screen 4 [Same for all conditions]

First Practice Round

INSERT CONCESSION STAND TASK (e.g., in Appendix A)

[If an order is incorrect, show the following pop-up message. The number of correct orders is reset to 0 if the participant makes 5 consecutive errors.]

The order is incorrect.
You have X attempts remaining
before your orders for this round
is reset.

OK

Appendix G (Continued)

Screen 5 [Same for all conditions]

End of Your First Practice Round

You completed **XX orders** during this 2 minute practice round.

As a result, you earned **$YY**.

[XX is the total number of correct orders completed; YY = $0.05*XX]

When you are ready, click **Next** to begin your second 2 minute practice round.

Next

Screen 6 [Same for all conditions]

Second Practice Round

[Insert the same detail as screen 4]

Screen 7 [Same for all conditions]

End of Your Second Practice Round

You completed **XX orders** during this 2 minute practice round.

As a result, you earned **$YY**.

[XX is the total number of correct orders completed; YY = $0.05*XX]

When you are ready, click **Next** to begin your second 2 minute practice round.

Next

Appendix G (Continued)

Screen 8 [Same for all conditions]

Third Practice Round

[Insert the same detail as screen 4]

Screen 9 [Same for all conditions]

End of Your Third Practice Round

You completed **XX orders** during this 2 minute practice round.

As a result, you earned **$YY**.

[XX is the total number of correct orders completed; YY = $0.05*XX]

Click **Next** to proceed.

Next

Screen 10 [Same for all conditions]

Practice Rounds Complete

The following table shows the number of 3-item orders you completed in each 2 minute practice round you completed:

Practice Round 1	XX order(s)
Practice Round 2	XX order(s)
Practice Round 3	XX order(s)

In total, you earned $BB from your practice round performance.

Click **Next** to proceed.

Next

Screen 11 [Different across conditions]

Setting Details

[Conditions 1, 2, and 3: No RPI]

Now that you are familiar with how to fill orders, you are ready to proceed.

You will now complete **3 rounds** of the concession task, with each round lasting **2 minutes**.

Prior to each round, you will be asked to set a performance **target equal to the maximum number** of orders you think you can complete in that round 2 minute round.

Each round, you also have an opportunity to earn a reward based on your performance relative to your self-set performance target (calculation of reward will be described shortly).

At the end of each round, you will be informed of your **performance relative to your self-set performance target** (i.e., number of orders above (below) target) and the **amount of reward that you earned** as a result.

Once all rounds are completed, you will be paid your practice round earnings plus the reward that you earned **in one randomly selected** round.

IMPORTANT:
Similar to your practice rounds, rounds will last 2 minutes and orders will always contain 3 items ranging in size from Small, to Medium, to Large.

Click the "Test Me!" button to test your understanding of the task.

Test Me!

[Conditions 4, 5, and 6: RPI]

Now that you are familiar with how to fill orders, you are ready to proceed.

You will now complete **3 rounds** of the concession task, with each round lasting **2 minutes**.

Appendix G (Continued)

Over the next 3 rounds, you will work in a group with **2 other people in this room.** These two other people are userXXX and userXXX [insert the user names of the two other members of the group].

Prior to each round, you will be asked to set a performance **target equal to the maximum number** of orders you think you can complete in that round 2 minute round. Similarly, userXXX and userXXX will set their individual performance target each round.

Each round, you also have an opportunity to earn a reward based on your performance relative to your self-set performance target (calculation of reward will be described shortly). Similarly, each round, userXXX and userXXX have an opportunity to earn a reward for their individual performance relative to their individual performance target.

At the end of each round, all members of your group will be informed of **all other member's** performance relative to their individual self-set performance target (i.e., number of orders above (below) target) and the amount of rewards earned by all other member's as a result of their performance.

Once all rounds are completed, all members of your group will be paid their **individual practice round earnings** plus their individual reward earned in **one randomly selected** round.

IMPORTANT:
Similar to your practice rounds, rounds will last 2 minutes and orders will always contain 3 items ranging in size from Small, to Medium, to Large. Also, all members of your group will be asked to fill the same 3-item customer orders, in the same sequence, as you.

Click the "Test Me!" button to test your understanding of the task.

Test Me!

Screen 12 [Same across conditions]

Setting Quiz

1) I will complete 3 production rounds of the concession task:
   a) Yes
   b) No
[Correct answer: a) Yes]

2) Prior to each round, I will be asked to accurately target the maximum number of orders I think I can complete in that round:
   a) Yes
   b) No
[Correct answer: a) Yes]

3) I will be paid a reward based on my performance relative to my self-set performance target from one randomly selected round.
   a) Yes
   b) No
[Correct answer: a) Yes]

4) The length of each production round will be:
   a) 1 minute
   b) 2 minutes
   c) 3 minutes
   d) 5 minutes
[Correct answer: b) 2 minutes]

5) Concession orders will always contain 3 items:
   a) Yes
   b) No
[Correct answer: a) Yes]

[RPI Condition Only]
6) I am assigned to work in a group with 2 other people in this room:
   a) Yes
   b) No
[Correct answer: a) Yes]

Appendix G (Continued)

[RPI Condition Only]
7) Similar to me, the other 2 members of my group will set an individual target each round and will be paid a reward based on their individual performance relative to their self-set performance target from one randomly selected round:

a) Yes
b) No

[Correct answer: a) Yes]

[RPI Condition Only]
8) The other 2 members of my group will be asked to fill the same 3-item orders in same sequence as me:

a) Yes
b) No

[Correct answer: a) Yes]

[After each answer, if the answer is correct, show the following message:
"CORRECT!"

If the answer is incorrect, show the following message:
"INCORRECT" and highlight the correct answer with "The answer is __". Have the participant answer the question again until they get it correct. Do not let them proceed to the next question until they get the prior question correct.]

Next

Appendix G (Continued)

Screen 13a [Different across all 6 conditions]

Reward Details

[Condition 1: Cash/No RPI]

As previously mentioned, you can earn a reward based on your actual performance relative to your self-set performance target.

Specifically, you will earn a **cash reward** of $1 for each order you correctly complete above your self-set performance target.

Performance to Target	Reward Earned
Performance Below or Equal to Target	No cash
Performance Above Target	$1 per order above

Click "Next" to view an example of a reward payout.

Next

[Condition 2: Tangible/No RPI]

As previously mentioned, you can earn a reward based on your actual performance relative to your self-set performance target.

Specifically, you will earn a gift **card reward** to 1 of 4 locations (Second Cup, Chapters, Cineplex, or Marble Slab) of your choosing. Your **card balance** will contain an additional $1 for each order above your self-set performance target.

Performance to Target	Reward Earned
Performance Below or Equal to Target	No card
Performance Above Target	Card with a balance of $1 per order above

Click "Next" to view a description of the 4 card locations you can choose from.

Next

[Condition 3: Points/No RPI]

As previously mentioned, you can earn a reward based on your actual performance relative to your self-set performance target.

Specifically, you will earn **points rewards,** redeemable for a gift card to 1 of 4 locations (Second Cup, Chapters, Cineplex, and Marble Slab) of your choosing. You will earn 1 point for each order completed above your self-set performance target.

Performance to Target	Reward Earned
Performance Below or Equal to Target	No points
Performance Above Target	1 point per order above

IMPORTANT:
Points are redeemable for a gift card at a rate of 1 point = $1 added to the gift card balance.

Click "Next" to view a description of the 4 card locations you can choose from.

Next

[Condition 4: Cash/RPI]

As previously mentioned, you can earn a reward based on your actual performance relative to your self-set performance target.

Specifically, you will earn a **cash reward** of $1 for each order you correctly complete above your self-set performance target.

Performance to Target	Reward Earned
Performance Below or Equal to Target	No cash
Performance Above Target	$1 per order above

IMPORTANT:
The other two members of your group have the opportunity to earn a similar cash reward.

Click "Next" to view an example of a reward payout.

Next

Appendix G (Continued)

[Condition 5: Tangible/RPI]

As previously mentioned, you can earn a reward based on your actual performance relative to your self-set performance target.

Specifically, you will earn a gift **card reward** to 1 of 4 locations (Second Cup, Chapters, Cineplex, or Marble Slab) of your choosing. Your **card balance** will contain an additional $1 for each order above your self-set performance target.

Performance to Target	Reward Earned
Performance Below or Equal to Target	No card
Performance Above Target	Card with a balance of $1 per order above

IM**PORTANT:**
The other two members of your group will have a similar opportunity as you to earn a card reward.

Click "Next" to view a description of the 4 card locations you can choose from.

Next

[Condition 6: Points/RPI]

As previously mentioned, you can earn a reward based on your actual performance relative to your self-set performance target.

Specifically, you will earn **points reward,** redeemable for a gift card to 1 of 4 locations (Second Cup, Chapters, Cineplex, and Marble Slab) of your choosing. You will earn 1 point for each order completed above your self-set performance target.
Appendix G (Continued)

Performance to Target	Reward Earned
Performance Below or Equal to Target	No points
Performance Above Target	1 point per order above

IMPORTANT:
Points are redeemable for a gift card at a rate of 1 point = $1 added to the gift card balance. Also, the other two members of your group will have a similar opportunity as you to earn points redeemable for a gift card.

Click "Next" to view a description of the 4 card locations you can choose from.

Next

Screen 13b [Only Tangible and Points Conditions]

Reward Details Continued

[Conditions 2 and 5: Tangible Conditions]

You can choose your card reward from 1 of the following 4 locations:

INSERT CHOICES (see Appendix B)

Click "Next" to view an example of a reward payout.

Next

[Conditions 3 and 6: Points Condition]

Reward Details Continued

At the end of the study, the **points rewards** you earn are redeemable for a gift card of your choice from 1 of the following 4 locations:

INSERT CHOICES (see Appendix B)

IMPORTANT:
Points are redeemable for a gift card at a rate of 1 point = $1 added to the gift card balance.

Click "Next" to view an example of a reward payout.

Next

Appendix G (Continued)

Screen 14 [Different across conditions]

Reward Example

[Condition 1: Cash/No RPI]

Performance to Target	**Reward Earned**
Performance Below or Equal to Target	No cash
Performance Above Target	$1 per order above

For example, if you target that you can complete **25 orders** and you actually complete **20 orders**, you will fail to meet your target by 5 orders.

As a result, you will not earn a **cash reward** for that round.

An example of the information you will receive following a round where you missed your target by 5 orders is:

	Round 1
Performance to Target	5 orders below
Reward Earned	No Cash

[Please show amounts below target in red]

Click the "Test Me!" button to test your understanding of your reward details.

Test Me!

Appendix G (Continued)

[Condition 2: Tangible/No RPI]

Performance to Target	**Reward Earned**
Performance Below or Equal to Target	No card
Performance Above Target	Card with a balance of $1 per order above

For example, if you target that you can complete **25 orders** and you actually complete **20 orders**, you will fail to meet your target by 5 orders.

As a result, you will not earn **a card reward** for that round.

An example of the information you will receive following a round where you missed your target by 5 orders is:

	Round 1
Performance to Target	5 orders below
Reward Earned	No Card Reward

[Please show amounts below target in red]

Click the "Test Me!" button to test your understanding of your reward details.

Test Me!

[Condition 3: Points/No RPI]

Performance to Target	**Reward Earned**
Performance Below or Equal to Target	No points
Performance Above Target	1 point per order above

For example, if you target that you can complete **25 orders** and you actually complete **20 orders**, you will fail to meet your target by 5 orders.

As a result, you will not earn **any points reward** for that round.

An example of the information you will receive following a round where you missed your target by 5 orders is:

	Round 1
Performance to Target	5 orders below
Reward Earned	No Points

[Please show amounts below target in red]

Click the "Test Me!" button to test your understanding of your reward details.

Test Me!

[Condition 4: Cash/RPI]

Performance to Target	**Reward Earned**
Performance Below or Equal to Target	No cash reward
Performance Above Target	$1 per order above

For example, if you target that you can complete **25 orders** and you actually complete **20 orders**, you will fail to meet your target by 5 orders.

As a result, you will not earn **a cash reward** for that round.

An example of the information you will receive following a round where you missed your target by 5 orders is:

Appendix G (Continued)

Group Member		Round 1
You	Performance to Target Reward Earned	5 orders below No Cash
User XXX	Performance to Target Reward Earned	XXX XXX
User XXX	Performance to Target Reward Earned	XXX XXX

[Please show amounts below target in red]

Click the "Test Me!" button to test your understanding of your reward details.

Test Me!

[Condition 5: Tangible/RPI]

Performance to Target	**Reward Earned**
Performance Below or Equal to Target	No card
Performance Above Target	Card with a balance of $1 per order above

For example, if you target that you can complete **25 orders** and you actually complete **20 orders**, you will fail to meet your target by 5 orders.

As a result, you will not earn **a card reward** for that round.

An example of the information you will receive following a round where you missed your target by 5 orders is:

Group Member		Round 1
You	Performance to Target Reward Earned	5 orders below No Card
User XXX	Performance to Target Reward Earned	XXX XXX
User XXX	Performance to Target Reward Earned	XXX XXX

[Please show amounts below target in red]

Click the "Test Me!" button to test your understanding of your reward details.

Test Me!

[Condition 6: Points/RPI]

Performance to Target	**Reward Earned**
Performance Below or Equal to Target	No points
Performance Above Target	1 point per order above

For example, if you target that you can complete **25 orders** and you actually complete **20 orders**, you will fail to meet your target by 5 orders.

As a result, you will not earn **any points reward** for that round.

An example of the information you will receive following a round where you missed your target by 5 orders is:

Group Member		Round 1
You	Performance to Target Reward Earned	5 orders below No Points
User XXX	Performance to Target Reward Earned	XXX XXX
User XXX	Performance to Target Reward Earned	XXX XXX

[Please show amounts below target in red]

Click the "Test Me!" button to test your understanding of your reward details.

Test Me!

Screen 15 [Differences across conditions]

Reward Quiz

[Conditions 1 and 3: Cash]
1a) I have an opportunity to earn **a cash reward** for **exceeding** my self-set performance target:

a) Yes
b) No

[Correct answer: a) Yes]

[Conditions 2 and 5: Tangible]

1b) I have an opportunity to earn **a card reward** for **exceeding** my self-set performance target:

a) Yes
b) No

[Correct answer: a) Yes]

[Conditions 3 and 6: Points]
1c) I have the opportunity to earn **points reward** for **exceeding** my self-set performance target:

a) Yes
b) No

[Correct answer: a) Yes]

[Condition 3 and 6: Points]
2) At what rate are **points** redeemable for a balance on a gift card:

a) 1 point = $0.50 added to the gift card balance
b) 1 point = $1 added to the gift card balance
c) 1 point = $1.50 added to the gift card balance
d) 1 point = $2 added to the gift card balance

[Correct answer: b) 1 point = $1 added to the gift card balance]

[Conditions 4: Cash/RPI]
3a) At the end of each round, all members of my group (including myself) will receive information about the **cash rewards** earned by everyone else in the group.
a) Yes
b) No
[Correct answer: a) Yes]

Appendix G (Continued)

[Conditions 5: Tangible/RPI]
3b) At the end of each round, all members of my group (including myself) will receive information about the **card rewards** earned by everyone else in the group.
a) Yes
b) No
[Correct answer: a) Yes]

[Conditions 6: Points/RPI]
3c) At the end of each round, all members of my group (including myself) will receive information about the **points rewards** earned by everyone else in the group.
a) Yes
b) No
[Correct answer: a) Yes]

[After each answer, if the answer is correct, show the following message:
"CORRECT!"
If the answer is incorrect, show the following message:
"INCORRECT" and highlight the correct answer with "The answer is __". Have the participant answer the question again until they get it correct. Do not let them proceed to the next question until they get the prior question correct.]

Continue the test

Screen 16 [Differences across Reward Type]

Reward Quiz Continued …

[Conditions 1 and 4: Cash]
Again, here are the details regarding how you earn a **cash reward**.

Performance to Target	Reward Earned
Performance Below or Equal to Target	No cash
Performance Above Target	$1 per order above target

Before you proceed, you must get two questions correct:

Appendix G (Continued)

Question:
You targeted 20 orders and completed 22 orders. This means you completed 2 orders above target for that round. Your cash reward will be:

Cash Reward $ 2.00

Submit

I passed!

[Conditions 2 and 5: Tangible]
Again, here are the details regarding how you earn **a card reward**.

Performance to Target	**Reward Earned**
Performance Below or Equal to Target	No card
Performance Above Target	Card with a balance of $1 per order above

Before you proceed, you must get two questions correct:

Question:
You targeted 20 orders and completed 22 orders. This means you completed 2 orders above target for that round. Your card reward will have a balance of:

2.00

Submit

I passed!

[The two correctly answered questions must be one each of the following two types: a) did not perform enough to earn a reward b) performed enough to earn a reward.]

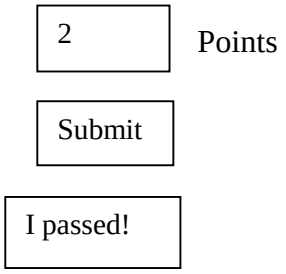
Appendix G (Continued)

[Conditions 3 and 6: Points]
Again, here are the details regarding how you earn **points reward**:

Performance to Target	Reward Earned
Performance Below or Equal to Target	No points
Performance Above Target	1 point per order above

Before you proceed, you must get two questions correct:

You targeted 20 orders and completed 22 orders. This means you completed 2 orders above target for that round. Your points reward will be:



[The two correctly answered questions must be one each of the following two types: a) did not perform enough to earn a reward b) performed enough to earn a reward.]

[Conditions 1 and 4: Cash]
[record the number of attempts required to get 2 answers correct (attempt9)]

a) Did not perform enough to earn a reward:

1. You targeted 24 orders in a round and completed 20 orders. This means you completed 4 orders below target for that round. Your cash reward will be: [$0]
2. You targeted 21 orders in a round and completed 19 orders. This means you completed 2 orders below target for that round. Your cash reward will be: [$0]
3. You targeted 23 orders in a round and completed 18 orders. This means you completed 5 orders below target for that round. Your cash reward will be: [$0]

If the answer is correct, show the following message:
CORRECT!
If the answer is incorrect, show the following message:
INCORRECT.
The answer is $0]

Appendix G (Continued)

[Condition 2 and 5: Tangible]
a) Did not perform enough to earn a reward:

1. You targeted 24 orders and completed 20 orders. This means you completed 4 orders below target for that round. Your card reward will have a balance of: [0]
2. You targeted 21 orders and completed 19 orders. This means you completed 2 orders below target for that round. Your card reward will have a balance of: [0]
3. You targeted 23 orders and completed 18 orders. This means you completed 5 orders below target for that round. Your card reward will have a balance of: [0]

If the answer is correct, show the following message:
CORRECT!
If the answer is incorrect, show the following message:
INCORRECT.
The answer is $0]

[Condition 3 and 6: Points]
a) Did not perform enough to earn a reward:

1. You targeted 24 orders and completed 20 orders. This means you completed 4 orders below target for that round. Your points reward will be: [0]
2. You targeted 21 orders and completed 19 orders. This means you completed 2 orders below target for that round. Your points reward will be: [0]
3. You targeted 23 orders and completed 18 orders. This means you completed 5 orders below target for that round. Your points reward will be: [0]

If the answer is correct, show the following message:
CORRECT!
If the answer is incorrect, show the following message:
INCORRECT.
The answer is 0 point]

[Condition 1 and 4: Cash]
a) Performed enough to earn a reward:

1. You targeted 15 orders in a round and completed 21 orders. This means you completed 6 orders above target for that round. Your cash reward will be: [$6]
2. You targeted 20 orders in a round and completed 25 orders. This means you completed 5 orders above target for that round. Your cash reward will be: [$5]
3. You targeted 19 orders in a round and completed 24 orders. This means you completed 5 orders above target for that round. Your cash reward will be: [$5]

If the answer is correct, show the following message:
CORRECT!
If the answer is incorrect, show the following message:
INCORRECT.
The answer is $XX.]

[Condition 2 and 5: Tangible]
b) Perform enough to earn a reward:

1. You targeted 15 orders and completed 21 orders. This means you completed 6 orders above target for that round. Your card reward will have a balance of: [$6]
2. You targeted 20 orders and completed 25 orders. This means you completed 5 orders above target for that round. Your card reward will have a balance of: [$5]
3. You targeted 19 orders and completed 24 orders. This means you completed 5 orders above target for that round. Your card reward will have a balance of: [$5]

If the answer is correct, show the following message:
CORRECT! If the answer is incorrect, show the following message:
INCORRECT.
The answer is YY points.

[Condition 3 and 6: Points]
b) Perform enough to earn a reward:

1. You targeted 15 orders and completed 21 orders. This means you completed 6 orders above target for that round. Your points reward will be: [6 points].
2. You targeted 20 orders and completed 25 orders. This means you completed 5 orders above target for that round. Your points reward will be: [5 points].
3. You targeted 19 orders and completed 24 orders. This means you completed 5 orders above target for that round. Your points reward will be: [5 points].

If the answer is correct, show the following message:
CORRECT!
If the answer is incorrect, show the following message:
INCORRECT.
The answer is YY points.

Appendix G (Continued)

Screen 17 [Only Tangible and Points Conditions]

[Condition 2 and 5: Tangible Conditions]

Card Location Selection

Before you start, select the card location you will likely choose at the end of this study as your reward from the following 4 locations [Show all locations at once]:

INSERT CHOICES (see Appendix B)

1) I will likely choose my card from [record as giftcert]:
   a) Second Cup
   b) Chapters/Indigo
   c) Marble Slab
   d) Cineplex Odeon

IMPORTANT: You may change the location you chose at the end of the study

[Condition 3 and 6: Points Conditions]

Card Location Selection

Before you start, select the card location you will likely choose at the end of this study to redeem your points for from the following 4 locations [Show all locations at once]:

INSERT CHOICES (see Appendix B)

1) I will likely redeem my reward points for a gift card from [record as giftcert1]:
   a) Second Cup
   b) Chapters/Indigo
   c) Marble Slab
   d) Cineplex Odeon

IMPORTANT: You may change the location you chose at the end of the study

Appendix G (Continued)

Screen 18 [Different for Reward Type]

[Conditions 1 and 4: Cash]

Target for Round 1 [Round 2; Round 3]

You are about to begin your first [second, third] production round.

To help with **planning** and to determine your potential **cash reward** for the round, set a performance target of the maximum number of orders you think you will correctly complete this round:

I target that I will correctly complete [ ] orders this round.

[limit response > 0]

[Record bud1, bud2, bud3 in Database]

Begin the round

[Conditions 2 and 5: Tangible]

Target for Round 1 [Round 2; Round 3]

You are about to begin your first [second, third] production round.

To help with **planning** and to determine your potential **_____ [insert giftcert1] card reward** for the round, set a performance target of the maximum number of orders you think you will correctly complete this round:

I target that I will correctly complete [ ] orders this round.

[limit response > 0]

[Record bud1, bud2, bud3 in Database]

Begin the round

Appendix G (Continued)

[Conditions 3 and 6: Points]

Target for Round 1 [Round 2; Round 3]

You are about to begin your first [second, third] production round.

To help with **planning** and to determine your potential **points reward** for the round, set a performance target of the maximum number of orders you think you will correctly complete this round:

I target that I will correctly complete [ ] orders this round.

[limit response > 0]

[Record bud1, bud2, bud3 in Database]

Begin the round

Screen 19 [Same for all conditions]

Round 1

INSERT CONCESSION STAND TASK (e.g., Appendix A)

Screen 19b [Only for RPI conditions]

Waiting for Everyone in Your Group to Finish

Please wait for the results to be tabulated …

This page will automatically refresh

[Once all information needed to determine all participants' performance please automatically show participants screen 20]

Appendix G (Continued)

Screen 20 [different based on condition]

End of Round 1 [Round 2; Round 3]

[Condition 1: Cash/No RPI]

Your target was ZZ orders and you correctly completed XX orders. This means you completed VV [VV=XX-ZZ] orders above target this round [or if ZZ>XX than, "This means completed VV orders below target this round"].

[if XX > ZZ] Your **cash reward** for this round is **$VV**

[if ZZ > XX] You did not earn a **cash reward** for the round.

[ZZ is bud#; XX is the total number of correct orders for the round; VV is the amount above (below) target]

	Round 1	Round 2	Round 3
Performance to Target	VV		
Reward Earned	$VV		

[Reward Earned: if(VV>0, "$VV", "No Cash"); Please show amounts below target in red]

Continue

[Condition 2: Tangible/No RPI]

Your target was ZZ orders and you correctly completed XX orders. This means you completed VV [VV=XX-ZZ] orders above target this round [or if ZZ>XX than, "This means completed VV orders below target this round"].

[if XX > ZZ] Your _____**[insert giftcert] card reward** for this round contains $AA.

Appendix G (Continued)

[if ZZ > XX] You did not earn a _____**[insert giftcert] card reward** this round.
[ZZ is bud#; XX is the total number of correct orders for the round; VV is the amount above (below) target]

	Round 1	Round 2	Round 3
Performance to Target Reward Earned	VV _____ [insert giftcert] card containing $VV		

[For Reward Earned: if (VV>0, "____ [insert giftcert] card containing $VV", "No ___ [insert giftcert] Card"); Please show amounts below target in red]

Continue

[Condition 3: Points/No RPI]

Your target was ZZ orders and you correctly completed XX orders. This means you completed VV [VV=XX-ZZ] orders above target this round [or if ZZ>XX than, "This means completed VV orders below target this round"].

[if XX > ZZ] You earned **VV points reward** this round contains.

[if ZZ > XX] You did not earn any **points reward** this round.

[ZZ is bud#; XX is the total number of correct orders for the round; VV is the amount above (below) target]

	Round 1	Round 2	Round 3
Performance to Target Reward Earned	VV VV points		

Appendix G (Continued)

[for Reward Earned: if (VV>0, "VV Points", "No Points"); Please show amounts below target in red]

Continue

[RPI CONDITION ONLY: Conditions 4, 5, and 6

NOTE: Two questions are now asked after the 1^{ST} and 2^{ND} round (NOT 3^{RD}) to those in the RPI Condition (Conditions 4, 5, and 6). These questions are asked after the post-round feedback chart is shown but still are on the same screen. Example:

Use the feedback chart above to answer the following two statements (enter "–" if below target):

UserXXX completed _____ orders above (below) target

User XXX completed _____ orders above (below) target

If they get it correct, they continue to the next round; If incorrect please show the follow "INCORRECT. Please use the feedback chart above to respond correctly"]

[Condition 4: Cash/RPI]

Your target was ZZ orders and you correctly completed XX orders. This means you completed VV [VV=XX-ZZ] orders above target this round [or if ZZ>XX than, "This means completed VV orders below target this round"].

[if XX > ZZ] Your **cash reward** for this round is **$VV**

[if ZZ > XX] You did not earn a **cash reward** for the round.

[ZZ is bud#; XX is the total number of correct orders for the round; VV is the amount above (below) target]

Appendix G (Continued)

Below is a summary of the **performance to target** and the **cash rewards** earned by all group members in this round:

User Name		Round 1	Round 2	Round 3
You	Performance to Target Reward Earned	VV $VV		
userXXX	Performance to Target Reward Earned			
userXXX	Performance to Target Reward Earned			

[for reward earned: if (VV>0, "$VV", "No Cash"); Please show amounts below target in red]

Use the feedback chart above to answer the following two statements (enter "–" if below target):

UserXXX completed _____ orders above (below) target

UserXXX completed _____ orders above (below) target

Continue

Appendix G (Continued)

[Condition 5: Tangible/RPI]

Your target was ZZ orders and you correctly completed XX orders. This means you completed VV [VV=XX-ZZ] orders above target this round [or if ZZ>XX than, "This means completed VV orders below target this round"].

[if XX > ZZ] Your _____**[insert giftcert] card reward** for this round contains $AA.

[if ZZ > XX] You did not earn a _____**[insert giftcert] card reward** this round.

[ZZ is bud#; XX is the total number of correct orders for the round (record as "perf1); VV is the amount above (below) target and is recorded as "reward1"]

Below is a summary of the **performance to target** and the **card rewards** earned by all group members in this round:

Group Member		Round 1	Round 2	Round 3
You	Performance to Target Reward Earned	VV _____ [insert giftcert] card containing $VV		
User XXX	Performance to Target Reward Earned			
User XXX	Performance to Target Reward Earned			

[for reward earned: if (VV>0, "____ [insert giftcert] card containing $VV", "No ___ [insert giftcert] Card"); Please show amounts below target in red]

Use the feedback chart above to answer the following two statements (enter "–" if below target):

UserXXX completed _____ orders above (below) target

UserXXX completed _____ orders above (below) target

Continue

[Condition 6: Points/RPI]

Your target was ZZ orders and you correctly completed XX orders. This means you completed VV [VV=XX-ZZ] orders above target this round [or if ZZ>XX than, "This means completed VV orders below target this round"].

[if XX > ZZ] You earned **VV points reward** this round contains.

[if ZZ > XX] You did not earn **any points reward** this round.

[ZZ is bud#; XX is the total number of correct orders for the round (record as "perf1); VV is the amount above (below) target and is recorded as "reward1"]

Appendix G (Continued)

Below is a summary of the **performance to target** and the **points rewards** earned by all group members in this round:

Group Member		Round 1	Round 2	Round 3
You	Performance to Target Reward Earned	VV VV points		
User XXX	Performance to Target Reward Earned			
User XXX	Performance to Target Reward Earned			

[for reward earned: if (VV>0, "VV Points", "No Points"); Please show amounts below target in red]

Use the feedback chart above to answer the following two statements (enter "–" if below target):

UserXXX completed _____ orders above (below) target

UserXXX completed _____ orders above (below) target

Continue

Appendix G (Continued)

[Repeat Screens 18-20 for Round 2 and for Round 3. The table that tracks performance should retain the information from prior rounds. At the end of round 3, proceed to Screen 21 after participants click the continue button.]

Screen 21 (same across all conditions)

End of Production

You have completed all production rounds.

Please take a moment to answer some questions about your reactions to working on this task.

Continue

Screen 22 [Different across conditions]

Questions about the Task

[Conditions 1 and 4: Cash]
You had the opportunity to earn **a cash reward** for performing above your self-set performance target.

[Conditions 2 and 5: Tangible]
You had the opportunity to earn **a _____[giftcert] card reward** for performing above your self-set performance target.

[Conditions 3 and 6: Points]
You had the opportunity to earn **points reward,** redeemable for a gift card, for performing above your self-set performance target.

Please rate your degree of agreement with the following statements:

1) I like the reward I could earn because I will spend it on things that I <u>want rather than necessities.</u> [want]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

Appendix G (Continued)

2) I consider the reward I could earn as attractive. [attractive]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

3) I consider the reward I could earn as separate from my other sources of cash. [separate]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

4) Thinking about the reward I could earn made me feel happy [affect]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

5) Most people who care about me would approve of the targets I set in this task. [injunctive]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

6) I consider the reward I could earn as a gift or as an act of kindness. [gift]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

Appendix G (Continued)

7) It was important that I returned the generosity I received with regards to my potential rewards by accurately setting my performance target. [reciprocity] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
[Conditions 3 and 6: Points Condition] 8) When setting my budget, I thought of 1 point as being worth much less than $1. [value] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
[Conditions 2, 3, 5, and 6: Tangible and Points Condition] 9) If I had a choice, I would rather receive cash as my reward for performance above my self-set performance target. [rather] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
[Conditions 4, 5, and 6: RPI condition only] 10) I care about the overall impression the other two members of my group have of me. [care] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
[Conditions 4, 5, and 6: RPI condition only] 11) It is more likely that the other two members of my group earned their rewards by understating their target rather than by working hard. [understate] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree

12) In this task, it is <u>unethical</u> for someone to set a target significantly below his or her known performance capability? [sensitivity]

○	○	○	○	○	○	○
1	2	3	4	5	6	7
Strongly Disagree			Neither Agree or Disagree			Strongly Agree

Screen 23 [Different across conditions]

Questions about the Task Continued

Please answer the following additional questions:

1) How <u>justifiable</u> is it for other participants in this task to set their targets <u>below their maximum capabilities</u> to earn additional rewards? [justifiable]

○	○	○	○	○	○	○
Completely Unjustified			Neutral			Completely Justified

2) Is setting your performance target in this task more of an <u>ethical</u> decision or a <u>financial</u> decision? [frame]

○	○	○	○	○	○	○
Ethical Decision			Equally Ethical and Financial			Financial Decision

3) If you had a $10 gift card to your choice of 1 of 4 locations (Second Cup, Marble Slab, Cineplex Odeon, or Chapters), what is the <u>least</u> amount of cash you would be willing to accept in exchange for your gift card? [leastamount] [Amount must be > 0]

$ ☐

Continue

[please require participants to answer each question]

Appendix G (Continued)

Screen 24 [Same across all conditions]

Questions About You

Please rate your degree of agreement with the following statements regarding how you generally make decisions:

1) I often consult other people to help choose the best alternative when making a decision. [influence1] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
2) It is important that others like the decisions I make. [influence2] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
3) When making a decision, I generally choose the alternative that I think will be approved by others. [influence3] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
4) I feel a sense of belonging whenever I am with my classmates. [belong] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
5) As a whole, I like my other classmates in this room. [like] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
6) It's okay to steal to take care of your family's needs [disengage1] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree

Appendix G (Continued)

7) Stealing <u>some money</u> is not too serious compared to <u>stealing a lot of money</u> [disengage2] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
8) Compared to other illegal things people do, <u>taking some things</u> from a store without paying for them is <u>not very serious</u>. [disengage3] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
9) I regularly think about the <u>ethical implications</u> of my decisions [attentive] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree
10) It is important to me that I am <u>honest</u> in everything I say and do [identity] ○ ○ ○ ○ ○ ○ ○ 1 2 3 4 5 6 7 Strongly Disagree — Neither Agree or Disagree — Strongly Agree

Screen 24 [Same across all conditions]

Questions About You (Continued)

Finally, we ask for your opinion on a particular social issue and we ask you to respond to two demographic questions. Your responses are confidential and annonomous. However, you may decline to answer these questions by leaving them blank:

1) Is it a more serious crime to steal a gift card worth $10 to your choice of 1 of 4 locations (Second Cup, Marble Slab, Cineplex Odeon, or Chapters) or to steal $10 cash? [steal] ○ ○ ○ ○ ○ ○ ○ $10 Gift Card — Equally Serious — $10 Cash

2) What is your gender? ○ Female [0] ○ Male [1] [Gender]

3) What is your age? [Age] ☐

Submit Responses

[please require participants to answer each question]

Screen 25a [Different across cash and tangible conditions]

Thank You

[Conditions 1 and 4: Cash]

You have completed the study.

You earned $BB from completing 3 practice rounds. [$BB = totalpracticepay]

Round X [1,2, or 3] has been randomly selected as the round your reward will be paid out. You earned a cash reward of $CC in round X [please track X as 'rewardpayout'].

[$DD = sum of reward#; Record as totalreward; Record totalamount = BB+DD]

Please raise your hand and the administrator will provide you instructions on how to collect your reward.

[Conditions 2 and 5: Tangible]

You have completed the study.

You earned $BB from completing 3 practice rounds. [$BB = totalpracticepay]

Round X [1,2, or 3] has been randomly selected as the round your reward will be paid out. You earned a gift card worth $CC in round X [please track X as 'rewardpayout'].

[$DD = sum of reward#; Record as totalreward; Record totalamount = BB+DD]

1) I would like to receive my reward on a card towards [record as giftcert2]:
   a) Second Cup
   b) Chapters/Indigo
   c) Marble Slab
   d) Cineplex Odeon

Submit Responses

Appendix G (Continued)

[Conditions 3 and 6: Points]

You have completed the study.

You earned $BB from completing 3 practice rounds. [$BB = totalpracticepay]

Round X [1,2, or 3] has been randomly selected as the round your reward will be paid out. You earned CC points in round X [please track X as 'rewardpayout'].

[$DD = sum of reward#; Record as totalreward; Record totalamount = BB+DD]

Points are redeemable for a gift card with a balance of 1 point equals an additional $1 on your gift card.

1) I would like to redeem my points reward for a gift card towards [record as giftcert2]:
   a) Second Cup
   b) Chapters/Indigo
   c) Marble Slab
   d) Cineplex Odeon

Submit Responses

Screen 25b [Conditions 2, 3, 5, and 6: tangible and points]

In total, you earned $BB from completing 3 practice rounds. [$BB = totalpracticepay]

Round X [1,2, or 3] has been randomly selected as the round your reward will be paid out. You earned a gift card worth $CC towards _____ [giftcert2]

Please raise your hand and the administrator will provide you instructions on how to collect your reward.

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