THE EFFECTS OF GOAL DIFFICULTY AND MONITORING FREQUENCY ON EFFORT AND RISK TAKING DECISIONS

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Management control systems perform a vital role in facilitating the accomplishment of organizational objectives. To effectively align the objectives of employees with those of the organization, firms balance multiple control mechanisms to encourage organizationally desired behaviors and discourage undesired behaviors. The purpose of my dissertation was two-fold. First, I assessed how changes in monitoring frequency influenced employee behaviors and the overall function of the management control system. Second, I investigated the effects of stretch goals on behavior to determine whether stretch goals can lead to harmful behaviors and whether continuous monitoring can mitigate these behaviors.

Results suggest that individuals exert more effort when assigned a stretch or difficult goal compared to an easy goal. My study also finds that stretch goals can be harmful because of their effect on risk taking, goal commitment, and job insecurity. Finally, results indicate that accountability mediates the monitoring frequency-risk taking relationship such that continuous monitoring increases accountability and accountability decreases risk taking. However, the ability of monitoring frequency to decrease risk taking may depend on numerous factors.

Results from this study allow practitioners to understand the potential benefits and drawbacks of implementing continuous monitoring systems and the combined effects of using these systems in conjunction with compensation systems. Consequently, this study highlights necessary considerations for practitioners during the implementation continuous monitoring systems. The study also informs practitioners of the potentially harmful effects of stretch goals, the conditions under which they occur, and the possible ways to mitigate these effects.

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CHAPTER 1

INTRODUCTION

Management control systems perform a vital role in facilitating the accomplishment of organizational objectives. These systems include various control mechanisms, such as performance measurement, monitoring, and internal control practices, which function interactively to align employees' objectives with those of the organization (Zimmerman 2011, Chow et al. 1995, Jensen and Meckling 1976, Eisenhardt 1989, Simons 1987).

While some control mechanisms have remained relatively unchanged for many years (i.e., performance measurement systems), the underlying nature of other control mechanisms (i.e., monitoring) has been dramatically changing. Specifically, monitoring is moving from more traditional monitoring systems, such as direct supervision and internal auditing, which monitor employee behaviors on a periodic basis, to continuous monitoring. Continuous monitoring is an automated process which constantly reviews business data for divergence from predetermined standards and reports occurrences of divergence to responsible parties within the organization. (Kuhn and Sutton 2010, Hunton et al. 2008, Ramamoorti et al. 2011). In a 2011 survey of Fortune 250 companies, 89% expected to be using continuous monitoring software by 2012 (PwC 2012).

Monitoring systems are an important part of the management control system. They are used in conjunction with other control mechanisms to encourage organizationally desired behaviors and discourage undesirable behaviors. However, despite the widespread increase of continuous monitoring systems, little is known about how these systems affect employee behaviors. Additionally, it is not understood how these changes influence the effectiveness of the management control system as a whole. If changes in monitoring frequency alter employee

behavior, then the management control system needs to be evaluated to ensure that it is encouraging the desired employee behaviors and effectively aligning the employee's interests with those of the organization. The primary focus of this study is to assess how differences in monitoring frequencies influence employee behaviors and the overall function of the management control system. I accomplish this objective using the levers of control framework to examine how changes in monitoring frequency influence behavior, both individually and when used in conjunction with another control mechanism, budget goal difficulty.

Prior literature on budget goal difficulty has extensively tested the effects of easy and difficult goals on individual behavior and performance. However, in the real world, three levels of goals are used: easy, difficult, and stretch. Stretch goals are "those that are considered virtually unattainable" (Thompson et al. 1997, 48). Used by such companies such as General Electric, Alcoa, Enron and General Motors (Sherman and Kerr 1995, Denning 2012, Kerr and Landauer 2004). Stretch goals can either lead to great performance or terrible downfall. For example, General Electric used stretch goals to improve "performance by a magnitude they never thought possible" (Kerr and Landauer 2004, 134). However, with Enron, these goals led to excessive risk taking and fraudulent activities which eventually caused the bankruptcy of the company and the injury of countless stakeholders.

Although prevailing theory, supported by extant research, demonstrates consistent outcomes for easy and difficult goals, the impact of stretch goals has generated a great debate in both the academic and practitioner communities. While some believe that stretch goals are effective motivators that encourage individuals to "think outside the box," perform better, and increase efficiency, others believe stretch goals are harmful to organizations because they can lead to excessive risk-taking, unethical behavior, and decreased intrinsic motivation (Sherman

and Kerr 1995, Kerr and Landauer 2004, Locke and Latham 1990a, Markovitz 2012, Denning 2012, Ordonez et al. 2009). In light of this debate, research is needed to assess the effects of stretch goals on numerous behaviors including risk taking, effort, creativity, efficiency, and performance. However, only two studies have considered the stretch goal-performance relationship and none have examined how stretch goals influence particular inputs into performance. Consequently, the second focus of my study is to investigate the effects of stretch goals on effort and risk taking behavior.

To test the influence of monitoring and stretch goals, I examine effort and risk taking as outcome variables, because these behaviors are important determinants of performance. For example, a project manager exerts effort researching new product opportunities. He also takes risks by selecting one of these products to introduce into the market without knowing for certain how well the product will sell. As this example illustrates, both effort and risk choices influence the manager's performance and, ultimately, the performance and success of the firm (Sprinkle 2003, Sprinkle et al. 2008, Hirshleifer and Suh 1992, Rablen 2010). An important lesson of the recent global financial crisis is that unchecked risk taking in pursuit of performance goals can have a devastating impact on organizations and society.

To investigate effort and risk taking behavior under a control system employing a combination of performance measurement and monitoring, I conducted an experiment that manipulated the difficulty of the budget goal used in the performance measurement system (easy, difficulty, and stretch) and the frequency of monitoring (periodic versus continuous). The experiment utilized a sales scenario. In the scenario, I manipulated budget goal difficulty by providing participants with information about their past sales performance and assigning participants different sales revenue goals, manipulated as easy, difficult, or stretch based on its

relative difficulty compared to past performance. Since budget-based contracts are frequently used in practice, I compensated participants using a budget-based contract where participants receive a fixed bonus for reaching their assigned goals.

In my experiment, participants chose to work toward their goals by selecting the number and type of customers they wanted to contact. Specifically, they chose either lower risk customers with relatively low performance payoffs or higher risk customers which offered the possibility of significantly higher payoffs. Participants were informed of management's preference for the riskiness of their customer contact decisions and were told they would be monitored for consistency with that stated preference. They were then told that if significant differences existed between the stated preference and actual customer contacts, they may have to justify their decisions. This made participants accountable for violating the stated risk preference. I manipulated monitoring frequency by changing how often participant customer contact decisions were monitored.

While I rewarded participants based on their performance toward reaching their sales goal, I also measured their effort and risk taking decisions in order to examine how goal difficulty and monitoring frequency influenced these choices. The only feedback participants receive occurred after the experiment was complete. I statistically control for various other potentially influential variables, including perceived accountability, perceived need to justify decisions, risk preference, goal commitment, self-efficacy, benevolence, job insecurity, perceived importance of using a lot of effort hours, perceived interactive control system, and other demographic variables.

The participants consisted of 175 MBA and master of accounting students from sixteen classes across seven universities in three states. Participants were randomly assigned to one of

the six experimental conditions. Each student read the hypothetical sales scenario, completed a practice decision making session, and made their final customer contact decisions. Once all participants had completed the experiment, they were compensated.

Results from my experiment indicate that individuals exert more effort when assigned a difficult goal compared to an easy goal and decrease effort exertion slightly from the difficult to stretch goal level. My study also determined that individuals in the stretch goal condition take significantly higher risks than those in the easy or difficult goal conditions. Supplemental analysis indicated that this increase in risk taking is amplified when individuals have high job insecurity. Finally, the results of my experiment indicated that continuous monitoring did not have a significant effect on risk taking. Similarly, continuous monitoring did little to reduce the harmful effects of risk taking in the stretch goal condition. However, supplemental analysis revealed that accountability mediates the monitoring frequency-risk taking relationship. This finding suggests that continuous monitoring influences risk taking behavior through an increased sense of accountability.

This research makes several contributions to both academic research and practice. It contributes to accounting information systems and managerial accounting research by analyzing how changes in monitoring frequency influence employee decisions. By examining how monitoring system components and performance measurement system components jointly affect effort and risk taking, it also provides much needed insight into the combined influence of multiple control system components on behavior (Arnold 2010, Hunton et al. 2008, 2010; Kuhn and Sutton 2010; Masli et al. 2010; Chow et al. 1995). In addition, this study explores whether the simultaneous use of monitoring and performance measurement system components can effectively align the objectives of the manager and the organization along both effort and risk

taking dimensions. Results from this study allow practitioners to understand the potential benefits and drawbacks of implementing continuous monitoring systems and the combined behavioral effects of using these systems in conjunction with performance measurement systems. Consequently, this study highlights necessary considerations for practitioners during the implementation of continuous monitoring systems. Finally, this study examines effort and risk taking at various goal levels, including the stretch goal level, providing insight into how these goal levels affect individual behavior and addressing calls for research on identifying control system characteristics under which stretch goals can be harmful (Ordonez et al. 2009).

The reminder of this dissertation is organized as follows: Chapter 2 provides a review of the goal difficulty and monitoring literature and develops hypotheses for each stream of literature. Chapter 3 presents the research methodology. Chapter 4 describes the experimental findings and the results of hypothesis testing. Chapter 5 provides a summary of my experimental results, discussing the contributions and limitations of my study and offering suggestions for future research.

CHAPTER 2

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Introduction

This dissertation explores the effect of two management control mechanisms, performance measurement and monitoring, on managerial effort and risk taking decisions. Specifically, this study examines how components of these mechanisms (budget goal difficulty and monitoring frequency) influence the two managerial behaviors.

Simon's (1995) levers of control theory provides a theoretical framework from which to examine the influence of goal difficulty and monitoring frequency on effort and risk taking behavior. Levers of control is a comprehensive theory that describes how management control systems can be designed to align the objectives of employees with those of the organization using four basic levers (i.e., control mechanisms). These levers include belief systems, boundary systems, diagnostic control systems, and interactive control systems. Belief systems are explicit organizational definitions whose purpose is to motivate individuals to find new avenues of value creation (Simons 1995). These systems describe "the mission, purpose, and core values of the company" (Horngren 2012, 827). Examples include organizational credos and mission statements. Boundary systems describe acceptable and unacceptable employee behaviors, and establish punishments for breaking the rules (Simons 1995, Horngren 2012). Examples include codes of conduct and capital budgeting standards. Internal auditors, budget analysts, and planners all monitor information for evidence of individuals' divergence from the set of rules established by these boundary systems (Simons 1995). Consequently, monitoring of information regarding employee behavior is a part of the boundary system. Diagnostic control systems are formal systems that measure output variables that are important for organizational performance

to identify and correct deviations from preset performance standards (Simons 1995). A commonly used diagnostic control is an organization's formal performance measurement and reward system. Therefore, goal-based compensation is a diagnostic control. The final lever of control, interactive control systems, includes formal information systems used to regularly and personally involve managers in the decision making activities of their subordinates (Simons 1995). These systems are used to stimulate organizational learning and innovation.

To reiterate, this study focuses on components of two of these levers, the boundary system and the diagnostic control system. Monitoring of information is typically done to ensure that people are behaving within the boundaries of expected behavior. For example, internal auditors monitor and review employee behaviors to make sure they are complying with the company policies and codes of conduct. The company's policies and codes of conduct are part of the boundary system. Consequently, monitoring is a component of the boundary system which is used to ensure that the boundaries are followed.

Budget goal difficulty is part of the performance measurement and reward system. Specifically, budget goals are used to motivate employees to achieve a certain level of performance. Employees may be rewarded, perhaps with a bonus, for achieving a particular outcome, such as the number of items sold or the final cost of a project. These characteristics of the budget goal classify it as part of the diagnostic control system. The other two levers of control, the belief system and the interactive control system, are not examined in this study, but are controlled for in the experiment.

To effectively align employees' objectives with the organization's objectives, levers of control theory asserts that a balance among the four levers must be achieved. For example, performance measurement is a commonly used diagnostic control. While measuring and

rewarding employees for good performance is an important driver of firm performance, this diagnostic control mechanism must be counterbalanced by other levers of control "to ensure that proper business ethics, inspirational values, and attention to future threats and opportunities are not sacrificed while achieving business results" (Horngren 2012, 827).

Firm performance is affected by both effort and risk choices. In order to encourage successful firm performance, firms need to reduce the divergence of interests between managers and their organizations on the effort and risk dimensions by implementing management control systems that use multiple levers of control. Specifically, diagnostic control systems (i.e., performance measurement and reward) can be counterbalanced by boundary systems (i.e., rules and monitoring) to encourage firm-desired behaviors. For example, organizations often use easy budget goals in their performance measurement systems (Merchant and Manzoni 1989; Merchant and Van der Stede 2012; Van der Stede 2000). Research suggests that easy budget goals are used to increase risk taking (Sprinkle et al. 2008). However, firms likely do not want their managers to take excessive risks. Therefore, they can use monitoring to constrain excessive risk taking behaviors that may accompany easy budget goals. This example illustrates how organizations can use multiple levers of control to influence employee effort and risk decisions and ultimately firm performance. Figure 1 represents these ideas in a research framework.[1]

[1] My monitoring frequency manipulation focuses on monitoring customer contact decisions for compliance with the company's stated risk preference. This manipulation should influence the number of risky customers participants choose to contact, but should not influence their choice regarding total effort. Therefore, I do not expect monitoring frequency to influence total effort and make no hypothesis about this relationship.

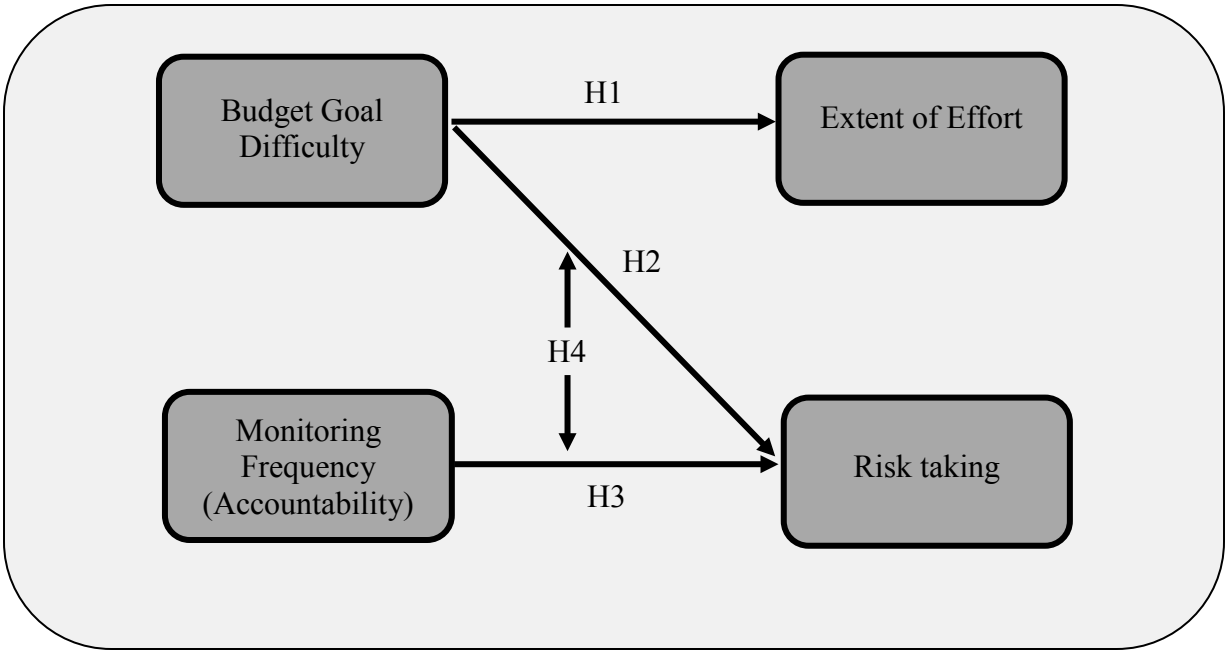


Figure 1. Research framework

The theoretical discussion in this chapter is organized into four sections. The first section discusses goal setting theory and explains the relationship between budget goal difficulty and effort. The second section describes the relationship between budget goal difficulty and risk taking. The third section discusses the different monitoring frequency and its relationship with risk taking. The final section discusses the interactive effect of budget goal difficulty and monitoring frequency on risk taking behavior.

Goal Setting Theory, Budget Goal Difficulty, and Effort

Goal setting theory suggests goals regulate human behavior (Locke and Latham 1990a, Brown and Latham 2000). This theory uses the term "goal" in a broad manner to describe "something that the person wants to achieve" (Locke and Latham 1990a, 2). Goal setting theory has been widely researched and is considered to be one of the most valid and practical theories of work motivation (Locke and Latham 1990a, Brown and Latham 2000, Miner 1984).

Goal setting theory indicates that difficult goals are most effective in achieving high levels of performance (Locke and Latham 1990a). This finding is supported by numerous studies, including Latham and Baldes (1975), Shalley et al. (1987), and Chesney and Locke (1991). In fact, Locke et al.'s (1981) review of goal setting research from 1969 to 1980 found that 90% of the studies reviewed supported the hypothesis that specific, challenging goals resulted in higher performance than easy goals. According to Locke, goal difficulty is proposed to have a positive, linear relationship with performance until individuals exceed the limits of their ability, at which point the relationship between goal difficulty and performance levels off (Locke 1982). However, as discussed later, there is some controversy regarding this belief (Erez and Zidon 1984, Thompson et al. 1997, Becker 1978).

Locke and Latham (1990a) explain that goals affect performance through effort, such that more difficult goals motivate individuals to exert greater effort, which leads to higher performance. Goals direct attention to the behaviors necessary to achieve the goal. In addition, difficult goals activate increased levels of effort expenditure and motivate the persistence of that effort. Consequently, Locke and Latham (1990a) conclude that specific, difficult goals induce increased effort and subsequent performance.

When considering the full range of goal levels, traditional goal setting theory asserts that, as goal difficulty increases from easy to difficult to stretch, performance also increases. Locke and Latham (1990a) suggest that performance may level off at the stretch goal level, but indicate that no performance decrease should occur. For example, Locke (1982) found that goal difficulty was positively related to performance in the easy to difficult range. Although the relationship between goal difficulty and performance in the difficult to stretch goal range was insignificant, performance in this range tended to improve slightly as goals became increasingly more

impossible. By measuring his participants' commitment to their assigned goal, Locke (1982, 512) was able to conclude that performance levels did not decline from the difficult to stretch goal level because subjects were "trying to get as close as they could to the goal," suggesting that individuals exert high effort under stretch goals.

However, research based on expectancy theory suggests the goal difficulty-effort relationship may not follow this pattern (Vroom 1964, Ronen and Livingstone 1975, Erez and Zidon 1984, Becker 1978, Thompson et al. 1997, Heath et al. 1999, Sprinkle et al. 2008). Expectancy theory asserts that individual motivation to act is based on the product of three variables: (1) expectancy, the individual's expectations that a certain level of effort leads to performance achievement; (2) instrumentality, the individual's belief that performance achievement will lead to a reward; and (3) valence, the perceived value of the reward (Vroom 1964, Locke et al. 1986, Locke and Latham 1990b). The theory predicts expectancy will be positively associated with performance when instrumentality and valence are held constant (Vroom 1964, Locke and Latham 1990b). Heath et al. (1999) suggest that individuals "possess mental representations of goals and of their likelihood of achieving them" (Heath et al. 1999, 81). In a budget context, budget goal difficulty influences individual expectations about whether effort leads to budget attainment, thus, affecting motivation to exert effort (Ronen and Livingstone 1975).

When faced with a budget goal, individuals first form expectancies about their ability to meet the goal. If they believe they can achieve the budget (and value the resulting reward), they are motivated to put forth effort in order to attain this goal, i.e., they commit to or accept the goal (Vroom 1964). Goal acceptance influences the effort they choose to exert in an attempt to meet the goal. From the easy to difficult range of goals, individuals tend to accept the goal and commit

to put forth effort in achieving the goal. However, when an individual is assigned a stretch goal, reduced expectancy may lead to rejection of the goal and therefore reduced effort toward meeting the goal. Erez and Zidon (1984) provide evidence for the role of goal acceptance in the goal difficulty-performance relationship. Specifically, they find goal acceptance moderates the relationship such that performance increases with goal difficulty when goals are accepted and decreases with goal difficulty when goals are rejected.

Erez and Zidon (1984) illustrate that goal acceptance plays a crucial role in an individuals's initial decision to exert effort. Once an individual commits to the goal, the equimarginal principle predicts how much effort they will exert. Specifically, it states that individuals will continue to exert effort until the marginal cost of exerting one additional unit of effort equals the marginal benefit received from exerting that effort (i.e., additional pay) (Landsburg 2008, Sprinkle et al. 2008).[2] Under a budget-based performance measurement and reward system, individuals receive a set bonus for achieving a budget goal, as represented in Figure 2 (Fisher et al. 2008, Sprinkle et al. 2008). As shown on the easy, difficult, and stretch budget lines, the marginal benefit of exerting effort is zero until the point where the individual meets the budget goal. After the individual achieves the budget goal, the marginal benefit of exerting additional effort returns to zero. As illustrated by these lines, the marginal benefit of exerting additional effort stays at zero longer as goal difficulty increases, signifying that it takes more effort to achieve these goal levels and receive a bonus. The marginal cost curve in Figure 2 represents the marginal cost of exerting effort. As shown, the marginal cost of exerting no effort is zero. However, as additional effort is exerted, the marginal cost of exerting that effort increases at a growing rate (Frey 1993, Sprinkle et al. 2008). For example, assume that you have

[2] Marginal benefit is defined as "the additional benefit gained from the last unit of an activity" (Landsburg 2008, 680). Similarly, marginal cost is defined as "the additional cost associated with the last unit of an activity" (Landsburg 2008, 680).

multiple projects to complete in one week. The first hour you devote to one project is costly because you could have spent the time working on a different project. However, each additional hour you spend working on the project becomes more costly, because you have less time to work on the other projects you need to complete.

Figure 2 includes three marginal benefit curves, one for each budget goal level. The shape of these curves represent the nature of the reward for achieving the budget. Until the budget is reached, there is no benefit received from working towards the goal and the marginal benefit curve remains at zero. Once the budget is achieved, the fixed bonus is received but no additional benefit is received from continuing to exert effort after this point (represented by the vertical line upward).

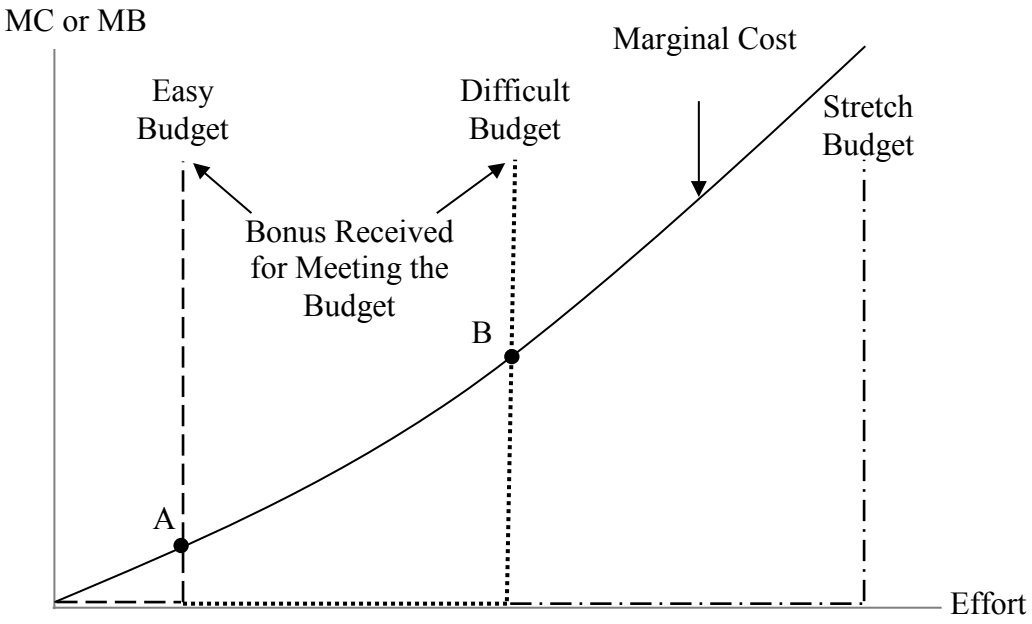


Figure 2. Marginal benefit (MB) and marginal cost (MC) of effort for three budget levels (adapted from Sprinkle et al. 2008).

At the easy budget level, employees can achieve the budget goal with little effort. Therefore, they have a positive expectancy and are motivated to exert effort towards meeting the

budget. Once employees begin putting forth effort, they will work until the marginal cost of exerting additional effort equals the marginal benefit received from exerting that additional effort. As shown in Figure 2, this occurs at a low level of effort (point A).

At the difficult budget level, it takes much more effort for employees to achieve the budget goal. Most employees will still have a positive expectancy because it is possible for them to achieve their budget. Consequently, they commit to the goal and are motivated to exert effort towards this budget goal. Since it takes much more effort to attain this budget, it takes longer for the marginal cost of exerting additional effort to equal the marginal benefit received from exerting that additional effort, as shown in Figure 2, point B.

At the stretch budget level, it is highly unlikely that employees will achieve the budget level no matter how much effort they exert. Consequently, these budget goals have low or possibly negative expectancies and, when subjected to a stretch budget goal, individuals may reject the goal and have little to no motivation to exert effort towards meeting the budget (Ronen and Livingstone 1975). Therefore, as compared to the predictions in goal theory, expectancy theory proposes that individuals facing a stretch goal will put forth little to no effort towards the activity (Vroom 1964, Ronen and Livingstone 1975, Sprinkle et al. 2008). The following relationship between budget goal level and effort, shown in Figure 3, is suggested by combining goal-setting theory, expectancy theory, and the equimarginal principle.[3]

[3] Although effort could theoretically drop to zero, I do not hypothesize that effort will decrease to zero even at the stretch budget goal level. As discussed later, an employee's fear of losing their job will lead them to put forth some level of effort regardless of their lack of motivation at this level.

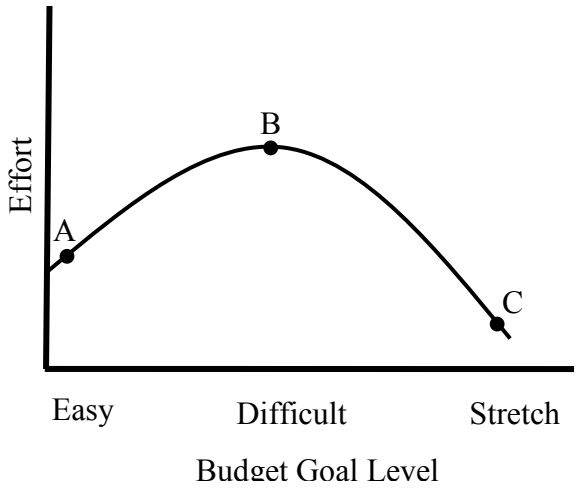


Figure 3. The relationship between budget goal difficulty and effort under expectancy theory.

The accounting literature has investigated the goal setting-performance relationship from a budget perspective, examining the effect of easy, moderate, and difficult goals on performance – point A to point B in Figure 3 (Hirst 1987). Consistent with goal setting theory, these studies have found a positive relationship between budget goal difficulty and performance (Rockness 1977, Chow 1983, Hirst and Yetton 1999, Webb et al. 2011). For example, Rockness (1977) investigated the influence of budget level, reward structure, and reward form on individual performance and satisfaction. Ninety-six subjects participated in a task that required them to verify the location of integrated circuits on circuit boards. After completing a test session, participants were assigned either an average or difficult budget. Rockness (1977) measured performance as the number of correctly decoded combinations and paid participants only for performance that met or exceeded the budget level. Results indicated performance increased as the budget level increased from the average to difficult level.

Chow (1983) examined the relationship between job standard tightness (i.e, budget level), type of compensation, and performance. Using the same experimental task as Rockness (1977), he manipulated the tightness of the job standard and type of compensation scheme. Job

standard tightness was manipulated across two levels: average and difficult, also similar to Rockness (1977). Chow (1983) found that performance was significantly higher in the difficult standard condition compared to the average standard condition.

Hirst and Yetton (1999) investigated the effect of goal setting and task interdependence on performance. In their study, 64 managers participated in a resource allocation task in two simulated chemical production plants. Half of these participants were given a "do-your-best" goal while the other half were given a specific, difficult goal. Performance on the task was measured as the amount of chemical output produced in each simulated plant. Hirst and Yetton (1999) found that both goal setting and task interdependence influenced performance. Their results indicated that specific, difficult goals lead to higher performance than "do-your-best" goals on both low and high interdependent tasks.

Webb et al. (2011) examined the influence of productivity-target difficulty and type of incentive contract on overall productivity and productivity per production efficiency. Ninety-eight participants were asked to count the number of times unique search letters appeared in different boxes. They were told they could accomplish this task in two ways: (1) by simply counting how many times the search letter appeared in its corresponding box of letters or (2) by identifying shortcuts in the form of patterns that were repeated throughout the boxes. Webb et al. (2011) manipulated the difficulty of the assigned productivity target (easy vs. challenging) and incentive contract type (fixed-wage vs. linear performance-based). They calculated productivity and productivity per production efficiency using the number of correct responses and the number of correct responses per shortcut found. Results from this experiment indicated that individuals with an easy target that were paid a fixed-wage identified more production efficiencies (i.e., shortcuts) than those with either a challenging target or pay based on their performance. In

contrast, individuals with challenging targets and/or those paid based on their performance had higher productivity per production efficiency. These results suggest that easy goals increase the number of shortcuts found (i.e., efficiency), while difficult goals increase the number of correct responses per shortcut found (i.e., productivity per production efficiency).

Fatseas and Hirst (1992) is the only accounting study to explore the full spectrum of goal difficulty (i.e., easy, moderate, difficult, and impossible goals). Using a decoding task, the authors investigated the effect of assigned goals and compensation on performance. They used a 4 x 3 experimental design where goal level (low, medium, high, and impossible) and compensation type (fixed-pay, piece-rate, budget-based) were manipulated between subjects. Their findings suggest performance is highest at the easy goal level, moderate at the difficult goal level, and lowest at the impossible goal level. Unfortunately, their experimental design makes it impossible to measure effort. For their experiment, the authors utilized a decoding task borrowed from Chow (1983) and Rockness (1977) which simulated verifying the location of integrated circuits on a circuit board. Performance was measured as an outcome variable, the number of lines correctly decoded, with no measure of input to performance, such as effort. This measure of performance involves an aspect of quantity (i.e., the number of lines decoded) and quality (i.e., the number of lines correctly decoded) of output, making it impossible to understand the total amount of effort participants devoted to the task using this performance measure. For example, to increase quantity, effort must be extended towards decoding lines quickly. However, to increase quality, effort must be directed towards ensuring the accuracy of the decoded lines. Therefore, a participant who devoted a large amount of effort to quantity and no effort to quality may have received a low performance score despite the large amount of effort he put into the task. Similarly, a participant who devoted a large amount of effort to quality and no effort to

quantity may have also received a low performance score. There are also potential unmeasured ability and experience components to performance. For example, individual ability could greatly affect performance in a decoding task where some individuals are likely to be better at decoding than others. Similarly, an individual with past experience on a decoding task should be able to perform better than those with less experience. The performance-type measures used in many of the studies on goal difficulty do not control for these potentially influential variables. Consequently, it is unclear how the full range of goal levels influence effort, which is only one component of performance.

The accounting studies discussed above suggest that difficult budget goals increase performance and one study found that performance declines for stretch goals. However, these studies have not isolated the cause of the performance increase. In fact, most of the studies used tasks where performance involved multiple dimensions (e.g., quantity and quality, efficiency and effort, or ability) (Rockness 1977, Chow 1983, Fatseas and Hirst 1992, Webb et al. 2011).

Unlike these studies, Sprinkle et al (2008) examined the effect of budget goal difficulty on effort specifically. The purpose of their study was to investigate the influence of budget goal difficulty on effort and risk taking. They manipulated budget level (easy vs. difficult) then asked subjects to complete a lottery-type task. In this task, participants selected one of twelve lotteries whose pay function represented their effort and risk taking choices. Results indicated that a tradeoff exists between motivating high levels of effort and encouraging risk taking. Specifically, they found that individuals tend to choose low effort and moderate risks under low budget levels and high effort and low risks under high budget levels. However, they did not test the effect of stretch goals on effort and risk taking.

To summarize, goal setting theory, expectancy theory, and economic principles suggest there is a positive relationship between goal difficulty and effort from the easy to difficult goal level. However, from the difficult to stretch goal level, goal setting theory and expectancy theory provide contradictory outcomes. Although expectancy theory and research indicate that an individual's expectancy beliefs will moderate the goal difficulty-performance relationship (Grant and Shin 2011), prior research based on either goal setting theory or expectancy theory in goal difficulty research has not hypothesized a reduction in effort, possibly because they haven't considered stretch goals. Therefore, I consider the individual assertions of goal setting theory and expectancy theory at the stretch goal level. While goal setting theory more closely examines the goal difficulty-performance relationship, expectancy theory predicts a direct relationship between goal difficulty and an individual's motivation to exert effort. Specifically, goal setting theory suggests that performance will slightly increase from the difficult to stretch goal level. The theory predicts that this increase in performance is caused by an increase in effort expenditure but extant research has not demonstrated this causal link. Expectancy theory, however, suggests that effort should decrease from the difficult to stretch goal level because an individual's expectancy that their efforts will lead to achievement of the goal decreases. Therefore, I believe that expectancy theory is more explanatory of the relationship between goal difficulty and effort from the difficult to stretch goal level because it directly predicts an individual's motivation to put forth effort. Therefore, consistent with expectancy theory, I hypothesize the following relationship between budget goal difficulty and effort.

> H1: There is an inverted-U relationship between budget goal difficulty and effort such that effort increases from the easy to difficult goal level and then decreases from the difficult to stretch goal level.

Sprinkle et al. (2008, 439) argue that "employees also affect performance via the choice of tasks to which they allocate their effort." Since employees' jobs are multifaceted, these tasks will frequently differ in their level of risk (i.e., variance in expected returns).

It is usually assumed that risk involves volatility (Shapira 1995). In particular, alternatives with larger variances in the distribution of possible outcomes are assumed to have greater risk (March and Shapira 1987, Shapira 1995, Sanders and Hambrick 2007). For example, an investment with a 50% chance of losing $200 and a 50% chance of winning $200 has greater volatility and is therefore perceived as riskier than an investment with a 50% chance of losing $100 and a 50% chance of winning $100. Similarly, alternatives that include the probability of loss of most or all of the investment are considered more risky than alternatives that include the probability of only a partial loss (March and Shapira 1987, Shapira 1995, Sanders and Hambrick 2007). Therefore, when making risk choices, individuals consider the risk of the alternatives, based on variability of outcomes and the probability of extreme loss, in light of each alternative's expected return. Theoretically, the higher the risk, the higher the expected return. Shapira (1995, 26) explains that under conventional decision theory, risk choices involve "a trade-off between risk and expected return."

While Sprinkle et al. (2008) contend most firms are risk-neutral, desiring tasks that provide the highest expected payoff regardless of the variance in those payoffs, Shapira (1995) asserts that individuals take on state-dependent risk attitudes: risk-averse, risk-neutral, and risk-seeking. Individuals acting in a risk-averse manner prefer low risk alternatives and are willing to forfeit a portion of their expected return to decrease risk (Shapira 1995, Kahneman and Tversky 1979). Individuals behaving in a risk-neutral manner are indifferent to risk (Fons 1994, EEC

2006, Shapira 1995). For example, they are indifferent between a gamble with an expected return of $10 or a sure payout of $10. Consequently, individuals with risk-neutral attitudes judge risky alternatives only on the basis of expected returns, choosing the option with the highest expected payout (Fons 1994). Individuals acting in a risk-seeking manner prefer high risk alternatives and are willing to choose an alternative with a lower expected return for the chance of receiving a higher payout (Shapira 1995).

Goal targets, discussed above, could affect individuals' state-dependent risk attitude. However, only two accounting studies have examined the relationship between goal setting and risk taking. Larrick et al. (2009) used three experiments to examine whether specific, challenging goals increased risk taking. Two of the experimental tasks were bargaining exercises, while the third involved gambling. The authors randomly assigned participants in each experiment with a "do your best" or goal condition. In the "do your best" condition, participants were encouraged to do their best to make money. In the goal condition, participants were asked to set a specific, challenging goal for the amount of money they wanted to make during the exercise. Results from these experiments suggest that specific, challenging goals lead to greater risk taking than "do your best" goals.

Sprinkle et al. (2008) suggest there is a U-shaped relationship between budget goal difficulty and risk taking. Using a lottery-type task, they examined the relationship between budget goal difficulty and risk taking from the easy to difficult goal level. As expected, the researchers found that budget level influenced individual state-dependent risk attitude. Results indicate that easy budget levels encourage employees to take greater risks, while difficult budgets cause employees to become more risk-averse. In these latter situations, managers tended to select "safe" projects that increased their chances of meeting the budget despite the decrease

in expected firm profit that can result from the selection of low risk projects. Sprinkle et al. (2008) did not test the risk taking behaviors of employees in stretch budget conditions, but the authors suggest managers in this condition will choose very risky projects because such projects are the only way for them to reach the budget goal.

These assertions regarding state-dependent risk attitudes are supported by prospect theory. Kahneman and Tversky's (1979) prospect theory divides the decision-making process into two phases: (1) the editing phase and (2) the evaluation phase. During the editing phase, people code expected outcomes as gains or losses relative to some contextual reference point, such as a goal or budget, and then restructure the available risk choices in a manner that simplifies their decision-making process (Kahneman and Tversky 1979). Outcomes are considered gains if they are above the reference point and losses if they are below the reference point. During the evaluation phase, individuals choose the alternative with the highest value. Unlike economics-based theories, these values are not a measure of the expected utility of alternatives, but the value of deviations from the reference point or the value of changes in wealth. The value of various risk choices is represented by the prospect theory value function, shown in Figure 4.

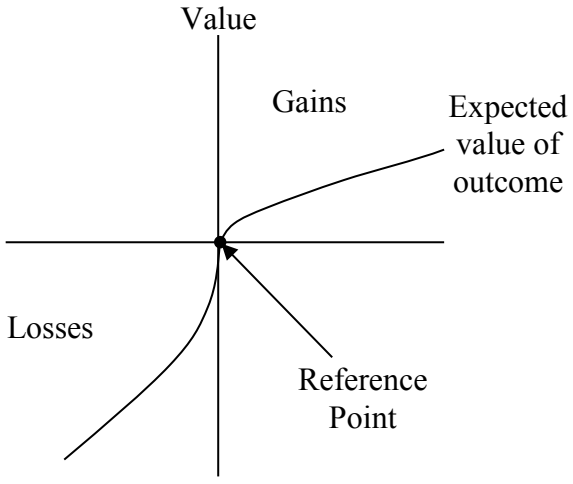


Figure 4. Prospect theory's value function.

Prospect theory suggests the risk choices of managers will depend on the reference point they use to evaluate the alternatives. For budget-based incentives, managers use the budget as their reference point. Based on prospect theory, individuals should react to budget goals as follows. First, when *winning is certain*, people maximize their wealth (Kahneman and Tversky 1979). Thus, when faced with an easy budget or goal, meeting the budget is certain, regardless of the risk choice selected. Consequently, individuals in this context are risk-neutral and choose moderate risks that maximize the employee's expected payoff.

Second, when *winning is probable*, people choose the alternative where winning is the most likely (Kahneman and Tversky 1979). For example, when faced with a difficult, but achievable budget, winning is probable but not certain. Therefore, individuals are risk-averse and select the risk choice that presents them with the greatest possibility of reaching the budget (i.e., the alternative where winning is the most likely). In this situation, individuals are willing to sacrifice some of their expected return for lower risk. As discussed earlier, the choice with the lowest risk of missing the budget goal is the alternative with the least variance.

Third, when *losing is probable*, people choose the alternative where losing is the least likely (Kahneman and Tversky 1979). When faced with a stretch budget (i.e., where losing is probable), individuals perceive they are in a loss position, such that reaching the budget is extremely unlikely. Given that more risky alternatives have greater volatility (higher and lower possible outcomes), it may be that these alternatives are the only ones to offer even the possibility of reaching the stretch goal albeit with low probability. Consequently, individuals in this situation are risk-seeking and choose the alternative providing the greatest opportunity to reach the budget (i.e., where winning is at least possible, although unlikely). To summarize,

prospect theory suggests easy goals lead to moderate risk taking, difficult goals cause low risk taking, and stretch goals lead to high risk taking.

General Motors (GM) illustrated this phenomenon when they set stretch goals in 2002, in an attempt to increase their market share. GM's managers, forced with almost unattainable goals, took the high-risk steps of offering a greater number of interest-free loans and other incentives. These incentives were intended to attract customers; however, they eventually caused GM to lose money. Consistent with prospect theory, GM's managers enacted riskier strategies with lower expected returns in an attempt to reach their stretch goal of higher unit sales. Some argue that GM's fixation on this stretch goal led their managers to make poor decisions which eventually landed them in bankruptcy (*Economist* 2009, Ordonez et al. 2009).

To further illustrate the relationship between goal difficulty and risk taking, suppose there are three alternatives. Alternative A has an expected return of $25 with a 50% chance of gaining $20 and a 50% chance of gaining $30. Alternative B has an expected return of $30 with a 50% chance of gaining $5 and a 50% of gaining $55. Alternative C has an expected return of $15 with a 50% chance of losing $30 and a 50% chance of gaining $60. The variance in payoffs increases from Alternative A to Alternative C, making Alternative A the least risky and Alternative C the most risky. Under an easy budget goal of $5, an individual would select the moderately risky Alternative B because this alternative provides the highest expected return and meeting the budget is certain (Kahneman and Tversky 1979). Under a difficult budget goal of $15, an individual would select the low risk Alternative A because it provides the highest chance of meeting the budget. Here, the individual prefers the smaller sure gain to the potentially larger risky gain (Kahneman and Tversky 1979, Larrick et al. 2009). Under a stretch budget goal of $60, an individual would choose the highly risky Alternative C because this is the only

alternative where the $60 goal is within the range of possible outcomes, despite its increased potential for larger losses and lower expected return. As described by Larrick et al. (2009), "in choices between a sure loss and a risky loss, most people prefer to gamble" (343). Therefore, an individual prefers to risk losing more to potentially meet the goal, than to settle for a sure loss (Laughhunn et al. 1980). The relationship between budget goal difficulty and risk taking is illustrated in Figure 5.

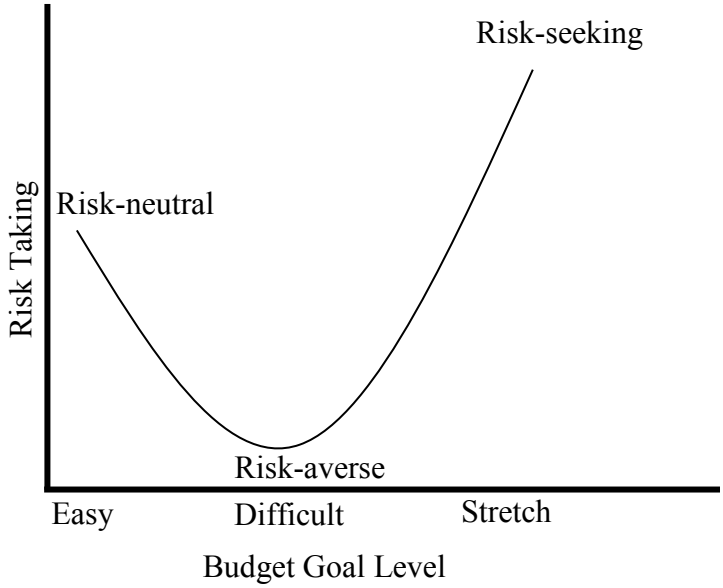


Figure 5. The relationship between budget goal difficulty and risk taking.

This leads to my next hypothesis.

> H2: There is a U-shaped relationship between budget goal difficulty and risk taking such that risk taking decreases from the easy to difficulty goal level and then increases from the difficult to stretch goal level.

Monitoring Frequency and Risk Taking

Monitoring is a control mechanism used by organizations to align worker's and manager's objectives with those of the company (Zimmerman 2011, Chow et al. 1995, Jensen and Meckling 1976, Eisenhardt 1989, Simons 1987). Monitoring systems provide superiors with

information about what their subordinates are actually doing. Consequently, monitoring reduces the likelihood that subordinates will act in a self-interested manner because the subordinate realizes his supervisors can observe his behavior (Eisenhardt 1989). From Simon's (1995) levers of control perspective, monitoring is viewed as part of the boundary system because it encourages employees to behave in a manner consistent with the organization's objectives, values, and rules (i.e., the belief system).

Traditional monitoring systems include practices such as direct supervision and internal auditing. Because direct supervision and internal auditing monitor employee behaviors on an intermittent basis, it is impossible for these traditional monitoring methods to observe and assess all employee behaviors. However, advances in technology now allow monitoring to occur on a continual basis (ACL 2011; Ramamoorti et al. 2011; KPMG 2008a, 2008b, 2010a, 2010b, 2010c; PwC 2012).

Continuous monitoring is described as an automated process that "enables management to continually review business processes for adherence to and deviations from their intended levels of performance and effectiveness" (Ramamoorti et al. 2011, 2). Continuous monitoring systems collect data on a real- or near real-time basis about employees' choices and behaviors, compare this data with a set of predetermined rules and objectives set by management, and send automated exception reports to the appropriate people when performance gaps or unusual transactions are found (Kuhn and Sutton 2010, Hunton et al. 2008). Unlike the intermittent nature of the human-facilitated traditional monitoring practices, monitoring facilitated by an organization's information system can occur continuously (Hunton et al. 2008).

It has been proposed that monitoring increases accountability, defined as "the implicit or explicit expectation that one may be called on to justify one's beliefs, feelings, and actions to

others" (Lerner and Tetlock 1999, 255). Indeed, Hunton et al. (2010) find evidence that continuous monitoring increases perceived accountability relative to periodic monitoring. This occurs because the constant nature of continuous monitoring raises the likelihood that an employee's actions will be detected and reported to his superior, leading employees to have a higher perceived need to justify their decisions (i.e., higher perceived accountability).

Lerner and Tetlock (1999) suggest that accountability is a motivational force that increases cognitive effort. When accountability is high, individual behavior is easier to observe and the pressure to conform raises the desire to please one's audience (i.e., the person(s) to whom one is accountable).[4] Consequently, individuals increase their cognitive effort in an attempt to please their audience, which can improve judgment under the right circumstances.

Tan and Kao (1999) support this assertion. They investigated the moderating effect of three factors (knowledge, problem-solving ability, and task complexity) on the accountability-auditor performance relationship. Subjects in the high accountability condition were asked to provide their names and contact information because their responses would be reviewed by a partner or senior manager, while subjects in the low accountability condition were assured their responses would remain anonymous. In order to assess the success of their accountability manipulation, Tan and Kao (1999) asked participants in each condition "how motivated they were to perform well on the task, the extent to which they thought their responses would be reviewed by the training manager, and the amount of mental effort used" (218). The results from these questions indicated subjects in the high accountability condition were more motivated and exerted more cognitive effort than subjects in the low accountability condition. These findings

[4] When the audience's views are known, accountability leads individuals to make decisions that conform to the views of the audience. When the audience's views are unknown, accountability causes individuals to engage in preemptive self-criticism, a more self-critical and complex way of thinking that leads them to consider multiple perspectives and to anticipate the objections that others might raise (Lerner and Tetlock 1999).

suggest higher accountability leads to higher motivation and increased exertion of cognitive effort.

Of particular interest in this study is the influence of accountability on risk taking.[5] Tetlock and Boettger (1994) were the first to consider the effect of accountability on risk taking. They performed an experiment in which participants were presented with nine cost-benefit profiles for an anti-coagulant drug and asked to make decisions about the acceptability of the drug. They manipulated accountability by requiring some participants to justify their decisions to a research fellow with first-hand working experience at the Food and Drug Adminstration, while others responses remained anonymous. When the drug was described as already on the market, there was little difference between the responses of the accountable (i.e., those who had to justify their decisions) and unaccountable (i.e., anonymous) participants. However, when the drug was off-the-market (i.e., riskier), accountable subjects became much more cautious.

DeZoort et al. (2006) found similar results in the auditing domain. They manipulated accountability pressure strength under four conditions: anonymous, review, justification, and feedback. Subjects in the anonymous condition were told their materiality judgment and other responses would remain anonymous. Review condition participants were asked to provide their personal information and told that their responses would be reviewed by an audit partner. Subjects in the justification condition were told that they would have to provide a written justification for their materiality judgment, and that their responses and justification would be reviewed by an audit partner. Feedback condition participants were told that they would receive formal feedback about their judgment and other responses, and that an audit partner would

[5] My monitoring frequency manipulation focuses on monitoring customer contact decisions for compliance with the company's stated risk preference. This manipulation should influence the number of risky customers participants choose to contact, but should not influence their choice regarding total effort. Therefore, I do not expect monitoring frequency to influence total effort and make no hypothesis about this relationship.

provide them with specific comments about their performance. Consequently, accountability pressure strength increased from the anonymous condition (lowest accountability pressure) through the feedback condition (highest accountability pressure). Their findings indicate that individuals under higher levels of accountability pressure make more conservative (i.e., less risky) materiality judgments, suggesting a negative relationship between accountability pressure and risk taking.

Because continuous monitoring (CM) increases accountability, it seems reasonable that those subject to CM would demonstrate risk aversion (i.e., take the more conservative approach). If the organization expresses their desire for risk aversion, the increase in accountability would lead to risk aversion because of the employee's desire to please their audience (the company). Hunton et al. (2008) investigated the relationship between monitoring frequency and risk taking in an experimental setting. Participants were asked to make decisions about capital projects at their firm, and monitoring frequency (periodic vs. continuous) was manipulated between subjects. Results suggest that managers in the continuous monitoring condition were significantly less willing to continue with a risky but viable project than managers in the periodic monitoring condition.

In order to better understand this behavior, Hunton et al. (2010) examined why continuous monitoring decreased individuals' willingness to take risks. They found that continuous monitoring increased the perceived likelihood that an individual's decisions would be detected and that he or she would have to justify their decisions. Consequently, individuals made decisions that were easier for them to defend.

In my experiment, I explicitly state the company's risk taking preference. Similar to a workplace setting, this is done to create a belief system or set of values and rules that

participant's behavior can be evaluated against. The boundary system then specifies the consequences of violating the belief system. The belief and boundary systems in my scenario are designed to decrease excessive risk taking. When the audience's preference is known, accountability should lead individuals to make decisions that conform to the views of the audience. In my case, the audience (i.e., the company) discourages excessive risk taking. Therefore, continuous monitoring should decrease risk taking. This rationale and prior research lead to the following hypothesis:

H3: There is a negative relationship between monitoring frequency and risk taking.

The Interaction Effects of Budget Goal Difficulty and Monitoring Frequency

Past research has shown that components of diagnostic (i.e., performance measurement and reward) and boundary control (i.e., monitoring) systems interact (Chow et al. 1995, Hunton et al. 2008). For example, Hunton et al. (2008) found that incentive horizon and monitoring frequency interacted to influence risk taking. Similarly, Chow et al. (1995) found that compensation system type (linear vs. profit-sharing) interacted with a probabilistic management audit to more effectively deter subordinate misrepresentations. Simon's (1995) levers of control theory supports these findings, asserting that multiple levers of control must be balanced to achieve organizational objectives. My study extends this literature by investigating the interaction between a component of diagnostic control systems, budget goal difficulty, and a component of boundary control systems, monitoring frequency.

A U-shaped relationship is expected to occur between goal difficulty and risk taking where there is moderate risk taking at the easy goal level, low risk taking at the difficulty goal level, and high risk taking at the stretch goal level. When individuals are monitored

continuously, they will have an increased sense of accountability and are expected to decrease risk taking. Individuals who normally would have taken high to moderate levels of risk (i.e., those in the easy and stretch goal condition) should decrease their risk taking to more easily justifiable levels of risk taking. Alternatively, the risk taking behavior of individuals who are already taking justifiable levels of risk (i.e., those in the difficult goal condition) should remain relatively stable. Consequently, the U-shaped relationship between budget goal difficulty and risk taking should be less pronounced in the continuous monitoring condition than in the periodic monitoring condition. This leads to my next hypothesis which is illustrated in Figure 6.

> H4: Monitoring frequency will reduce risk taking at the easy and stretch goal difficulty levels more than it affects risk taking at the difficult goal level.

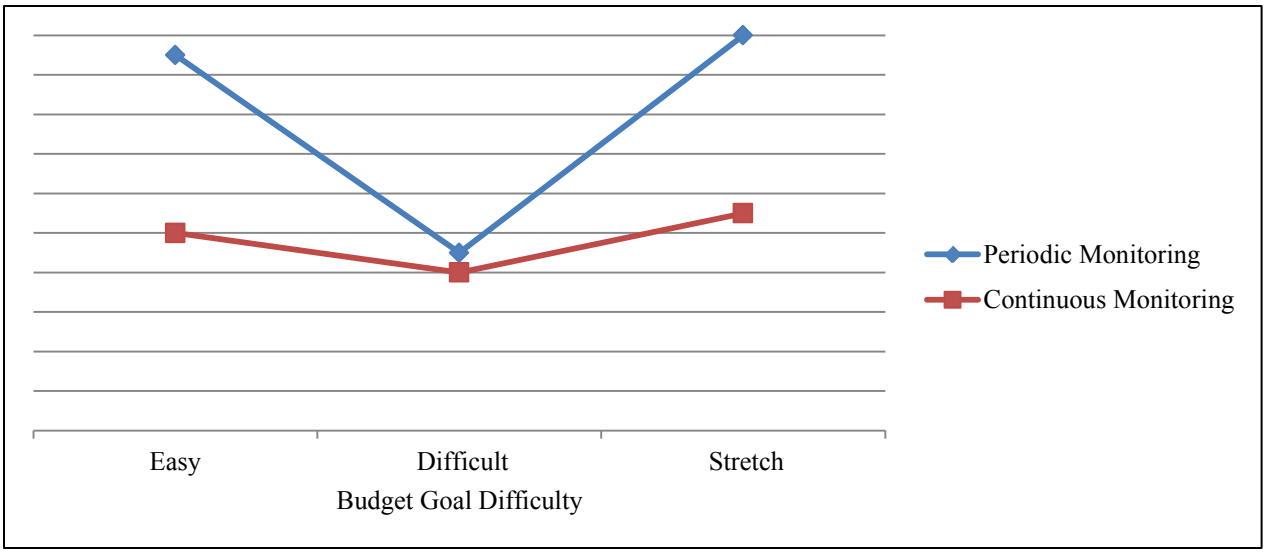


Figure 6. Hypothesized joint effect of budget goal difficulty and monitoring frequency on risk taking.

CHAPTER 3

METHODOLOGY

Introduction

This chapter describes the experimental methodology used to test my hypotheses and presents a detailed discussion of the development and validation of my experimental instrument. In the following sections, I explain my research design and participants, experimental instrument, study variables, pilot testing, and validation.

Research Design

I used a 3 x 2 between-subjects experimental design to examine the influence of budget goal difficulty and monitoring frequency on effort and risk taking. Budget goal difficulty was manipulated at three levels (easy, difficult, and stretch) and monitoring frequency was manipulated at two levels (periodic and continuous). The experimental design is illustrated in Figure 7.

		Budget Goal Difficulty		
		Easy	Difficult	Stretch
Monitoring Frequency	Periodic			
	Continuous			

Figure 7. Experimental design.

Research participants were randomly assigned to one of the six conditions. I manipulated budget goal difficulty by describing prior performance and embedding goal levels in the experimental case which suggested that participants were assigned an easy, difficult, or stretch goal. Monitoring frequency was manipulated by embedding information in the experimental

scenario which suggested that participants were monitored on either a continuous or periodic basis. My dependent variables, effort and risk taking, were measured, as were several control variables. These measures are discussed in detail later in this chapter. The complete research instrument is presented in Appendix A with variations shown in parentheses.

Research Participants

I recruited students from core courses in the MBA and the master of accounting programs at seven universities. The universities included two from the northern U.S. and five from the southern U.S. ranging in size from small to large and located in both suburban and urban areas. For an experiment to be effective, Libby et al. (2002) suggest researchers should match the goals of the experiment with the selection of their subjects. However, they also suggest that experiments should be efficient and advocate that subjects not be more sophisticated than is necessary to achieve the goals of the experiment. The primary goal of my study was to examine the effort and risk taking choices made by individuals in response to different levels of budget goal difficulty and monitoring frequency. Decisions that involve risk typically occur at the managerial level; therefore, my experimental instrument placed participants in the role of a manager at an organization. MBA students are in training to become managers. Consequently, they possess the educational background necessary to make managerial-type decisions. In addition, MBA students typically have professional work experience. This education and experience makes MBA students suitable candidates for my experiment. Their background should provide them the ability to place themselves in the context of my experimental setting and with the ability to make the necessary decisions. Master of accounting students are also trained to make decisions that involve effort and risk. Consequently, they are also suitable candidates for

my experiment. However, accounting students may not possess the same level of work experience as MBA students. I run supplemental analysis in Chapter 4 to test for potential differences in these samples.

Participants with work experience likely have feelings associated with their work environment, such as perceived pressure from their superiors or the amount of accountability they feel in their current position. Removal of the participant from their current work environment reduces the potential influence of confounding variables related to that setting. Therefore, I used a scenario-based survey with a description of the experimental company in an effort to place all participants in a similar work context. To further control for these outside experiences, I included demographic questions in my survey regarding their work experience and current employer for use as control variables.

Development of Experimental Instrument

The goal of my study is to examine the effort and risk taking choices made by individuals in response to different levels of budget goal difficulty and monitoring frequency. To accomplish this goal, it was necessary to devise an experimental task through which I could manipulate budget goal difficulty and monitoring frequency, and measure effort and risk taking choices. Managers are faced with numerous situations where they must make choices about effort and risk taking (i.e., investment decisions, project selection choices). For the purposes of my study, I needed a simplified scenario that is realistic yet easy to understand, and which allows me to easily disentangle participants' effort and risk taking choices. I chose a sales scenario for my experimental setting because it meets these criteria. Sales personnel are an important part of most companies. Salespersons often make choices about effort and risk taking. They are also

subject to goals and their performance is typically monitored. Consequently, the sales scenario provided a simple yet realistic setting in which I could manipulate my independent variables (budget goal difficulty and monitoring frequency) and measure my dependent variables (effort and risk taking).

In my scenario, participants were told they are the sales manager for Atlantis Manufacturing Supply Company. I chose to use a realistic company name to help participants visualize themselves as part of a real company. The instrument then explained how participants' monthly pay is calculated. Participants received a salary of $600 experimental dollars (ED). They were assigned a revenue goal which represents the dollar value of sales revenue their supervisor wants them to achieve.[6] This revenue goal was used to determine their monthly bonus, such that they received $500 ED for achieving the goal. However, participants were also told that they would receive no bonus if they do not reach their revenue goal. Finally, to simulate the opportunity cost of allocating their "work" time to this sales activity rather than other activities available to them, participants were told that they would incur a cost based on the number of effort hours they chose to use. The cost of these effort hours was determined using a table provided to the participants (see Appendix B). Consequently, their final monthly pay was calculated as follows: $600 ED salary + $500 ED bonus (if earned) – cost of effort.

The revenue goal was used as a diagnostic control system component (i.e., compensation for certain performance levels) in my scenario in order to adequately operationalize the theory supporting my hypotheses. I chose to pay participants for their performance in order to induce true economic behavior. I emphasized the consequences of not achieving the revenue goal by

[6] I chose to use the term revenue goal instead of a budget because participants might perceive a budget as a ceiling (i.e., an expense budget is a number they do not want to go over). In my setting, the budget was actually a goal. Consequently, using the term revenue goal reduced the possibility that participants misunderstood the purpose of the goal.

explaining that participants would receive no bonus if they do not reach their goal. The inclusion of effort cost in the monthly pay calculation simulated the real life cost of effort. In life all effort has a cost such that an individual must give up something of value (i.e., rest, play, other revenue opportunities) in order to put effort towards this task. In addition, as effort increases, the marginal cost of effort also increases such that the next unit of effort is more costly than the last.

After participants were told how their monthly pay is calculated, they were informed of their past sales performance, including the amount of sales revenue they had obtained for the past six months and their highest past sales revenue. They were then informed of their revenue goal for the current month. The relative difficulty of this budget goal, compared to their past performance, was used to manipulate budget goal difficulty and is discussed in more detail later in this chapter. The budget goal difficulty ranged from $50,000 to $190,000.

Next, participants were told that they had 100 hours available this month to make sales calls and were given information about the choices available to them in the experiment. These hours could be used to contact existing customers or new customers. For an existing customer, they had to spend two hours in preparation and on the phone, and they were guaranteed to receive a set amount of $2,500 in sales. I chose to make sales to existing customers guaranteed because I want existing customers to represent a low level of risk.

Unlike existing customers, sales to new customers varied in range from $0 to $75,000 with an average sale of $18,000. To make a sale to a new customer, participants had to spend ten hours in preparation and on the phone, and sales were not guaranteed. In fact, participants were given a past history of sales to new customers which showed that two of the last ten new customers contacted resulted in no sale. Unlike existing customers, new customers appear risky to participants. Risk is typically defined in terms of the variance in the outcomes, such that the

higher the variance in the outcomes, the higher the risk (Sanders and Hambrick 2007). In my scenario, the variance in payoffs for new customers was greater than the variance in payoffs for existing customers. For similar reasons, I chose to make the time needed to contact a new customer longer than the time needed to contact an existing customer. This choice re-emphasized the riskiness of new customers and realistically portrayed the effort relationship between new and existing customers. However, to be consistent with the finance perspective that higher risk leads to higher returns, I set the payout for new customers such that, on average, sales to new customers have a higher average payout per hour than existing customers (Fiegenbaum and Thomas 1988, Nickel and Rodriguez 2002).

During the scenario, participants were told that the company wants them to contact at least *one* but no more than *four* new customers. This small amount of information about the company's preference was given to participants to inform them about the company's belief system and to define which behaviors were considered appropriate and inappropriate according to the company. My theory suggests that components of the boundary system and diagnostic control system will interact to influence individual behavior. To be consistent with levers of control theory, this experiment operationalizes monitoring as a component of the boundary system that observes employee behavior and output, and evaluates these against a given standard (i.e., the belief system). Without informing participants of the company's preferences, the standards against which their behaviors/outputs are evaluated would be unclear. The belief and boundary systems I incorporated into the scenario discouraged high levels of risk taking.

After participants were given information about their goal, the company's preferences, and the characteristics of their potential customers, they learned about the frequency of monitoring within their company. This information was used to manipulate monitoring

frequency between subjects and is discussed in greater detail later in this chapter. A summary of the other numerical components of the experiment is shown below in Table 1.

Table 1

Numerical Components of the Experiment (in Experimental Dollars)

Bonus Calculation	$500 for meeting sales revenue goal
Goal Difficulty Levels	Easy: $50,000 Difficult: $110,000 Stretch: $190,000
Total hours available to make sales phone calls	100 hours
Existing Customers	Time Required: 2 hour Sales Revenue: $2,500 per customer guaranteed
New Customers	Time Required: 10 hours Sales Revenue: Unknown • Range: $0 - $75,000 • Average: $18,000

After the scenario and pay scheme were described, participants worked through a practice session where they could see how the number of new and existing customers contacted might influence the sales revenue they achieve and their monthly pay. This practice session, shown in Appendix C, was designed to allow participants to gain experience with customer contact decisions and understand how these choices may influence sales revenue for the company,

whether they receive their bonus, the cost of the effort they use, and their monthly pay. The practice session also highlighted the riskiness of contacting new customers.

After completing the practice session, participants were asked to make decisions about the number of new and existing customers they planned to contact this month. They also responded to manipulation check questions for each of the independent variables, demographic questions, and other study-related questions. Once the task was completed, participant choices were evaluated and the experimental dollars earned in the experiment were converted into tickets. These tickets were entered into a drawing in which participants had the chance to win one of several Visa gift cards. The drawing for the gift cards occurred once all participants had completed the study. All participants were notified of the names of the gift card winners via email. In addition to the chance to win a gift card, some participants received bonus points in their class for their participation in the survey. The experimental procedures are summarized in Figure 8. A summary of the experimental design features is presented in Table 2.

Table 2

Summary of Design Features

Design Feature	Purpose of Design Feature
Using MBA Students	To ensure participants have the necessary knowledge and ability to complete the scenario
Using a scenario-based survey	To reduce workplace influences the participants may bring into the experiment and place all participants in a similar work context
Measuring demographic questions regarding work experience	To further control for workplace influences
Using a sales scenario	To provide a simplified scenario to participants which allows me to easily disentangle participants' effort and risk taking choices
Using a realistic company name	To help participants visualize themselves as part of a real company
Offering participants a chance to win a gift card that is based on their performance	To induce true economic behavior

(table continues)

Table 2 *(continued)*.

Design Feature	Purpose of Design Feature
Including effort cost in the monthly pay calculation	To simulate the real life cost of exerting effort
Making sales to existing customers guaranteed	To make contacting existing customers have a low level of risk
Making the variance in payoffs for new customers greater than the variance in payoffs for existing customers	To make contacting new customers riskier than contacting existing customers
Making the time needed to contact a new customer longer than the time needed to contact an existing customer	To reinforce the riskiness of new customers compared to existing customers
Using specific performance goals	To eliminate any variance in effort that may be caused by goal ambiguity
Having participants complete the experimental instrument through an internet-based survey software	To increase the plausibility of the monitoring frequency manipulation which states that automated computer software collects actual information about participants' choices
Informing participants about the company's belief regarding risk taking	To set up a belief system upon which participant behaviors could be evaluated by the boundary system
Providing participants with additional information about the company's belief system and measuring their perceptions of the company's interactive control system	To control for the potential influence of the levers of control which are not manipulated in the experimental instrument
Informing participants they may be required to justify their choices if their supervisor finds significant differences between the company's expectations and actual contacts	To address unacceptable behaviors through the monitoring component of the boundary system

Phase 1	Participants randomly assigned to one of the six experimental conditions.
Phase 2	Participants given instructions embedded within a scenario.
Phase 3	Participants completed a practice decision making session.
Phase 4	Participants asked to make final customer contact decisions and to complete a post-experimental questionnaire containing manipulation check, demographic, and control variable questions.
Phase 5	Participants entered into gift card drawing based on performance.
Phase 6	The gift card drawing takes place, participants are notified of the winners, and prizes are distributed.

Figure 8. Summary of experimental procedures.

Study Variables

Independent Variables

Budget Goal Difficulty

Three levels of budget goal difficulty are used in this study: easy, difficult, and stretch. In order to manipulate budget goal difficulty between subjects, I provided participants with information about their past sales performance and then assigned a sales revenue goal. Specifically, I gave participants information regarding their sales performance for the past six months and their highest sales performance ever. This information allowed them to judge whether the goal they were assigned is easy, difficult, or stretch in comparison to their most recent performance and best past performance. Participants in the easy goal condition had a sales revenue goal of $50,000. Compared to their past performance, this sales revenue goal could be easily achieved. In the difficult goal condition, participants were given a sales revenue goal of $110,000. This goal was higher than their performance in the five out of the past six months, but below their highest past sales performance. Accordingly, participants should have perceived this goal as difficult, but achievable. Participants in the stretch goal condition had a sales revenue goal of $190,000, which was significantly higher than both their best performance ever and their performance in the previous six months. However, by analyzing the information provided in the scenario, participants should have seen that this goal is potentially achievable. Unfortunately, sales to new customers were not guaranteed and the payouts ranged from $0 to $75,000. Therefore, participants could not be certain that focusing on new customers would allow them to obtain their goal. Due to this uncertainty, participants should have perceived the sales revenue goal of $190,000 as a stretch goal (i.e. a goal that is almost impossible).

Research indicates that goal specificity influences the goal difficulty-performance

relationship by decreasing performance variance (Locke and Latham 1990a). For this study, I chose to use specific performance goals (i.e., numeric revenue budget goals) to eliminate any potential increase in variance that may be caused by goal ambiguity.

Monitoring Frequency

In this study, I manipulated monitoring frequency using information presented to the participants in the scenario, similar to Hunton et al. (2010, 2008). To be consistent with the experimental scenario, I needed a monitoring manipulation that was relevant to the sales scenario. Since it is realistic for a sales manager's supervisor to monitor his/her customer contact decisions, I chose to manipulate monitoring frequency by varying how often the sales manager's supervisor reviewed his/her customer contact decisions. The continuous (periodic) monitoring frequency was presented in the scenario as follows:

> Your supervisor monitors your customer contact decisions daily (once a year. Automated software collects information from the system's database on the number of new and existing customers you have contacted. Your supervisor accesses this information daily (once a year) to review the number of new and existing customers you have contacted. If significant differences between the company's expectations and actual customer contacts are found, your supervisor may ask you to justify your decisions about the types of customers you chose to contact.

Like Hunton et al. (2010, 2008) and consistent with the nature of continuous monitoring, the monitoring manipulation was modeled after transactions-based monitoring techniques that collect data on a real- or near real-time basis and compare this data with a set of predetermined rules and objectives set by management (Kuhn and Sutton 2010, Hunton et al. 2008). In order to make this manipulation realistic to participants, I chose to have them complete the instrument through the internet-based survey software, Qualtrics. Using Qualtrics should have increased the plausibility that automated computer software could collect actual information about their

choices. As shown above, the monitoring manipulation used in this study only varied the timing of detection while holding constant the underlying procedures performed.

I told participants that they may have to justify their choices about the types of customers they contacted if their supervisor finds significant differences between the company's expectations and actual customer contacts, in order to establish monitoring as a component of a boundary system. A boundary system provides members of an organization with information about unacceptable behaviors and the consequences of such unacceptable behavior. In this scenario, the company's belief system defined how participants should reach their revenue goal. Specifically, the company expected the sales managers to contact at least *one* but no more than *four* new customers. As part of the boundary system, monitoring was used to observe employee behavior and output, and evaluate these against the given standard. For monitoring to function effectively as a part of the boundary system, it must address unacceptable behaviors when found (Simons 1995). By telling participants they may be required to justify their choices if their supervisor finds significant differences between the company's expectations and actual contacts, the monitoring manipulation had the ability to address unacceptable behaviors.

Dependent Variables

Effort

The effort construct consists of three dimensions: direction, intensity, and duration (Kanfer 1990; Locke and Latham 1990a; Bonner and Sprinkle 2002).[7] Direction refers to the task or activity a person chooses to perform. Intensity involves how much attention and/or cognitive resources an individual commits to a specific task or activity for a fixed period of time. Duration refers to the total amount of effort an individual devotes to a specific task over an

[7] The duration dimension is sometimes referred to as persistence (Kanfer 1990).

extended period of time. Kanfer (1990) describes these dimensions as "what a person does, how hard a person works, and how long a person works" (78). Theoretically, incentives positively influence each of the three effort dimensions by providing individuals with a reward for increased effort (Bonner and Sprinkle 2002).

For this experiment, I measured only one of the three effort dimensions, effort intensity, while controlling the other two dimensions. Individual effort intensity was measured by asking participants to choose the number of new and existing customers they wish to contact. Using this information, I calculated the total numbers of hours participants use contacting customers. Since effort was costly, each customer contact was associated with an explicit cost, such that increased effort levels have higher costs. In the experiment, this effort cost was operationalized by giving participants a limited number of effort hours to use and subtracting the cost of effort from their monthly pay. The more effort used, the higher the cost of each unit of effort, and therefore the more costly the additional effort became.

Brüggen and Strobel (2007) investigate whether individuals behave differently when asked to perform an effort task or choose an effort level with an associated cost. They find there are no significant differences between individuals' actual effort on a task and their chosen levels of effort, concluding that "chosen effort is an appropriate way of operationalizing effort in experiments" (Brüggen and Strobel 2007, 233). In fact, the authors assert that chosen effort is often a more optimal way to operationalize effort in an experiment because it controls for individual difference variables, such as ability and experience, that may confound the effort variable if measured in a real effort task. This experiment controls for these individual differences to isolate the effect of the independent variables on the dependent variables; consequently, I use chosen effort.

Risk Taking

I measured risk taking as the proportion of new customers contacted by participants and the proportion of hours spent contacting new customers. New customers are considered risky because, unlike existing customers, sales to new customers are not guaranteed and the variance in the potential payout for new customers is greater. Consequently, the higher the proportion of new customers that participants chose to contact, the more risk they were taking. In my scenario, the company expected individuals to contact at least *one* but no more than *four* new customers. Since participants could contact up to ten new customers, setting the upper limit of the boundary at four new customers suggested that the company discouraged excessive risk taking.

Potential Covariates

In addition to the main variables of interest, other variables may influence the hypothesized relationships. To control for the potential impact of these variables, I measured covariates for use in my hypothesis testing. These covariates included perceived accountability, perceived need to justify decisions, risk preference, goal commitment, self-efficacy, benevolence, job insecurity, perceived importance of using a lot of effort hours, perceived interactive control system, and other demographic variables.

The monitoring frequency-risk taking relationship is hypothesized to occur because of a difference in perceived accountability and perceived need to justify decisions between the continuous and periodic monitoring conditions. In order to more fully understand these relationships, I included measures for both in my experimental instrument, found in Appendices D and E. The perceived accountability scale was adapted from Hochwarter et al. (2005), while the perceived need to justify decisions was adapted from Mero et al. (2006) and Hunton et al.

(2010). Scores from these scales were calculated by averaging participant responses, once factor analysis confirmed the dimensional loadings.

The third covariate, individual risk preference, or attitude towards risk, has been found to influence risk choices in addition to other situational variables (Zaleskiewicz 2001, Trimpop 1994). Risk preference was measured using the Stimulating-Instrumental Risk Inventory found in Appendix F (Zaleskiewicz 2001). This individual level variable has two dimensions: instrumental risk taking and stimulating risk taking. Instrumental risk taking is achievement oriented risk taking, where the individual is motivated to take risk because it helps them reach a goal (Zaleskiewicz 2001). Stimulating risk taking is an individual's need to experience the excitement and arousal associated with risk taking. It is plausible that both dimensions of risk preference can influence risk taking in my experiment. Therefore, I included both dimensions as possible covariates in my analysis. Separate scores for the stimulating and instrumental risk taking dimension were calculated by averaging participants' responses to the items from each dimension, after factor analysis confirmed the dimensional loadings.

The fourth covariate, goal commitment, is defined by Latham and Locke (1991) as "the degree to which the individual is attached to the goal, considers it significant or important, is determined to reach it, and keeps it in the face of setbacks and obstacles" (217). Research finds that goal commitment moderates the relationship between goals and behavior (Locke and Latham 1990a, Klein et al. 2001, Locke and Latham 2002). Theoretically, this occurs because goals cannot be motivating unless individuals are committed to achieving them. Consequently, it is important to measure individual commitment to goals assigned in this experiment. Goal commitment was calculated by averaging individual responses to Klein et al.'s (2001) goal commitment scale, after factor analysis confirmed the dimensional loadings. This scale, found in

Appendix G, is shown to be a "psychometrically sound, construct relevant, robust, and widely generalizable measure" of goal commitment (Klein et al. 2001, 52).

The fifth covariate, self-efficacy, is defined as an individual's belief in their capability to produce certain levels of achievement (Bandura 1997). Bandura (2006, 308) explains that "self-efficacy is a major determinant of intention." Consequently, if an individual has low self-efficacy for the task described in the instrument, their intention to exert effort will be low. Similarly, an individual's self-efficacy may influence risk taking. For example, an individual with high self-efficacy will feel confident in their ability to complete a sale with new customers. Therefore, they may be more willing to contact new customers than an individual with low self-efficacy. Locke et al. (1986) equate self-efficacy with expectancy, so I used self-efficacy to control for and evaluate how expectancy influences individual decisions. Following the advice of Bandura (2006), I constructed the seven question self-efficacy scale for making sales calls found in Appendix H. Self-efficacy was calculated by averaging individual responses to the self-efficacy scale, once factor analysis confirmed the dimensional loadings

The sixth covariate, benevolence, is designed to measure an individual's willingness to give up a portion of their monthly pay for the betterment of the company. As discussed later, this measure was added after pilot test debriefing indicated that many participants were willing to use a lot of effort, which cost them money, in order to contact more customers for the company's benefit. To control for the possible influence of benevolence on effort and risk choices, I constructed a three question scale based on the comments I received from pilot test participants. This scale is shown in Appendix I. Benevolence was calculated by averaging individual responses to this scale, after factor analysis confirmed the dimensional loadings

The seventh covariate, job insecurity, is described as "the amount of uncertainty an

employee feels about his or her job continuity" (Mauno and Kinnunen, 2002, 296). After pilot testing, it was revealed that individuals often chose to use a lot of effort hours for fear that they might lose their job if they did not demonstrate effortful endeavor. To control for the possible influence of perceived job insecurity on individual choice to use effort, I adapted Johnson et al.'s (1984) job insecurity scale, shown in Appendix J. The scale was originally a seven item scale that included five questions assessing one's fear of being fired and two questions assessing one's belief that working hard or doing good work would prevent getting fired. I added 6 questions to the scale, two questions were similar to those related to the fear of being fired, three questions were added to assessing one's fear of being punished, and one question was similar to those assessing one's belief that working hard would prevent getting fired. By adding these questions, the job insecurity scale has at least three questions for each of the three job insecurity constructs: (1) fear of being fired, (2) fear of being punished, and (3) belief that working hard will prevent getting fired. All job insecurity questions were asked in reference to the scenario in order to measure the amount of job insecurity associated with this experimental context as opposed to an individual job insecurity trait. Separate scores for the three job insecurity dimensions were calculated by averaging participants' responses to the items from each dimension, once factor analysis confirmed the dimensional loadings (factor analysis results are shown in Chapter 4).

The eighth covariate, perceived importance of using a lot of effort, is a one-item scale included in the experimental instrument. This scale measured an individual's perception of how important it was to use most of their effort hours regardless of how many hours it took for them to reach their sales revenue goal. Like many of the previous covariates, this question was added to the instrument after pilot testing revealed that it may influence an individual's choice to use effort hours.

Perceived interactive control system was the ninth covariate. Simon's (1995) levers of control theory suggests that four levers of control can be used to align the objectives of employees with those of the organization: belief systems, boundary systems, diagnostic control systems, and interactive control systems. My experimental instrument manipulated components of two of these systems, the boundary system and the diagnostic control system. To control for the potential influence of the other two systems, I informed the participants about the company's belief system, as discussed earlier, and measured participants' perceptions of the interactive control system. The questions used to measure this perception were adapted from an existing scale used by Van der Stede (2001) and are shown in Appendix K. Scores for perceived interactive control system were calculated by averaging participants' responses to the items from the Van der Stede (2001) scale, after factor analysis confirmed the dimensional loadings.

Demographic variables, such as age and work experience, are also included as covariates in my analysis to explore their influence on my hypothesized relationships.

Pilot Testing and Validation

I performed a series of pilot tests to ensure the validity of my experimental instrument. The instrument was piloted five times with graduate and undergraduate students. Each pilot test allowed me to examine whether my experimental manipulations and scenario were functioning as intended and make changes to improve their effectiveness. The major changes that resulted from the first four pilot tests are summarized in Table 3. The results of the fifth pilot are discussed in the next section.

Table 3

Changes to Instrument because of Pilot Tests

Pilot	Major Changes Made After Each Pilot
1	• Decreased the difficult goal from $125,000 to $120,000 because participants perceived this goal to be more difficult than intended • Changed the monitoring manipulation to more accurately reflect the behavior that we were interested in controlling (i.e., customer contact decisions, not performance) • Changed the periodic frequency manipulation from monthly to once a year because the time frame of the scenario is monthly. Therefore, if the supervisor performs monthly reviews, the participants in both the periodic and continuous conditions are guaranteed to have their actions reviewed once a month. To make a greater distinction between review periods in the continuous and periodic conditions, the periodic time frame was changed from monthly to once a year. • Decided to provide a payout table for the last 10 new customers contacted to give participants a better idea of what payouts for new customers may actually look like. • Decided to emphasize payout per hour for both new and existing customers to allow for better comparison between new and existing customers. This should emphasize the riskiness of the new customers. • Added measure for benevolence (discussed in Covariate section above). • Added a question to the emphasis and manipulation check sections of the survey to make sure that participants understood that they would receive no bonus if they did not meet their sales revenue goal.
2	• Changed the wording of the perceived accountability scale to make the questions more applicable to the scenario. • Removed the phrase "At all times" from the following sentence in the monitoring manipulation in an attempt to reduce the perception that of continuous monitoring for those in the periodic condition: "At all times, automated software collects information from the system's database…"
3	• Increased the stretch goal from $185,000 to $190,000 and decreased the easy goal from $55,000 to $50,000 in response to the large amounts of effort that were chosen by participants. My hope was to make it easier for the easy goal participants to achieve their goal and more difficult for those in the stretch goal condition. • Decreased the difficult goal from $120,000 to $110,000 in order to give participants in the difficult goal condition an opportunity to reach their goal using existing customers only and have enough time remaining to contact a new customer. • Added questions to help guide participant thought processes regarding how many new and existing customers they need to reach their goal in an attempt to make this information more salient to them. • Changed the cost of using effort hours from an opportunity cost to an actual cost that gets subtracted from their monthly pay. This change was made because participants were failing to see pay received for unused effort as an opportunity cost. Instead, they viewed receiving pay for unused effort as getting paid for doing nothing. To accomplish this, I had to add a salary portion to their monthly pay so that I could subtract the cost of effort without getting a negative number. • Added job insecurity scale (shown in Covariates section above).
4	• Added a practice Excel worksheet to survey to allow participants to practice their decisions before they make their final choices. My intent was to help participants realize how their choices will affect the final sales revenue they earn for their company and their monthly pay. • Deleted the piece-rate portion of the bonus pay because participants in the easy goal condition misunderstood how an increase in company revenue translated into the pay they received in their bonus. • Changed the belief system from "contacting a reasonable number of new and existing customers" to "contacting at least *one* but no more than *four* new customers". This change was made because there was a concern that the expectation set forth by the belief system was not specific enough to determine whether the monitoring manipulation changed behavior. The new expectation described by the belief system will allow me to determine if continuous monitoring curbs risk-seeking behavior.

Changes Made After Final Pilot Test

I made two major changes after the final pilot test. Simon's (1995) levers of control theory suggests that four levers of control can be used to align the objectives of employees with those of the organization: belief systems, boundary systems, diagnostic control systems, and interactive control systems. My experimental instrument manipulated components of two of these systems, the boundary system and the diagnostic control system, and provided information about a third system, the belief system. To provide additional control for the potential influence of the non-manipulated systems, I added additional information to the experiment about the company's belief system and measured participants' perceptions of the interactive control system.

To provide additional control for the company's belief system, I added the company's mission statement to the scenario and added a manipulation check question to ensure that the participants were aware of the mission statement (see the Scenario section in Part 1 of the Experimental Instrument found in Appendix A). To control for the interactive control system, I measured participants' perceptions of the interactive control system (see Question 27 in Part 3 of the Experimental Instrument found in Appendix A). I then included this variable as a potential covariate in my analysis.

The next chapter presents the results of my dissertation experiment.

CHAPTER 4

RESULTS

Introduction

This chapter discusses the results of my dissertation experiment. In this chapter, I describe my participants' demographic information, the validation of manipulated variables, results of hypothesis testing, and supplemental analysis.

Participant Demographics

The experiment was conducted in sixteen graduate-level MBA and master of accounting classes across seven universities in three states. Overall, 175 complete responses were received. After excluding those participants who incorrectly answered important manipulation check questions, I had 151 usable responses. Males accounted for 50.3% of the sample. Participant ages ranged from 21 to 58 with an average age of 30.17. On average, participants had 11.99 years of work experience and 7.96 years of professional work experience. There were no significant differences in participant demographics across treatments.

Table 4

Participant Demographics

		N	Mean	Median	Standard Deviation	Minimum	Maximum
Age		151	30.17	27.00	8.236	21	58
Work Experience		151	11.99	10.00	8.028	0	42
Professional Experience		151	7.96	6.00	6.885	0	31
					Number	Percentage	
Gender	Male				76	50.3%	
	Female				75	49.7%	
					151	100.0%	
Major	Accounting				31	20.5%	
	MBA				120	79.5%	
					151	100.0%	

Manipulation Checks

I used four manipulation checks to ensure that participants correctly understood important aspects of the experiment. One manipulation check assessed participants' knowledge of how their pay would be calculated. Two manipulation checks ensured that participants knew their sales revenue goal and how often they would be monitored. The final manipulation check assessed whether participants could correctly calculate the total number of hours they used contacting new and existing customers and the cost of the effort they used. If participants missed any one of these four manipulation checks, they were removed from the analysis.

In addition to these manipulation checks, I also examined the success of the budget goal difficulty manipulation by analyzing responses to the following question: What is the likelihood that you can achieve the sales revenue goal set by your supervisor? (on a scale ranging from 0 = very unlikely to 100 = very likely). This question corresponds to Question 13 in Part 3 of the Experimental Instrument found in Appendix A.

Table 5

Independent Samples t-*Test – Budget Goal Difficulty Manipulation Check**

Easy	Difficult	Stretch
N = 50 Mean: 92.20 Standard Deviation: 8.051	N = 48 Mean: 72.71 Standard Deviation: 21.827	N = 53 Mean: 28.83 Standard Deviation: 25.918
Easy vs. Difficult df = 59.11[8] *t*-statistic: 5.819 p-value (1-tailed): 0.000		Difficult vs. Stretch df = 99 *t*-statistic: 9.152 p-value (1-tailed): 0.000

*Question: What is the likelihood that you can achieve the sales revenue goal set by your supervisor? (on a scale ranging from 0 = very unlikely to 100 = very likely).

[8] If the null hypothesis for equal variances between populations is rejected, the degrees of freedom reported for the T-test is less than the expected value, *n*-2. This also occurs in T-tests reported in Tables 5, 6, 7, 39, 41, and 52.

If the goal difficulty manipulation is working successfully, the easy condition will have the highest value and the stretch condition will have the lowest value. I performed an independent samples *t*-test between the three budget goal difficulty conditions. Results are shown in Table 5.

Consistent with my expectations, those in the easy condition (mean = 92.20) perceived they had a significantly higher likelihood of achieving their goal than those in the difficult goal condition (mean = 72.71, $p = 0.000$). Similarly, those in the difficult goal condition perceived they had a significantly higher likelihood of achieving their goal than those in the stretch goal condition (mean = 28.83, $p = 0.000$). These results support the effectiveness of the budget goal difficulty manipulation.

I then examined the success of the monitoring manipulation in two ways. First, I analyzed responses to the following question: What is the likelihood that your customer contact decisions will be monitored? (on a scale ranging from 0 = very unlikely to 100 = very likely). This question corresponds to Question 16 in Part 3 of the Experimental Instrument found in Appendix A. If the monitoring manipulation is working successfully, participants in the continuous condition will perceive that there is a higher likelihood of their customer contact decisions being monitored than those in the periodic condition. I performed an independent samples *t*-test between the two monitoring conditions. Results are shown below in Table 6. Consistent with my expectations, those in the continuous condition (mean = 89.71) perceived they had a significantly higher likelihood of being monitored than those in the periodic condition (mean = 24.96, $p = 0.000$).

Table 6

Independent Samples t-*Test –Monitoring Manipulation Check Perceived Likelihood of Being Monitored**

Periodic N = 74 Mean: 24.96 Standard Deviation: 28.451	Continuous N = 77 Mean: 89.71 Standard Deviation: 18.389
Periodic vs. Continuous df = 124.16 *t*-statistic: -16.539 p-value (1-tailed): 0.000	
*Question: What is the likelihood that your customer contact decisions will be monitored? (on a scale ranging from 0 = very unlikely to 100 = very likely).	

The second method used to verify the effectiveness of the monitoring manipulation involves analyzing responses to the perceived accountability and need to justify decisions questions. These questions correspond to Questions 22 and 23 in Part 3 of the Experimental Instrument found in Appendix A, and use a scale of one (low perceived accountability/need to justify) to seven (high perceived accountability/need to justify). Theoretically, increased monitoring should result in increased feelings of accountability and an increase in the perceived need to justify one's decisions. Consequently, I expect individuals in the continuous monitoring condition to have higher perceived accountability and need to justify decisions than those in the periodic monitoring condition. I begin my analysis by combining the perceived accountability questions into an accountability scale. Principal components analysis with varimax rotation yielded one factor, with all factor loadings above the 0.5 recommended cutoff (Hair et al. 2006). Reliability analysis suggests the accountability scale has a reasonable level of reliability (Cronbach's alpha = 0.881) (Hair et al. 2006). Similarly, I combine the need to justify decisions questions into a need to justify scale. Factor analysis indicated one factor with sufficient

reliability (Cronbach's alpha = 0.893). Based on this, I averaged items to create the accountability and need to justify variables. I next performed an independent samples *t*-test between the two monitoring frequency conditions for each variable. Results are shown below in Tables 7 and 8. As expected, individuals in the continuous monitoring condition had significantly higher means for accountability (mean = 5.92) and need to justify (mean = 5.92) than those in the periodic monitoring condition (mean = 4.61, $p = 0.000$ and mean = 4.92, $p = 0.018$, respectively). These results support the effectiveness of the monitoring manipulation.

Table 7

Independent Samples t-*Test –Monitoring Manipulation Check Accountability**

Periodic N = 74 Mean: 4.61 Standard Deviation: 1.33	Continuous N = 77 Mean: 5.92 Standard Deviation: 0.73
Periodic vs. Continuous df = 112.73 *t*-statistic: -7.455 p-value (1-tailed): 0.000	
*Scale: 1 = low perceived accountability to 7 = high perceived accountability	

Table 8

Independent Samples t-*Test –Monitoring Manipulation Check Need to Justify**

Periodic N = 74 Mean: 4.92 Standard Deviation: 1.41	Continuous N = 77 Mean: 5.92 Standard Deviation: 0.94
Periodic vs. Continuous df = 126.21 *t*-statistic: -5.089 p-value (1-tailed): 0.000	
*Scale: 1 = low perceived need to justify to 7 = high perceived need to justify	

Covariates

I measured nine potential covariates and other demographic variables in my experimental instrument. The following covariates were considered for their potential influence on effort and risk taking: perceived accountability, perceived need to justify decisions, goal commitment, benevolence, self-efficacy, perceived interactive control system, individual risk preference, job insecurity, perceived importance of using a lot of effort. Other demographic variables including gender, age, years of work experience, and years of professional work experience were also considered.

Eight of the nine potential covariates were measured using multi-item scales. Consequently, I first analyzed these constructs to determine the adequacy and reliability of these measures. As discussed in the previous section, the perceived accountability and perceived need to justify decisions scales loaded on one factor each with sufficient reliability.

The remaining six covariates with multi-item scales were analyzed using principal components factor analysis with varimax rotation and averaged to form composite measures based on the factor results. Single factors resulted from the analysis of goal commitment (Cronbach's alpha = 0.782), benevolence (Cronbach's alpha = 0.852), self-efficacy (Cronbach's alpha = 0.833), and perceived interactive control system (Cronbach's alpha = 0.868).

Individual risk preference has two theoretical dimensions: instrumental risk taking and stimulating risk taking, although factor analysis of the items yielded four factors. Upon investigation, it was determined that four of the stimulating risk taking items measured slightly different aspects of risk taking than the remaining items. Similarly, one of the instrumental risk taking items was not consistent with the rest of the items. Once these five items were removed, three factors remained. One factor contained the remaining stimulating risk taking items

(Cronbach's alpha = 0.843). The second factor contained three items from the instrumental risk taking scale that measure perceptions about important workplace skills related to risk taking (Cronbach's alpha = 0.620). The third factor contained the final three items from the instrumental risk taking scale that measure perceptions about risk choices in business (Cronbach's alpha = 0.724). Analysis was performed using these three dimensions of individual risk preference.

Factor analysis of the job insecurity items yielded two factors. The items measuring one's fear of being fired and fear of being punished loaded onto one job insecurity factor (Cronbach's alpha = 0.945). The items measuring the third dimension of job insecurity, one's belief that working hard will prevent getting fired, loaded on the other factor (Cronbach's alpha = 0.846). For the remainder of the analysis, I use two measures of job insecurity: one's fear of being fired or punished and one's belief that working hard will prevent getting fired. I report treatment-related differences in these measures in supplemental analysis.

Correlation Analysis

I next performed correlation analyses on my independent, dependent, and covariate variables to determine the appropriate covariates to use in my hypothesis testing. Table 9 below shows the results of the correlation analysis.

The covariates that significantly influence effort are (1) one's belief that working hard will prevent getting fired, (2) one's fear of being fired or punished, (3) perceived accountability, (4) goal commitment, (5) benevolence, and (6) the perceived importance of using a lot of effort. These variables are included initially in all effort analysis.

As shown in Table 9, the covariates that significantly influence risk taking measured either as the proportion of new customers contacted or the proportion of total hours used to contact new customers are (1) goal commitment, (2) accountability, (3) benevolence, and (4) stimulating risk taking. For reasons discussed in the next paragraph, I chose to include all of these variables except accountability in the initial risk taking analysis.

Based on correlation analysis, accountability was not initially included in hypothesis testing because of concerns for multicollinearity between accountability and monitoring frequency. According to Huck (2009), multicollinearity exists when there is a high correlation between the independent and control variables. The correlation analysis indicates that monitoring frequency and accountability have a Pearson correlation coefficient of 0.525 (p-value = 0.000). Huck (2009) suggests that correlation coefficients above 0.5 indicate a strong relationship between two variables, indicating a possible multicollinearity issue if both monitoring frequency and accountability are included in the same model. Additional evidence of multicollinearity between monitoring frequency and accountability exists because the parameter estimate for monitoring frequency is opposite of that expected when accountability is included in the risk taking model, but this does not occur when accountability is removed from the model. According to Kutner et al. (2004), this is a sign of serious multicollinearity. For these reasons, accountability was excluded from the risk taking model. However, mediation testing on accountability is reported later in this chapter.

Table 9

Correlation Table for Dependent, Independent, and Covariate Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1																				
2	-.041																			
3	.209*	-.064																		
4	.347**	.055	-.188*																	
5	.333**	-.026	-.152	.909**																
6	-.106	.037	.428**	-.138	-.130															
7	.087	-.054	.207*	.033	-.008	.306**														
8	-.009	.525**	.247*	-.102	-.184*	.316**	.208*													
9	.064	.387**	.125	.055	-.061	.269**	.181	.739**												
10	-.318**	.076	.256*	-.372**	-.337**	.372**	.048	.387**	.189*											
11	.115	-.034	.399*	.107	.219**	.364**	.191*	.176*	.114	.170*										
12	-.246**	.047	.129	-.108	-.099	.210**	-.065	.267**	.285**	.321**	.253**									
13	-.009	.235**	.123	.014	-.013	.353**	.273**	.507**	.365**	.266**	.252**	.006								
14	.186*	.013	.604**	-.079	-.018	.325**	.106	.276**	.228**	.190*	.516**	.219**	.139							
15	.201*	-.038	.111	.143	.165*	-.160	-.018	-.070	-.010	-.193*	.135	.026	-.028	.077						
16	.027	.036	.046	.130	.044	.076	.060	.310**	.408**	.075	.000	.394**	.067	.100	.180*					
17	.043	-.106	.032	-.034	.014	.074	.169*	.088	.047	-.022	.059	.153	.014	.043	.381**	.328**				
18	-.152	-.006	.054	-.145	-.101	.002	-.109	.054	-.065	.028	.056	.017	.043	.021	-.187*	-.005	-.048			
19	-.081	.043	-.115	-.056	-.038	-.162*	-.203*	.008	.073	.055	.051	.236**	.024	.016	-.068	-.019	-.099	-.143		
20	-.020	.059	-.116	.012	.038	-.181*	-.270**	-.022	.046	-.034	-.038	.226**	-.074	-.018	-.069	.021	-.172*	-.169*	.866**	
21	-.020	.042	-.074	-.033	.006	.153	.228**	.015	.035	-.011	.012	.173*	.013	.033	-.058	.002	-.121	.153	.873**	.922**

* indicates significance at the 0.05 level (2-tailed)
** indicates significance at the 0.01 level (2-tailed)

Legend: 1 = Budget Goal Difficulty, 2 = Monitoring Frequency, 3 = Effort, 4 = Risk Taking (Percentage of New Customers Contacted Compared to Total Number of Customers Contacted), 5 = Risk Taking (Percentage of Total Hours Used Contacting New Customers), 6 = Job Insecurity – One's Belief that Working Hard will Prevent Getting Fired, 7 = Job Insecurity – Fear of Being Fired or Punished, 8 = Perceived Accountability, 9 = Perceived Need to Justify Decisions, 10 = Goal Commitment, 11 = Benevolence, 12 = Self-efficacy, 13 = Perceived Interactive Control System, 14 = Perceived Importance of Using a lot of Effort, 15 = Stimulating Risk Taking Preference, 16 = Instrumental Risk Taking Preference – Skills, 17 = Instrumental Risk Taking Preference – Choices, 18 = Gender, 19 = Age, 20 = Work Experience, 21 = Professional Work Experience

Hypothesis Testing

Hypothesis 1

Hypothesis 1 predicts an inverted-U relationship between budget goal difficulty and effort. Therefore, I expect effort to increase from the easy to difficult goal level and then decrease from the difficult to stretch goal level. Effort was measured by asking participants to choose the total number of hours they wished to use contacting customers. To test Hypothesis 1, I use ANCOVA to control for the variance associated with individuals' perceived importance of using a lot of effort (Effort Importance), goal commitment, and the perceived belief that working hard would keep them from being fired (FearPrevent). [9] I then use pairwise comparisons to determine whether significant differences in effort levels exist across the three conditions, results are shown in Table 10.

Table 10 *Test of Hypothesis 1 Budget Goal Difficulty – Effort Relationship (Dependent Variable = Total Number of Hours Used Contacting Customers)**

Panel A: ANCOVA Results					
Factor	SS	Df	MS	F	p-value (1-tailed)
Goal Difficulty	5548.17	2	2774.09	7.446	0.001
Monitoring Frequency	680.19	1	680.19	1.862	0.088
Goal Difficulty*Monitoring Frequency	1515.13	2	757.57	2.074	0.065
Effort Importance	17194.44	1	17194.44	46.150	0.000
Goal Commitment	1103.88	1	1103.88	2.963	0.044
FearPrevent	4402.55	1	4402.55	11.817	0.001
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)					
Easy	Difficult			Stretch	
67.347	81.691			79.397	
(50)	(48)			(53)	
Panel C: Pairwise Comparisons					
	Mean Difference			p-value (1-tailed)	
Easy vs. Difficult	-14.344			0.000	
Difficult vs. Stretch	2.294			0.286	
Easy vs. Stretch	-12.050			0.002	

*Scale: 0 = No effort to 100 = Maximum effort

[9] Covariates were identified with correlation analysis. Nonsignficant covariates were removed from further analysis for each table reported.

The results in Table 10 suggest that an inverted U-relationship between budget goal difficulty and effort exists such that effort increases significantly from the easy to difficult goal level (p = .000) and decreases, but not significantly, from the difficult to stretch goal level (p = .286). The insignificant decrease in effort from the difficult to stretch goal level suggests that while stretch goals do decrease effort, they do not cause individuals to "give up" completely as predicted by expectancy theory.

Sensitivity Analysis

Sensitivity analysis was performed to determine if results differed when certain populations were excluded from the analysis. The first sensitivity analysis excludes accounting majors from the sample. The results are presented in Table 11.

Table 11 *Test of Hypothesis 1 Budget Goal Difficulty – Effort Relationship (Dependent Variable = Total Number of Hours Used Contacting Customers* Excluding Accounting Majors)*

Panel A: ANCOVA Results					
Factor	SS	Df	MS	F	p-value (1-tailed)
Goal Difficulty	4211.24	2	2105.62	5.814	0.002
Monitoring Frequency	1168.78	1	1168.78	3.227	0.038
Goal Difficulty*Monitoring Frequency	1515.20	2	757.60	2.092	0.064
Effort Importance	11455.72	1	11455.72	31.633	0.000
Goal Commitment	1464.43	1	1464.43	4.044	0.024
FearPrevent	5731.70	1	5731.70	15.827	0.000
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)					
Easy	Difficult			Stretch	
67.453	82.377			76.797	
(41)	(40)			(39)	
Panel C: Pairwise Comparisons					
	Mean Difference			p-value (1-tailed)	
Easy vs. Difficult	-14.924			0.001	
Difficult vs. Stretch	5.580			0.112	
Easy vs. Stretch	-9.344			0.027	

*Scale: 0 = No effort to 100 = Maximum effort

As shown above, the results are similar to those in the original analysis. However, the decrease in effort from the difficult to the stretch goal is greater when accounting majors are excluded.

The second sensitivity analysis excludes those participants with one year or less work experience. The results, presented in Table 12, are similar to the original analysis.

Table 12

Test of Hypothesis 1 Budget Goal Difficulty – Effort Relationship (Dependent Variable = Total Number of Hours Used Contacting Customers, Excluding Participants with One Year or Less Work Experience)*

Panel A: ANCOVA Results					
Factor	SS	Df	MS	F	p-value (1-tailed)
Goal Difficulty	4480.05	2	2240.03	5.982	0.002
Monitoring Frequency	696.37	1	696.37	1.860	0.088
Goal Difficulty*Monitoring Frequency	1695.46	2	847.73	2.264	0.054
Effort Importance	15945.36	1	15945.36	42.579	0.000
Goal Commitment	1448.38	1	1448.38	3.868	0.026
FearPrevent	4391.84	1	4391.84	11.728	0.001
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)					
Easy	Difficult			Stretch	
67.314	80.679			78.887	
(48)	(45)			(51)	
Panel C: Pairwise Comparisons					
	Mean Difference			p-value (1-tailed)	
Easy vs. Difficult	-13.365			0.001	
Difficult vs. Stretch	1.792			0.336	
Easy vs. Stretch	-11.573			0.004	

*Scale: 0 = No effort to 100 = Maximum effort

The final sensitivity analysis excludes those participants with one year or less professional work experience. The results are presented in Table 13. As shown below, the results are similar to the original analysis.

Table 13 *Test of Hypothesis 1 Budget Goal Difficulty – Effort Relationship (Dependent Variable = Total Number of Hours Used Contacting Customers*, Excluding Participants with One Year or Less Professional Work Experience)*

Panel A: ANCOVA Results					
Factor	SS	Df	MS	F	p-value (1-tailed)
Goal Difficulty	3676.86	2	1838.43	4.796	0.005
Monitoring Frequency	869.32	1	869.32	2.268	0.068
Goal Difficulty*Monitoring Frequency	1021.60	2	510.80	1.333	0.134
Effort Importance	13071.20	1	13071.20	34.103	0.000
Goal Commitment	2008.39	1	2008.39	5.240	0.012
FearPrevent	5219.41	1	5219.41	13.617	0.000
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)					
Easy	Difficult			Stretch	
66.013	79.605			76.091	
(41)	(39)			(41)	
Panel C: Pairwise Comparisons					
	Mean Difference			p-value (1-tailed)	
Easy vs. Difficult	-13.593			0.002	
Difficult vs. Stretch	3.514			0.229	
Easy vs. Stretch	-10.078			0.019	

*Scale: 0 = No effort to 100 = Maximum effort

Summary of Findings

Overall, the results consistently indicate an inverted U-shaped relationship between budget goal difficulty and effort such that effort significantly increases from the easy to difficult goal level and decreases, but not significantly, from the difficult to stretch goal level. These results partially support Hypothesis 1, suggesting that difficult goals are most effective at encouraging high levels of effort. When considering the stretch goal condition, the results suggest that individuals neither slightly increase their effort from the difficult to stretch goal level, as hypothesized by goal setting theory, nor do they give up, as hypothesized by expectancy theory.

Hypothesis 2

Hypothesis 2 predicts a U-shaped relationship between budget goal difficulty and risk taking such that risk taking decreases from the easy to difficult goal level and then increases from the difficult to stretch goal level. Risk taking was measured as the proportion of new customers participants chose to contact compared to total number of customers contacted (%NewNumber) and the proportion of total hours spent contacting new customers of the total hours used (%NewHours). Since my dependent variables are proportions, the distribution of the residuals is binomially distributed. Consequently, I cannot use ANCOVA to test my hypothesis. Therefore, to test Hypothesis 2, I use a generalized linear model with a binomial distribution to determine if significant differences in risk taking exists across the three goal difficulty conditions. Results are shown in Tables 14 and 15.

Table 14

Test of Hypothesis 2 Budget Goal Difficulty – Risk Taking Relationship (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	17.025	2	0.000
Monitoring Frequency	0.223	1	0.319
Goal Difficulty*Monitoring Frequency	0.123	2	0.470
Goal Commitment	17.161	1	0.000
Benevolence	26.508	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)

Easy	Difficult	Stretch
10.81%	10.90%	16.03%
(50)	(48)	(53)

Panel C: Pairwise Comparisons

	Mean Difference	p-value (1-tailed)
Easy vs. Difficult	-0.09%	0.940**
Difficult vs. Stretch	-5.13%	0.000
Easy vs. Stretch	-5.22%	0.000

*Scale: 0% = No risk taking to 100% = High risk taking. ** p-value is 2-tailed because directionality is not supported

Table 15

Test of Hypothesis 2 Budget Goal Difficulty – Risk Taking Relationship (Dependent Variable = Percentage of Total Hours Used Contacting New Customers)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	96.702	2	0.000
Monitoring Frequency	2.525	1	0.060
Goal Difficulty*Monitoring Frequency	0.867	2	0.301
Goal Commitment	118.366	1	0.000
Benevolence	172.537	1	0.000
Stimulating Risk Taking	7.646	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)

Easy	Difficult	Stretch
38.32%	37.30%	48.74%
(50)	(48)	(53)

Panel C: Pairwise Comparisons

	Mean Difference	p-value (1-tailed)
Easy vs. Difficult	1.02%	0.194
Difficult vs. Stretch	-11.44%	0.000
Easy vs. Stretch	-10.42%	0.000

*Scale: 0% = No risk taking to 100% = High risk taking

As shown in Tables 14 and 15, results indicate that risk taking at the easy and difficult goal levels is similar, while risk taking increases significantly at the stretch goal level for both measures of risk taking ($p = 0.000$ and $p = 0.000$, respectively). Overall, these results partially support Hypothesis 2.

Sensitivity Analysis

When accounting majors are excluded, results are similar for risk taking when measured as the %NewNumber. Results are also similar for risk measured as %NewHours, however, the decrease in risk taking from the easy to difficult goal level is marginally significant ($p = 0.095$). These results are presented in Tables 16 and 17.

Table 16

Test of Hypothesis 2 Budget Goal Difficulty – Risk Taking Relationship (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted, Excluding Accounting Majors)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	12.454	2	0.001
Monitoring Frequency	0.165	1	0.342
Goal Difficulty*Monitoring Frequency	1.985	2	0.186
Goal Commitment	12.893	1	0.000
Benevolence	33.056	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)

Easy	Difficult	Stretch
10.83%	10.68%	15.74%
(41)	(40)	(39)

Panel C: Pairwise Comparisons

	Mean Difference	p-value (1-tailed)
Easy vs. Difficult	0.15	0.455
Difficult vs. Stretch	-5.06%	0.001
Easy vs. Stretch	-4.91%	0.002

*Scale: 0% = No risk taking to 100% = High risk taking

Table 17

Test of Hypothesis 2 Budget Goal Difficulty – Risk Taking Relationship (Dependent Variable = Percentage of Total Hours Used Contacting New Customers, Excluding Accounting Majors)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	80.316	2	0.000
Monitoring Frequency	1.713	1	0.096
Goal Difficulty*Monitoring Frequency	10.866	2	0.002
Goal Commitment	96.914	1	0.000
Benevolence	197.626	1	0.000
Stimulating Risk Taking	13.292	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)

Easy	Difficult	Stretch
38.58%	36.87%	48.23%
(41)	(40)	(39)

Panel C: Pairwise Comparisons

	Mean Difference	p-value (1-tailed)
Easy vs. Difficult	1.71%	0.095
Difficult vs. Stretch	-11.36%	0.000
Easy vs. Stretch	-9.65%	0.000

*Scale: 0% = No risk taking to 100% = High risk taking

When participants with one year or less work experience are excluded, results are similar to the original analysis for both measures of risk taking, as shown in Tables 18 and 19.

Table 18

Test of Hypothesis 2 Budget Goal Difficulty – Risk Taking Relationship (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted, Excluding Participants with One Year or Less Work Experience)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	15.839	2	0.000
Monitoring Frequency	0.001	1	0.489
Goal Difficulty*Monitoring Frequency	0.021	2	0.495
Goal Commitment	14.226	1	0.000
Benevolence	24.500	1	0.000
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)			
Easy	Difficult	Stretch	
10.69%	10.61%	15.75%	
(48)	(45)	(51)	
Panel C: Pairwise Comparisons			
	Mean Difference	p-value (1-tailed)	
Easy vs. Difficult	0.08%	0.474	
Difficult vs. Stretch	-5.14%	0.000	
Easy vs. Stretch	-5.06%	0.001	

*Scale: 0% = No risk taking to 100% = High risk taking

Table 19

Test of Hypothesis 2 Budget Goal Difficulty – Risk Taking Relationship (Dependent Variable = Percentage of Total Hours Used Contacting New Customers, Excluding Participants with One Year or Less Work Experience)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	107.055	2	0.000
Monitoring Frequency	0.325	1	0.285
Goal Difficulty*Monitoring Frequency	0.196	2	0.454
Goal Commitment	107.548	1	0.000
Benevolence	162.608	1	0.000
Stimulating Risk Taking	9.465	1	0.001
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)			
Easy	Difficult	Stretch	
38.02%	36.60%	48.27%	
(48)	(45)	(51)	

(table continues)

Table 19 *(continued)*.

Panel C: Pairwise Comparisons		
	Mean Difference	p-value (1-tailed)
Easy vs. Difficult	1.42%	0.120
Difficult vs. Stretch	-11.67%	0.000
Easy vs. Stretch	-10.25%	0.000

*Scale: 0% = No risk taking to 100% = High risk taking

When participants with one year or less professional work experience are excluded, results are similar for risk taking when measured as the %NewNumber. However, when risk taking is measured as %NewHours, the U-shaped relationship hypothesized is supported. These results are presented in Tables 20 and 21. As shown, risk taking decreases significantly from the easy to difficult goal level ($p = 0.007$) and increases significantly from the difficult to stretch goal level ($p = 0.000$).

Table 20

Test of Hypothesis 2 Budget Goal Difficulty – Risk Taking Relationship (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted, Excluding Participants with One Year or Less Professional Work Experience)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	12.685	2	0.001
Monitoring Frequency	0.534	1	0.233
Goal Difficulty*Monitoring Frequency	0.476	2	0.394
Goal Commitment	18.192	1	0.000
Benevolence	19.837	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)		
Easy	Difficult	Stretch
11.48%	10.55%	16.06%
(41)	(39)	(41)

Panel C: Pairwise Comparisons		
	Mean Difference	p-value (1-tailed)
Easy vs. Difficult	0.93%	0.257
Difficult vs. Stretch	-5.51%	0.001
Easy vs. Stretch	-4.58%	0.005

*Scale: 0% = No risk taking to 100% = High risk taking

Table 21

Test of Hypothesis 2 Budget Goal Difficulty – Risk Taking Relationship (Dependent Variable = Percentage of Total Hours Used Contacting New Customers, Excluding Participants with One Year or Less Professional Work Experience)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	94.042	2	0.000
Monitoring Frequency	1.939	1	0.082
Goal Difficulty*Monitoring Frequency	2.729	2	0.128
Goal Commitment	133.833	1	0.000
Benevolence	132.466	1	0.000
Stimulating Risk Taking	1.207	1	0.136

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)

Easy	Difficult	Stretch
39.74%	36.48%	49.22%
(41)	(39)	(41)

Panel C: Pairwise Comparisons

	Mean Difference	p-value (1-tailed)
Easy vs. Difficult	3.26%	0.007
Difficult vs. Stretch	-12.74%	0.000
Easy vs. Stretch	-9.48%	0.000

*Scale: 0% = No risk taking to 100% = High risk taking

Summary of Findings

Overall, the results consistently indicate that there is a significant increase in risk taking at the stretch goal level. However, there is no significant difference in risk taking between the easy and difficult goal levels. These results partially support Hypothesis 2. The results differ slightly when analysis is performed on only those participants with more than one year of professional work experience. With this population, the U-shaped relationship hypothesized between budget goal difficulty and risk taking is supported such that risk taking decreases from the easy to difficult goal level and increases from the difficult to stretch goal level. These results may occur because those with more professional work experience were better equipped to

understand and identify with the scenario. In all cases, risk taking was significantly higher at the stretch goal level, suggesting that stretch goals can be harmful because they increase risk taking.

Hypothesis 3

Hypothesis 3 predicts a negative relationship between monitoring frequency and risk taking. Theoretically, monitoring increases compliance with the stated boundary condition. In my scenario, the boundary condition discouraged excessive risk taking. Therefore, as monitoring frequency increases from the periodic to continuous condition, I expect risk taking to decrease. Hypothesis 3 was tested using a generalized linear model with a binomial distribution to compare risk taking between subjects in the monitoring frequency conditions (periodic vs. continuous). Results of this analysis are shown in Tables 22 and 23.

Table 22

Test of Hypothesis 3 Monitoring Frequency – Risk Taking Relationship (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	17.025	2	0.000
Monitoring Frequency	0.223	1	0.319
Goal Difficulty*Monitoring Frequency	0.123	2	0.470
Goal Commitment	17.161	1	0.000
Benevolence	26.508	1	0.000
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)			
Periodic	Continuous		
12.66%	12.13%		
(74)	(77)		
Panel C: Pairwise Comparisons			
	Mean Difference	p-value (1-tailed)	
Periodic vs. Continuous	0.53%	0.319	

*Scale: 0% = No risk taking to 100% = High risk taking

Table 23

Test of Hypothesis 3 Monitoring Frequency – Risk Taking Relationship (Dependent Variable = Percentage of Total Hours Used Contacting New Customers)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	111.579	2	0.000
Monitoring Frequency	2.415	1	0.060
Goal Difficulty*Monitoring Frequency	1.014	2	0.301
Goal Commitment	122.595	1	0.000
Benevolence	176.354	1	0.000
Stimulating Risk Taking	14.242	1	0.000
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)			
Periodic	Continuous		
42.12%	40.63%		
(74)	(77)		
Panel C: Pairwise Comparisons			
	Mean Difference	p-value (1-tailed)	
Periodic vs. Continuous	1.49%	0.060	

*Scale: 0% = No risk taking to 100% = High risk taking

As shown in Tables 22 and 23, monitoring frequency is negatively related to both measures of risk taking. This negative relationship is not significant for risk taking when measured as the %NewNumber ($p = 0.319$) and is only marginally significant for risk taking when measured as the %NewHours ($p = 0.060$). Power analysis indicates that these nonsignificant results may occur because of a lack of power. The power associated with monitoring frequency is 0.050 and 0.022 for risk taking when measured as the %NewNumber and %NewHours, respectively. The results of this power analysis indicate that the ability of this test to detect an effect for the monitoring frequency manipulation is significantly lower than the conventional standard of 0.800 (Cohen 1988, Mazen et al. 1985). This lack of power is discussed later as a limitation of this study.

Sensitivity Analysis

When accounting majors are excluded, the results are similar to the original analysis. These results are presented in Tables 24 and 25.

Table 24

Test of Hypothesis 3 Monitoring Frequency – Risk Taking Relationship (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted, Excluding Accounting Majors)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	12.454	2	0.001
Monitoring Frequency	0.165	1	0.342
Goal Difficulty*Monitoring Frequency	1.985	2	0.186
Goal Commitment	12.893	1	0.000
Benevolence	33.056	1	0.000
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)			
Periodic	Continuous		
12.49%	11.99%		
(59)	(61)		
Panel C: Pairwise Comparisons			
	Mean Difference	p-value (1-tailed)	
Periodic vs. Continuous	0.50%	0.342	

*Scale: 0% = No risk taking to 100% = High risk taking

Table 25

Test of Hypothesis 3 Monitoring Frequency – Risk Taking Relationship (Dependent Variable = Percentage of Total Hours Used Contacting New Customers, Excluding Accounting Majors)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	80.316	2	0.000
Monitoring Frequency	1.713	1	0.096
Goal Difficulty*Monitoring Frequency	10.866	2	0.002
Goal Commitment	96.914	1	0.000
Benevolence	197.626	1	0.000
Stimulating Risk Taking	13.292	1	0.000
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)			
Periodic	Continuous		
41.86%	40.44%		
(59)	(61)		

(table continues)

Table 25 *(continued)*.

Panel C: Pairwise Comparisons		
	Mean Difference	p-value (1-tailed)
Periodic vs. Continuous	1.42%	0.096

*Scale: 0% = No risk taking to 100% = High risk taking

When participants with one year or less work experience are excluded, there is a decrease in risk taking from the periodic to continuous monitoring conditions for both measures of risk taking. However, as shown in Tables 26 and 27, these decreases are not significant ($p = 0.978$ and $p = 0.570$, respectively).

Table 26

Test of Hypothesis 3 Monitoring Frequency – Risk Taking Relationship (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted, Excluding Participants with One Year or Less Work Experience)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	15.839	2	0.000
Monitoring Frequency	0.001	1	0.489
Goal Difficulty*Monitoring Frequency	0.021	2	0.495
Goal Commitment	14.226	1	0.000
Benevolence	24.500	1	0.000
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)			
Periodic	Continuous		
12.18%	12.15%		
(70)	(74)		
Panel C: Pairwise Comparisons			
	Mean Difference	p-value (2-tailed)	
Periodic vs. Continuous	0.03%	0.978	

*Scale: 0% = No risk taking to 100% = High risk taking

Table 27

Test of Hypothesis 3 Monitoring Frequency – Risk Taking Relationship (Dependent Variable = Percentage of Total Hours Used Contacting New Customers, Excluding Participants with One Year or Less Work Experience)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	107.055	2	0.000
Monitoring Frequency	0.325	1	0.285
Goal Difficulty*Monitoring Frequency	0.196	2	0.454
Goal Commitment	107.548	1	0.000
Benevolence	162.608	1	0.000
Stimulating Risk Taking	9.465	1	0.001
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)			
Periodic	Continuous		
41.16%	40.60%		
(70)	(74)		
Panel C: Pairwise Comparisons			
	Mean Difference	p-value (2-tailed)	
Periodic vs. Continuous	0.56%	0.570	

*Scale: 0% = No risk taking to 100% = High risk taking

When participants with one year or less professional work experience are excluded, there is an increase in risk taking from the periodic to continuous monitoring condition for both measures of risk taking. However, these increases are not significant (p = 0.466 and 0.164, respectively). These results are shown in Tables 28 and 29.

Table 28

Test of Hypothesis 3 Monitoring Frequency – Risk Taking Relationship (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted,Excluding Participants with One Year or Less Professional Work Experience)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	12.685	2	0.001
Monitoring Frequency	0.534	1	0.233
Goal Difficulty*Monitoring Frequency	0.476	2	0.394
Goal Commitment	18.192	1	0.000
Benevolence	19.837	1	0.000

(table continues)

Table 28 *(continued)*.

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)		
Periodic	Continuous	
12.06%	12.98%	
(59)	(62)	
Panel C: Pairwise Comparisons		
	Mean Difference	p-value (2-tailed)
Easy vs. Difficult	-0.92%	0.466

*Scale: 0% = No risk taking to 100% = High risk taking

Table 29

Test of Hypothesis 3 Monitoring Frequency – Risk Taking Relationship (Dependent Variable = Percentage of Total Hours Used Contacting New Customers, Excluding Participants with One Year or Less Professional Work Experience)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	94.042	2	0.000
Monitoring Frequency	1.939	1	0.082
Goal Difficulty*Monitoring Frequency	2.729	2	0.128
Goal Commitment	133.833	1	0.000
Benevolence	132.466	1	0.000
Stimulating Risk Taking	1.207	1	0.136
Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)			
Periodic	Continuous		
40.97%	42.49%		
(59)	(62)		
Panel C: Pairwise Comparisons			
	Mean Difference	p-value (2-tailed)	
Periodic vs. Continuous	-1.52%	0.164	

*Scale: 0% = No risk taking to 100% = High risk taking

Summary of Findings

The results for Hypothesis 3 vary across the different populations. Both the original analysis and analysis excluding accounting majors indicate a marginal negative relationship between monitoring frequency and risk taking, but only when risk taking is measured as the percentage of total hours spent contacting new customers. There is an insignificant decrease in risk taking across monitoring conditions when the analysis is performed excluding those with

one year or less work experience. Finally, a positive relationship between monitoring frequency and risk taking is found when analysis is conducted excluding participants with one year or less professional work experience. Overall, the results provide little support for Hypothesis 3 and suggest that monitoring frequency may not effectively encourage individuals to behave in a manner consistent with company expectations. Possible explanations for this finding are explored and discussed later.

Hypothesis 4

Hypothesis 4 predicts that greater monitoring frequency will reduce risk taking at the easy and stretch goal difficulty levels more than it affects risk taking at the difficulty goal level. To test Hypothesis 4, I measure the difference in risk taking level between the continuous and periodic monitoring conditions for the easy, difficult, and stretch budget goals. I then use a generalized linear model with a binomial distribution to determine whether these differences are statistically significant. I expect that the decrease in risk taking in the easy and stretch conditions will be statistically significant, while the decrease in risk taking in the difficult condition will not be statistically significant. Results are shown in Tables 30 and 31.

Table 30

Test of Hypothesis 4 Joint Effect of Budget Goal Difficulty and Monitoring Frequency on Risk Taking (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	17.025	2	0.000
Monitoring Frequency	0.223	1	0.319
Goal Difficulty*Monitoring Frequency	0.123	2	0.470
Goal Commitment	17.161	1	0.000
Benevolence	26.508	1	0.000

(table continues)

Table 30 *(continued)*.

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)		
Easy/Periodic	Difficult/Periodic	Stretch/Periodic
10.89%	11.06%	16.68%
(23)	(24)	(27)
Easy/Continuous	Difficult/Continuous	Stretch/Continuous
10.73%	10.75%	15.40%
(27)	(24)	(26)

Panel C: Pairwise Comparisons		
	Mean Difference	p-value (1-tailed)
Easy/Periodic vs. Easy/Continuous	0.16%	0.466
Difficult/Periodic vs. Difficult/Continuous	0.31%	0.428
Stretch/Periodic vs. Stretch/Continuous	1.28%	0.266

*Scale: 0% = No risk taking to 100% = High risk taking

Table 31

Test of Hypothesis 4 Joint Effect of Budget Goal Difficulty and Monitoring Frequency on Risk Taking (Dependent Variable = Percentage of Total Hours Used Contacting New Customers)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	111.579	2	0.000
Monitoring Frequency	2.415	1	0.060
Goal Difficulty*Monitoring Frequency	1.014	2	0.301
Goal Commitment	122.595	1	0.000
Benevolence	176.354	1	0.000
Stimulating Risk Taking	14.242	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)		
Easy/Periodic	Difficult/Periodic	Stretch/Periodic
38.74%	37.69%	50.19%
(23)	(24)	(27)
Easy/Continuous	Difficult/Continuous	Stretch/Continuous
37.91%	36.92%	47.29%
(27)	(24)	(26)

Panel C: Pairwise Comparisons		
	Mean Difference	p-value (1-tailed)
Easy/Periodic vs. Easy/Continuous	0.83%	0.320
Difficult/Periodic vs. Difficult/Continuous	0.77%	0.311
Stretch/Periodic vs. Stretch/Continuous	2.90%	0.035

*Scale: 0% = No risk taking to 100% = High risk taking

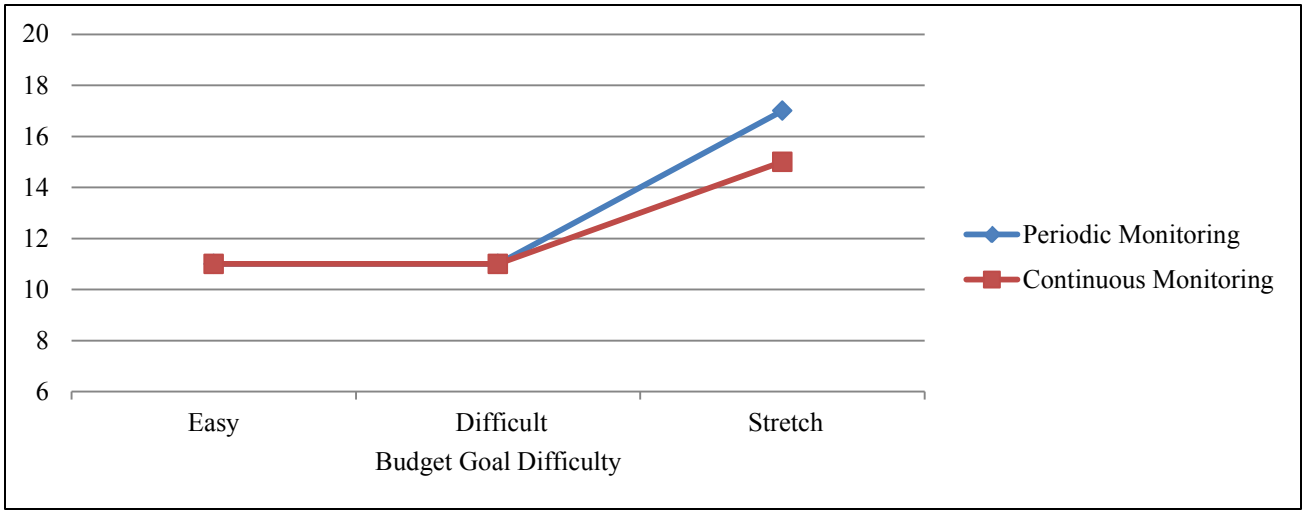


Figure 9. Joint effect of budget goal difficulty and monitoring frequency on risk taking (DV = proportion of new customers contacted compared to total number of customers contacted).

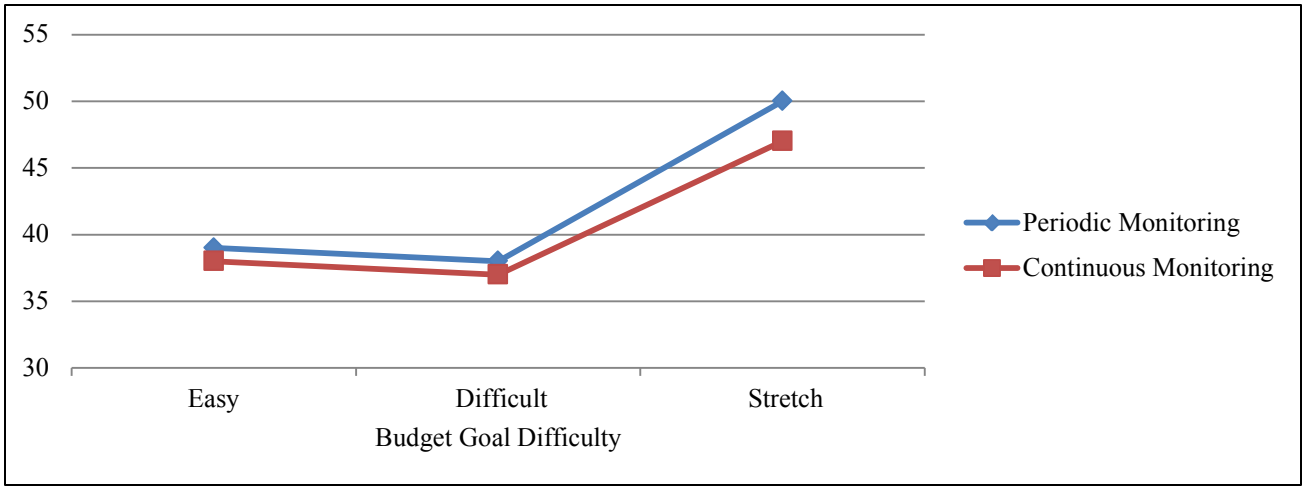


Figure 10. Joint effect of budget goal difficulty and monitoring frequency on risk taking (DV = proportion of total hours used contacting new customers).

As shown in Table 30 and Figure 9, the proportion of new customers contacted compared to the total number of customers contacted does not decrease significantly from the Periodic to Continuous condition at any budget goal level. The proportion of total hours used contacting new customers decreases significantly from the stretch/periodic to stretch/continuous condition (p = 0.035), shown in Table 31 and Figure 10. However, there are no significant decreases in risk

taking between the periodic and continuous monitoring conditions in the easy and difficult goal levels. These results provide partial support for Hypothesis 4.

Sensitivity Analysis

When accounting majors are excluded from the analysis, there is a marginally significant decrease in risk taking between the stretch/periodic and stretch/continuous condition as measured by the %NewNumber ($p = 0.075$), but risk taking increases, though not significantly, between the periodic and continuous monitoring condition in the easy and difficult goal levels. When risk taking is measured as the %NewHours, results are similar to the original analysis such that there is a significant decrease in risk taking between the stretch/periodic and stretch/continuous condition, but no decrease in risk taking between the periodic and continuous monitoring conditions in the easy and difficult goal levels. These results are shown in Tables 32 and 33.

Table 32

Test of Hypothesis 4 Joint Effect of Budget Goal Difficulty and Monitoring Frequency on Risk Taking (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted, Excluding Accounting Majors)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	12.454	2	0.001
Monitoring Frequency	0.165	1	0.342
Goal Difficulty*Monitoring Frequency	1.985	2	0.186
Goal Commitment	12.893	1	0.000
Benevolence	33.056	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)

Easy/Periodic	Difficult/Periodic	Stretch/Periodic
10.31%	10.61%	17.57%
(17)	(21)	(21)
Easy/Continuous	**Difficult/Continuous**	**Stretch/Continuous**
11.37%	10.75%	14.06%
(24)	(19)	(18)

(table continues)

Table 32 *(continued)*.

Panel C: Pairwise Comparisons		
	Mean Difference	p-value (1-tailed)
Easy/Periodic vs. Easy/Continuous	-1.06%	0.612**
Difficult/Periodic vs. Difficult/Continuous	-0.14%	0.940**
Stretch/Periodic vs. Stretch/Continuous	3.51%	0.075

*Scale: 0% = No risk taking to 100% = High risk taking, ** p-value is 2-tailed because directionality is not supported

Table 33

Test of Hypothesis 4 Joint Effect of Budget Goal Difficulty and Monitoring Frequency on Risk Taking (Dependent Variable = Percentage of Total Hours Used Contacting New Customers, Excluding Accounting Majors)*

Panel A: Tests of Model Effects			
Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	80.316	2	0.000
Monitoring Frequency	1.713	1	0.096
Goal Difficulty*Monitoring Frequency	10.866	2	0.002
Goal Commitment	96.914	1	0.000
Benevolence	197.626	1	0.000
Stimulating Risk Taking	13.292	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)		
Easy/Periodic	Difficult/Periodic	Stretch/Periodic
37.44%	36.97%	51.53%
(17)	(21)	(21)
Easy/Continuous	Difficult/Continuous	Stretch/Continuous
39.72%	36.77%	44.96%
(24)	(19)	(18)

Panel C: Pairwise Comparisons		
	Mean Difference	p-value (1-tailed)
Easy/Periodic vs. Easy/Continuous	-2.28%	0.244**
Difficult/Periodic vs. Difficult/Continuous	0.20%	0.454
Stretch/Periodic vs. Stretch/Continuous	6.57%	0.001

*Scale: 0% = No risk taking to 100% = High risk taking, ** p-value is 2-tailed because directionality is not supported

As shown in Tables 34 and 35, when participants with one year or less of work experience are excluded, there is no significant difference in risk taking between the periodic and

continuous monitoring conditions for any goal level. These results hold for both measures of risk taking.

Table 34

Test of Hypothesis 4 Joint Effect of Budget Goal Difficulty and Monitoring Frequency on Risk Taking (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted, Excluding Participants with One Year or Less Work Experience)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	15.839	2	0.000
Monitoring Frequency	0.001	1	0.489
Goal Difficulty*Monitoring Frequency	0.021	2	0.495
Goal Commitment	14.226	1	0.000
Benevolence	24.500	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)

Easy/Periodic	Difficult/Periodic	Stretch/Periodic
10.81%	10.58%	15.68%
(21)	(23)	(26)
Easy/Continuous	**Difficult/Continuous**	**Stretch/Continuous**
10.57%	10.63%	15.82%
(27)	(22)	(25)

Panel C: Pairwise Comparisons

	Mean Difference	p-value (1-tailed)
Easy/Periodic vs. Easy/Continuous	0.24%	0.450
Difficult/Periodic vs. Difficult/Continuous	-0.05%	0.976**
Stretch/Periodic vs. Stretch/Continuous	-0.14%	0.948**

*Scale: 0% = No risk taking to 100% = High risk taking, ** p-value is 2-tailed because directionality is not supported

Table 35

Test of Hypothesis 4 Joint Effect of Budget Goal Difficulty and Monitoring Frequency on Risk Taking (Dependent Variable = Percentage of Total Hours Used Contacting New Customers, Excluding Participants with One Year or Less Work Experience)*

Panel A: Tests of Model Effects

Factor	Chi-Square	Df	p-value (1-tailed)
Goal Difficulty	107.055	2	0.000
Monitoring Frequency	0.325	1	0.285
Goal Difficulty*Monitoring Frequency	0.196	2	0.454
Goal Commitment	107.548	1	0.000
Benevolence	162.608	1	0.000
Stimulating Risk Taking	9.465	1	0.001

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)

Easy/Periodic	Difficult/Periodic	Stretch/Periodic
38.58%	36.62%	48.53%
(21)	(23)	(26)
Easy/Continuous	**Difficult/Continuous**	**Stretch/Continuous**
37.47%	36.58%	48.01%
(27)	(22)	(25)

Panel C: Pairwise Comparisons

	Mean Difference	p-value (1-tailed)
Easy/Periodic vs. Easy/Continuous	1.11%	0.268
Difficult/Periodic vs. Difficult/Continuous	0.04%	0.491
Stretch/Periodic vs. Stretch/Continuous	0.52%	0.378

*Scale: 0% = No risk taking to 100% = High risk taking

When participants with one year or less of professional work experience are excluded, there is no significant decrease in risk taking between the periodic and continuous monitoring conditions for any goal level using both measures of risk taking. These results are shown in Tables 36 and 37. As shown, there is actually a marginally significant increase in risk taking from the stretch/periodic to stretch/continuous condition when risk taking is measured as %NewHours ($p = 0.054$).

Table 36

Test of Hypothesis 4 Joint Effect of Budget Goal Difficulty and Monitoring Frequency on Risk Taking (Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted, Excluding Participants with One Year or Less Professional Work Experience)*

Panel A: Tests of Model Effects

Factor	Chi-Square	Df	p-value (1-tailed)
Goal Difficulty	12.685	2	0.001
Monitoring Frequency	0.534	1	0.233
Goal Difficulty*Monitoring Frequency	0.476	2	0.394
Goal Commitment	18.192	1	0.000
Benevolence	19.837	1	0.000

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)

Easy/Periodic	Difficult/Periodic	Stretch/Periodic
11.01%	10.61%	14.93%
(18)	(20)	(21)
Easy/Continuous	**Difficult/Continuous**	**Stretch/Continuous**
11.98%	10.49%	17.25%
(23)	(19)	(20)

Panel C: Pairwise Comparisons

	Mean Difference	p-value (1-tailed)
Easy/Periodic vs. Easy/Continuous	-0.97%	0.656**
Difficult/Periodic vs. Difficult/Continuous	0.12%	0.474
Stretch/Periodic vs. Stretch/Continuous	-2.32%	0.342**

*Scale: 0% = No risk taking to 100% = High risk taking, ** p-value is 2-tailed because directionality is not supported

Table 37

Test of Hypothesis 4 Joint Effect of Budget Goal Difficulty and Monitoring Frequency on Risk Taking (Dependent Variable = Percentage of Total Hours Used Contacting New Customers, Excluding Participants with One Year or Less Professional Work Experience)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	94.042	2	0.000
Monitoring Frequency	1.939	1	0.082
Goal Difficulty*Monitoring Frequency	2.729	2	0.128
Goal Commitment	133.833	1	0.000
Benevolence	132.466	1	0.000
Stimulating Risk Taking	1.207	1	0.136

(table continues)

Table 37 *(continued)*.

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above (n)		
Easy/Periodic	Difficult/Periodic	Stretch/Periodic
38.92%	36.81%	47.38%
(18)	(20)	(21)
Easy/Continuous	Difficult/Continuous	Stretch/Continuous
40.57%	36.15%	51.06%
(23)	(19)	(20)

Panel C: Pairwise Comparisons		
	Mean Difference	p-value (1-tailed)
Easy/Periodic vs. Easy/Continuous	-1.65%	0.400**
Difficult/Periodic vs. Difficult/Continuous	0.66%	0.354
Stretch/Periodic vs. Stretch/Continuous	-3.68%	0.054**

*Scale: 0% = No risk taking to 100% = High risk taking, ** p-value is 2-tailed because directionality is not supported

Summary of Findings

The original analysis indicates a decrease in risk taking from the stretch/periodic to stretch/continuous conditions. However, this finding only occurs when risk taking is measured as the percentage of total hours spent contacting new customers. Supplemental analysis excluding accounting majors finds similar results. However, there is no significant difference in risk taking across budget goal difficulty/monitoring conditions when the analysis is performed excluding those with one year or less work experience. Additionally, a marginally significant increase in risk taking occurs between the stretch/periodic and stretch/continuous conditions when analysis is conducted excluding participants with one year or less professional work experience. This finding is opposite of expected. Overall, the results provide little support for Hypothesis 4 and suggest that monitoring frequency may not be an effective way to mitigate the harmful effects of stretch goals. Possible explanations for this finding are explored later.

Supplemental Analysis

Excessive Risk Taking

I perform supplemental analysis to determine whether continuous monitoring decreases excessive risk taking. I define excessive risk taking as contacting 5 or more new customers and construct the following contingency table, shown in Table 38.

Table 38

Contingency Table

	Number of people who contacted 4 or less new customers	Number of people who contacted more than 4 new customers
Periodic Monitoring Condition	58 (78.38 %)	16 (21.62 %)
Continuous Monitoring Condition	65 (84.42%)	12 (15.58%)

I use a chi-square test to determine if a lower proportion of individuals in the continuous monitoring condition take excessive risks than those in the periodic monitoring condition, results are shown in Table 39.[10]

Table 39

Chi-square Test Monitoring Frequency – Risk Taking Relationship

Test	Value	Df	Significance (2-tailed)
Pearson Chi-Square	0.911	1	0.340

[10] A chi-square test is appropriate for analyzing the independence of these events because the number of expected frequencies in each cell is greater than 5 (Huck 2009)

Individuals in continuous monitoring condition are less likely to take excessive risks than those in the periodic monitoring condition. However, the results of the chi-square test indicate that this difference is not significant. Similar results are found if excessive risk taking is defined as contacting six or more new customers. Overall, this test provides little support for Hypothesis 3.

Supplemental analysis was also performed to determine whether continuous monitoring decreases excessive risk taking (defined as contacting 5 or more new customers) in the easy, difficult, and stretch goal conditions. Results from the chi-square test are shown in Table 40.

Table 40

Chi-square Test Joint Effect of Budget Goal Difficulty and Monitoring Frequency on Risk Taking

Test	Value	Df	Significance (1-tailed)
Easy Periodic vs. Easy Continuous	2.585	1	0.054
Difficult Periodic vs. Difficult Continuous	0.167	1	0.342
Stretch Periodic vs. Stretch Continuous	0.008	1	0.464

Results from the chi-square test indicate that the only marginally significant decrease in excessive risk taking occurred from the easy/periodic to easy/continuous condition ($p = 0.054$). Similar results are obtained if excessive risk taking is defined as contacting 6 or more new customers. This suggests that the monitoring frequency manipulation effectively encouraged participants to stay within the company's stated boundary for contacting new customers in the easy budget goal condition only, lending partial support for Hypothesis 4.

Stretch Goals

Results of the experiment indicate that stretch goals significantly increase risk taking for

all measures of risk taking and across all sample populations. Therefore, supplemental analysis was performed to investigate possible explanations for this increase by examining the changes in goal commitment and job insecurity across goal difficulty levels. Figure 11 summarizes these changes.

	Easy Goal Level (n = 50)	Difficult Goal Level (n = 48)	Stretch Goal Level (n = 53)
Goal Commitment*	5.06 (0.866)	5.03 (1.144)	4.15 (1.294)
Fear of Being Fired or Punished**	2.91(1.276)	3.33 (1.330)	3.20 (1.442)
Belief that Working Hard Can Prevent Being Fired***	4.56 (1.312)	4.92 (1.235)	4.19 (1.766)

*Scale: 0 = Low Goal Commitment to 7 = High Goal Commitment
**Scale: 0 = Low Fear of Being Fired or Punished to 7 = High Fear of Being Fired or Punished
***Scale: 0 = Low Belief that Working Hard can Prevent Being Fired to 7 = High Belief that Working Hard can Prevent Being Fired

Figure 11. Changes in goal commitment and job insecurity across goal difficulty levels [mean (SD)].

I first look at the relationship between goal difficulty level and goal commitment. Goal commitment was measured on a scale from one to seven, with one being the least committed and seven being the most committed. As shown in Figure 11, goal commitment significantly decreases from the difficult to stretch goal level ($p = 0.001$). However, individuals in the stretch goal condition remain moderately committed to their goal. Theory suggests that goal commitment moderates the goal-behavior relationship because goals are only motivating if individuals are committed to achieving them. Results of hypothesis testing indicate that there is a slight decrease in effort and an increase in risk taking from the difficult to stretch goal level. A possible interpretation for the decrease in effort is the decrease in goal commitment from the difficult to stretch goal level. The increase in risk taking across these goal levels and the

moderate goal commitment of those in the stretch goal level suggests that individuals in the stretch goal condition still try to reach their goal by using their effort hours in a riskier manner.

Next, I investigate the effect of budget goal level on job insecurity. The job insecurity scale had two dimensions: the perceived fear of being fired or punished (*FearFiredPunish*) and the belief that working hard would prevent getting fired (*FearPrevent*). Both dimensions were measured on a 1 to 7 scale. For the perceived fear of being fired or punished, a response closer to one indicates little fear of being fired or punished, while a response closer to seven indicates a high fear of being fired or punished. For the belief that working hard would prevent getting fired, a response closer to one suggests that participants felt that working hard would not prevent them from being fired, while a response closer to seven suggests participants felt that they could prevent getting fired by working hard. I analyze the differences in both measures of job insecurity across the three budget goal levels. Results are shown above in Figure 11. Job insecurity was correlated with work experience and age. However, there were no significant differences in these demographics between treatment groups, suggesting that any differences found between treatments were not due to a failure of randomization.

Results suggest that participants in the stretch goal condition had a significantly lower belief that working hard could prevent them from being fired than those in the difficult goal condition ($p = 0.009$). They also had a lower belief that working hard could prevent them from being fired than those in the easy goal condition, but this decrease was not significant. The results also indicate that individuals in the difficult and stretch goal conditions had the highest fear of being fired or punished. However, this increase was only marginally significant ($p = 0.058$) between the easy and difficult goal conditions. These results suggest that individuals in the stretch goal condition had higher job insecurity. To further investigate the potential impact

this may have on risk taking, I analyze whether job insecurity interacts with budget goal difficulty to intensify or reduce risk taking. Since both dimensions of job insecurity represent distinct concepts, I consider each dimension of job insecurity separately. Tables 41 and 42 show the results of three interactions on risk taking: (1) the interaction between budget goal difficulty and one's fear of being fired or punished (*FearFiredPunish*), (2) the interaction between budget goal difficulty and one's belief that working hard can prevent being fired (*FearPrevent*), and (3) the three-way interaction between budget goal difficulty and the two measures of job insecurity.

Table 41

Interaction Effects of Budget Goal Difficulty and Job Insecurity Measures on Risk Taking (Dependent Variable = Percentage of New Customers Contacted Compared to the Total Number of Customers Contacted)*

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	17.023	2	0.000
Monitoring Frequency	0.294	1	0.294
Goal Difficulty*Monitoring Frequency	0.072	2	0.483
Goal Commitment	13.677	1	0.000
Benevolence	21.880	1	0.000
FearFiredPunish	0.004	1	0.474
FearPrevent	0.003	1	0.480
Goal Difficulty*FearFiredPunish	1.127	2	0.285
Goal Difficulty*FearPrevent	0.402	2	0.409
Goal Difficulty*FearFiredPunish*FearPrevent	3.127	3	0.186

*Scale: 0% = No risk taking to 100% = High risk taking

As shown in Table 41 above, the interactions between goal difficulty and the two job insecurity measures are insignificant when risk taking is measured as the percentage of new customers contacted compared to the total number of customers contacted.

Table 42

Interaction Effects of Budget Goal Difficulty and Job Insecurity Measures on Risk Taking (Dependent Variable = Percentage of Total Hours Spent Contacting New Customers)*

Panel A: Tests of Model Effects

Factor	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	107.703	2	0.000
Monitoring Frequency	2.267	1	0.066
Goal Difficulty*Monitoring Frequency	0.902	2	0.319
Goal Commitment	101.384	1	0.000
Benevolence	139.996	1	0.000
Stimulating Risk Taking	8.612	1	0.002
FearFiredPunish	0.430	1	0.256
FearPrevent	0.700	1	0.202
Goal Difficulty*FearFiredPunish	8.324	2	0.008
Goal Difficulty*FearPrevent	3.655	2	0.081
Goal Difficulty*FearFiredPunish*FearPrevent	12.633	3	0.003

Panel B: Estimated Marginal Means Controlling for Covariates Listed Above and Pairwise Comparisons for Goal Difficulty*FearFiredPunish Interaction

(1) Easy Goal/Low Fear Mean: 39.54%	(3) Difficult Goal/Low Fear Mean: 38.75%	(5) Stretch Goal/ Low Fear Mean: 47.61%
(2) Easy Goal/High Fear Mean: 36.69%	(4) Difficult Goal/ High Fear Mean: 36.11%	(6) Stretch Goal/ High Fear Mean: 51.25%

	Mean Difference	p-value (1-tailed)
(1) vs. (2)	2.85%	0.071
(3) vs. (4)	2.64%	0.080
(5) vs. (6)	-3.64%	0.019

Panel C: Estimated Marginal Means Controlling for Covariates Listed Above and Pairwise Comparisons for Goal Difficulty*FearFiredPunish*FearPrevent Interaction

Easy Goal Level	(1) Low FearFiredPunish/Low FearPrevent	39.16%
	(2) Low FearFiredPunish/High FearPrevent	39.92%
	(3) High FearFiredPunish/Low FearPrevent	35.12%
	(4) High FearFiredPunish/High FearPrevent	38.29%
Difficult Goal Level	(5) Low FearFiredPunish/Low FearPrevent	37.95%
	(6) Low FearFiredPunish/High FearPrevent	39.56%
	(7) High FearFiredPunish/Low FearPrevent	38.67%
	(8) High FearFiredPunish/High FearPrevent	33.63%
Stretch Goal Level	(9) Low FearFiredPunish/Low FearPrevent	48.79%
	(10) Low FearFiredPunish/High FearPrevent	46.44%
	(11) High FearFiredPunish/Low FearPrevent	47.32%
	(12) High FearFiredPunish/High FearPrevent	55.17%

(table continues)

Table 42 *(continued)*.

	Mean Difference	p-value (1-tailed)
(1) vs. (2)	-0.76%	0.392
(3) vs. (4)	-3.17%	0.137
(5) vs. (6)	-1.61%	0.240
(7) vs. (8)	5.04%	0.008
(9) vs. (10)	2.35%	0.185
(11) vs. (12)	-7.85%	0.001

*Scale: 0% = No risk taking to 100% = High risk taking

As shown in Table 42 Panel A, the interactions between budget goal difficulty and one's fear of being fired or punished and the three-way interaction between budget goal difficulty and the two job insecurity measures are both significant ($p = 0.008$ and $p = 0.003$, respectively) when risk taking is measured as the percentage of total hours spent contacting new customers. Panel B of Table 42 further examines the interaction between budget goal difficulty and one's fear of being fired or punished. The results indicate risk taking decreases marginally in the easy and difficult goal levels when individuals have a high fear of being fired or punished ($p = 0.071$ and $p = 0.080$, respectively). However, risk taking increases significantly at the stretch goal level when individuals have a high fear of being fired and punished ($p = 0.019$).

Panel C of Table 42 further examines the three-way interaction between budget goal difficulty and the two job insecurity measures. Figures 12, 13, and 14 below are used to visualize this interaction.

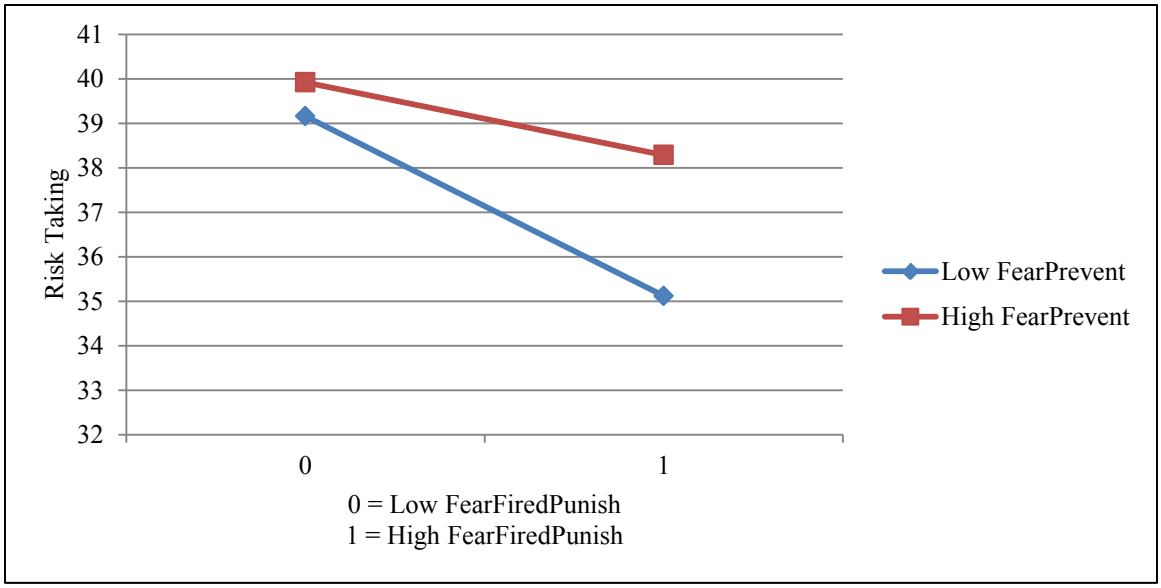


Figure 12. Interaction of job insecurity measures at easy goal level (dependent variable = percentage of total hours spent contacting new customers*).

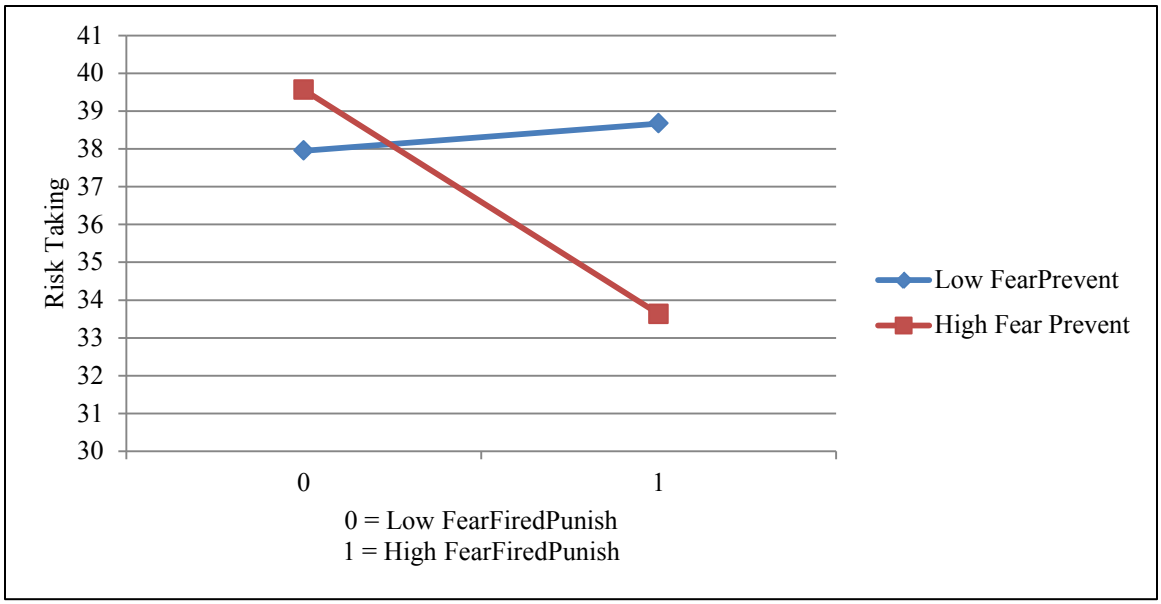


Figure 13. Interaction of job insecurity measures at difficult goal level (dependent variable = percentage of total hours spent contacting new customers*).

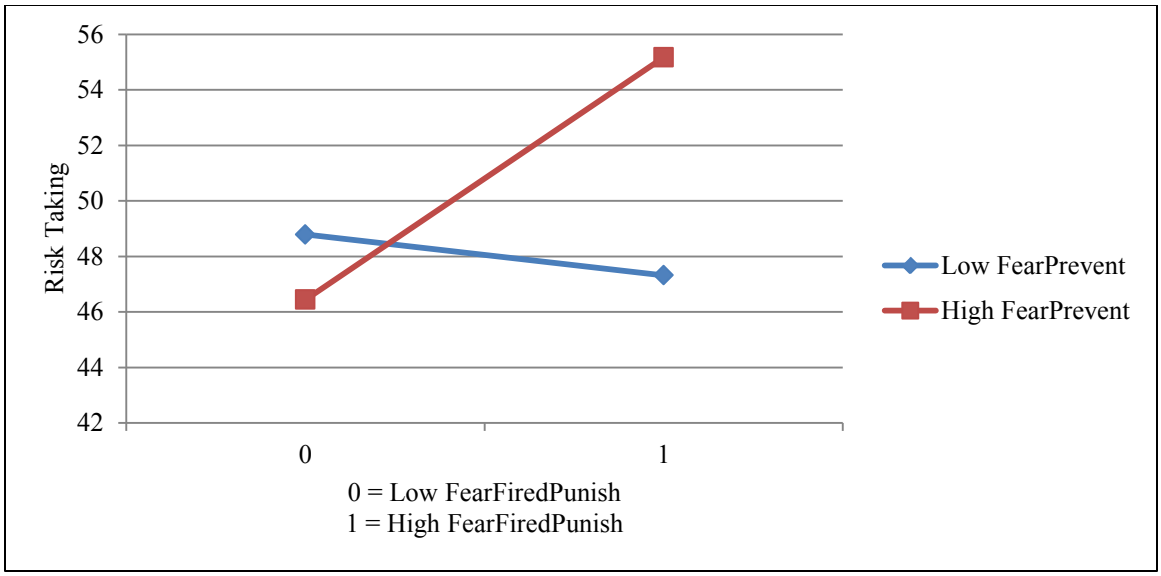


Figure 14. Interaction of job insecurity measures at stretch goal level (dependent variable = percentage of total hours spent contacting new customers*).

As shown in Panel C of Table 42 and Figure 13, at the difficult goal level, individuals with a high fear of being fired or punished and a high belief that working hard can prevent them from being fired take significantly less risks than those with a high fear of being fired or punished and a low belief that working hard can prevent them from being fired ($p = 0.008$). Alternatively, at the stretch goal level, individuals with a high fear of being fired or punished and a high belief that working hard can prevent them from being fired take significantly more risks than those with a high fear of being fired or punished and a low belief that working hard can prevent them from being fired ($p = 0.001$).

Summary of Findings

An investigation into the effects of stretch goals indicates that stretch goals decrease goal commitment. Stretch goals also lower one's belief that working hard can prevent being fired and increase the fear of being fired or punished, suggesting that stretch goals lead to higher job

insecurity. Analysis also indicates that individuals under a stretch goal who have a high fear of being fired or punished take more risks than those with a low fear of being fired or punished. Additionally, significance of a three-way interaction between budget goal difficulty and both job insecurity measures reveals that individuals with a high fear of being fired or punished and a high belief that working hard can prevent them from being fired take significantly less risks than those with a high fear of being fired or punished and a low belief that working hard can prevent them from being fired under a difficult budget goal. However, individuals with a high fear of being fired or punished and a high belief that working hard can prevent them from being fired take significantly more risks than those with a high fear of being fired or punished and a low belief that working hard can prevent them from being fired under a stretch budget goal. A potential explanation for these findings is that those with a high belief that working hard can prevent them from being fired feel that they have more control over the outcome of their future. Those who have this higher sense of control coupled with a fear of being fired or punished take those actions they believe will prevent them from being fired. At the difficult goal level, individuals can achieve their goal safely by taking fewer risks. However, at the stretch goal level, individuals must take higher risks to have even a chance of reaching their goal. Assuming participants believed that they could prevent being fired by reaching their goal, the interactions observed would support this explanation such that participants at the difficult and stretch goal levels who had a high fear of being fired or punished and a high belief that their actions could prevent this from occurring made the customer contact choices that gave them the best opportunity to reach their goal.

Accountability – Risk Taking Relationship

As discussed earlier, accountability was removed from the analysis because of concerns for multicollinearity due to the strong correlation with monitoring frequency. However, accountability was shown to be significantly related to both measures of risk taking in the correlation analysis. Consequently, I investigate the influence of accountability on risk taking. Tables 43 and 44 show the results of this analysis.

Table 43

Influence of Accountability on Risk Taking (Dependent Variable = Percentage of New Customers Contacted Compared to Total Customers Contacted)*

Factor	Sign of Beta	Chi-Square	Df	p-value (1-tailed)
Goal Difficulty	+	19.322	2	0.000
Accountability	-	9.087	1	0.002
Goal Commitment	-	10.191	1	0.001
Benevolence	+	28.721	1	0.000

*Scale: 0% = No risk taking to 100% = High risk taking

Table 44

Influence of Accountability on Risk Taking (Dependent Variable = Percentage of Total Hours Used Contacting New Customers)*

Factor	Sign of Beta	Chi-Square	df	p-value (1-tailed)
Goal Difficulty	+	123.296	2	0.000
Accountability	-	51.857	1	0.000
Goal Commitment	-	70.413	1	0.000
Benevolence	+	189.179	1	0.000
Stimulating Risk Taking	+	13.016	1	0.000

*Scale: 0% = No risk taking to 100% = High risk taking

The analysis indicates that accountability has a significant negative relationship with both measures of risk taking. This relationship is stronger than the relationship between monitoring frequency and risk taking. One possible explanation for this finding is that accountability mediates the relationship between monitoring frequency and risk taking as suggested by Hunton

et al. (2010). Consequently, I also investigate this possibility following Baron and Kenny's (1986) mediation model. Results are presented in Tables 45 and 46.

Table 45

Mediation Analysis of Monitoring Frequency-Risk Taking Relationship (Mediator: Accountability, Dependent Variable = Percentage of Total Hours Used Contacting New Customers)*

Factor	Sign of Beta	Chi-Square	df	p-value (1-tailed)
Step 1:				
Monitoring Frequency-Risk Taking Relationship without Mediator Present				
Goal Difficulty	+	111.579	2	0.000
Monitoring Frequency	-	2.415	1	0.060
Goal Difficulty*Monitoring Frequency		1.014	2	0.301
Goal Commitment	-	122.595	1	0.000
Benevolence	+	176.354	1	0.000
Stimulating Risk Taking	+	14.242	1	0.000
Step 2:				
Monitoring Frequency-Accountability Relationship				
Goal Difficulty	+	2.833	2	0.031
Monitoring Frequency	+	64.262	1	0.000
Goal Difficulty*Monitoring Frequency		0.555	2	0.288
Goal Commitment	+	23.706	1	0.000
Benevolence	+	3.828	1	0.026
Stimulating Risk Taking	-	0.301	1	0.292
Steps 3 and 4:				
Monitoring Frequency-Risk Taking Relationship with Mediator Present				
Goal Difficulty	+	122.435	2	0.000
Monitoring Frequency	+	6.261	1	0.006
Goal Difficulty*Monitoring Frequency		0.226	2	0.447
Goal Commitment	-	63.449	1	0.000
Benevolence	+	193.263	1	0.000
Stimulating Risk Taking	-	12.861	1	0.000
Accountability	-	54.413	1	0.000

*Scale: 0% = No risk taking to 100% = High risk taking

Step 1 in the analysis shows there is a marginally significant negative relationship between monitoring frequency and risk taking ($p = 0.06$). Step 2 illustrates that monitoring frequency is positively related to accountability ($p = 0.000$). Steps 3 and 4 show that when

accountability, the mediator, is included in the monitoring frequency-risk taking model, accountability is negatively related to risk taking ($p = 0.000$). Monitoring frequency is also found to have a significant positive relationship with risk taking ($p = 0.006$). Overall, these results suggest that monitoring frequency decreases risk taking. Monitoring frequency also increases accountability and accountability decreases risk taking. However, the effect of monitoring frequency on risk taking becomes positive when controlling for accountability. These results do not support mediation as defined by Baron and Kenny's (1986) mediation model. Alternatively, these results suggest that inconsistent mediation is present (MacKinnon et al. 2007). Inconsistent mediation occurs when the direct and indirect effects of the independent variable on the dependent variable are opposite in sign. In cases of inconsistent mediation, the mediator behaves like a suppressor variable, suppressing the direct effect of the independent variable on the dependent variable and, in some cases, causing the relationship between the independent and dependent variable to appear nonsignificant.

I also ran the Sobel test to more formally assess mediation because of the unique way in which the relationship between monitoring frequency and risk taking changes from negative to positive when accountability is included in the model. The Sobel test statistic is -4.473 with a standard error of 0.053 and a p-value of 0.000. The Sobel test indicates that accountability mediates the monitoring frequency-risk taking relationship when risk taking is defined as the percentage of total hours spent contacting new customers.

Table 46

Mediation Analysis of Monitoring Frequency-Risk Taking Relationship (Mediator: Accountability, Dependent Variable = Percentage of New Customers Contacted Compared to Total Number of Customers Contacted)*

Factor	Sign of Beta	Chi-Square	df	p-value (1-tailed)
Step 1:				
Monitoring Frequency-Risk Taking Relationship without Mediator Present				
Goal Difficulty	+	17.025	2	0.000
Monitoring Frequency	-	0.223	1	0.319
Goal Difficulty*Monitoring Frequency		0.123	2	0.470
Goal Commitment	-	17.161	1	0.000
Benevolence	+	26.508	1	0.000
Step 2:				
Monitoring Frequency-Accountability Relationship				
Goal Difficulty	+	2.708	2	0.035
Monitoring Frequency	+	64.718	1	0.000
Goal Difficulty*Monitoring Frequency		0.529	2	0.296
Goal Commitment	+	25.633	1	0.000
Benevolence	+	3.605	1	0.030
Steps 3 and 4:				
Monitoring Frequency-Risk Taking Relationship with Mediator Present				
Goal Difficulty	+	18.773	2	0.000
Monitoring Frequency	+	1.091	1	0.148
Goal Difficulty*Monitoring Frequency		0.083	2	0.480
Goal Commitment	-	9.632	1	0.001
Benevolence	+	29.565	1	0.000
Accountability	-	9.692	1	0.001

*Scale: 0% = No risk taking to 100% = High risk taking

Table 46 presents the results of mediation analysis when risk taking is defined as the percentage of new customers contacted compared to the total number of customers contacted. Step 1 in the analysis shows that there is no significant relationship between monitoring frequency and risk taking ($p = 0.319$). Step 2 illustrates that monitoring frequency is positively related to accountability ($p = 0.000$). Steps 3 and 4 show that when accountability is included in the monitoring frequency-risk taking model, accountability is negatively related to risk taking ($p = 0.001$). In this model, monitoring frequency has a nonsignificant positive relationship with risk

taking (p = 0.148). These results do not support mediation as defined by Baron and Kenny's (1986) mediation model. However, they are indicative of inconsistent mediation (MacKinnon et al. 2007). Therefore, I run Sobel's test for mediation because of the unique way in which relationship between monitoring frequency and risk taking changes from negative to positive when accountability is included in the model. The Sobel test statistic is -2.760 with a standard error of 0.086 and a p-value of 0.006. Similar to prior findings, Sobel's test indicates that accountability mediates the monitoring frequency-risk taking relationship when risk taking is measured as the percentage of new customers contacted compared to the total number of customers contacted.

Next, I explore the counterintuitive positive relationship between monitoring frequency and risk taking found when accountability, the mediator, is included in the model. Theory suggests that continuous monitoring should decrease risk taking because of increased accountability. Consistent with theory, my results suggest that accountability mediates that monitoring frequency-risk taking relationship and decreases risk taking. However, my results also provide evidence of inconsistent mediation, suggesting that accountability suppresses an existing positive relationship between monitoring frequency and risk taking. This relationship is illustrated in Figures 15 and 16 below.

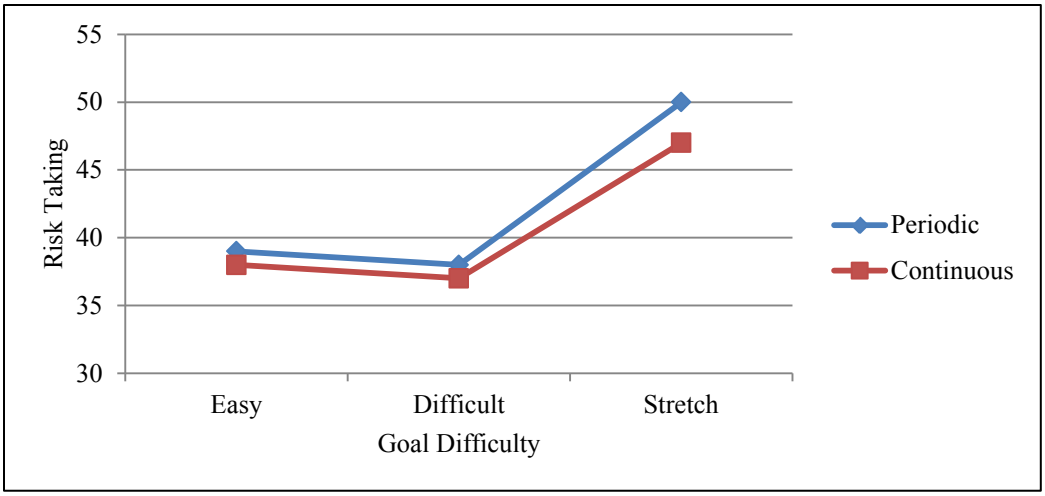


Figure 15. Relationship between monitoring frequency and risk taking without controlling for accountability.

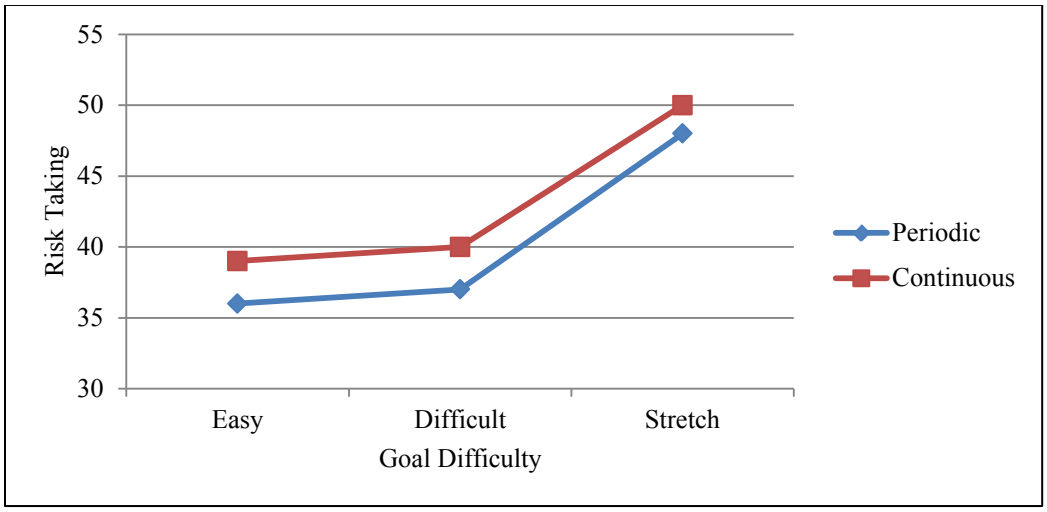


Figure 16. Relationship between monitoring frequency and risk taking controlling for accountability.

As shown in Figure 15, when accountability is not included in the monitoring frequency-risk taking model, continuous monitoring slightly decreases risk taking across all goal difficulty levels (i.e., accountability suppresses the positive relationship between monitoring frequency and risk taking). However, when accountability is included in the model and the variance in risk taking associated with accountability is controlled, continuous monitoring increases risk taking

across all goal difficulty levels. This result, shown in Figure 16, suggests that an unknown factor may cause monitoring frequency to increase risk taking.

Since power analysis previously indicated that the ability to detect an effect for the monitoring frequency manipulation was limited, I reexamine the power of my tests when accountability is included in the model. Findings indicate that the power associated with monitoring frequency is 0.061 and 0.632 when measured as the %NewNumber and %NewHours, respectively. While this is still lower than the conventional standard of 0.800, power does improve when accountability is included in the model (Cohen 1988, Mazen et al. 1985).

Summary of Findings

Overall, the evidence indicates that accountability mediates the monitoring frequency-risk taking relationship for both measures of risk taking. This finding reveals that continuous monitoring influences risk taking behavior through an increased sense of accountability. An interesting finding from this analysis is the positive relationship between monitoring frequency and risk taking found when controlling for the variance in risk taking associated with accountability. This result suggests that the mediator, accountability, suppresses the positive relationship between continuous monitoring and risk taking as found in inconsistent mediation. Possible explanations for this finding are discussed in the next chapter.

CHAPTER 5

CONCLUSION

Introduction

This chapter concludes my dissertation by providing a summary of my experimental results, discussing the contributions and limitations of my study, and offering suggestions for future research.

Discussion

The purpose of my dissertation is two-fold. First, I assessed how changes in monitoring frequency influenced employee behaviors and the overall function of the management control system. Second, I investigated the effects of stretch goals on behavior to determine whether stretch goals can lead to harmful behaviors and whether continuous monitoring can mitigate these behaviors. Drawing from goal setting theory, expectancy theory, and prospect theory, I predicted budget goal difficulty to individually influence effort and risk taking. Specifically, I hypothesized that there is an inverted-U-shaped relationship between budget goal difficulty and effort and a U-shaped relationship between budget goal difficulty and risk taking. Similarly, I drew on the accountability literature to predict that monitoring frequency would be negatively related to risk taking. I then used the main effects hypotheses and levers of control theory to predict that budget goal difficulty and monitoring frequency would simultaneously influence risk taking such that monitoring frequency would affect risk taking at the easy and stretch goal difficulty level more than it affected risk taking at the difficult goal level.

I tested these predictions with an experimental instrument that manipulated the difficulty of the budget goal used in the performance measurement and reward system (easy, difficulty, and

stretch) and the frequency of monitoring (periodic versus continuous). The experiment utilized a sales scenario. In the scenario, I manipulated budget goal difficulty by providing participants with information about their past sales performance and assigning participants different sales revenue goals. The assigned goal was manipulated as easy, difficult, or stretch based on its relative difficulty compared to past performance. Participants chose to work toward their goals by selecting the number and type of customers they wanted to contact. Specifically, they chose either existing, lower risk customers with relatively low performance payoffs or new, higher risk customer which offered the possibility of significantly higher payoffs.

Consistent with theory, participants were informed of the company's beliefs regarding the riskiness of employee's customer contact decisions and were told they would be monitored for consistency with that stated preference. I manipulated monitoring frequency by changing how often participant customer contact decisions were monitored. Participants were warned that they may be required to justify their decisions if their behavior differs from management's stated preference.

The participants consisted of 175 MBA and master of accounting students from sixteen classes across seven universities in three states. Participants were randomly assigned to one of the six experimental conditions. Each student read the hypothetical sales scenario, completed an interactive practice decision making session, and made their final customer contact decisions. The actual effort and risk choices of participants were measured for use in hypothesis testing. I also controlled for various other potentially influential variables, including perceived accountability, perceived need to justify decisions, risk preference, goal commitment, self-efficacy, benevolence, job insecurity, perceived importance of using a lot of effort hours, perceived interactive control system, and other demographic variables.

Results from my experiment support prior research on the goal difficulty-effort relationship for easy and difficult goals, finding that individuals exert more effort when assigned a difficult goal compared to an easy goal. The results also shed light on the controversial relationship between goal difficulty and effort at the stretch goal level. Proponents of goal setting research argue that effort should increase slightly from the difficult to stretch goal level. These researchers suggest that one benefit of stretch goals is the slight increase in effort that occurs under stretch goals (Locke and Latham 2009, Locke 1982). Alternatively, others believe that stretch goals can be harmful (Ordonez et al. 2009, Sprinkle et al. 2008). One of the harmful side effects of stretch goals suggested by expectancy theory proponents occurs because individuals are believed to "give up" when faced with a stretch goal and exert little to no effort (Vroom 1964, Erez and Zidon 1984, Ronen and Livingstone 1975). Despite this controversy and the rise of stretch goals in practice, few researchers have investigated the effects of stretch goals on behavior. The results of this study suggest that individuals under a stretch goal neither slightly increase their effort nor do they "give up". Instead, effort tends to decrease slightly from the difficult to stretch goal level. These findings suggest that while individuals in the stretch goal condition felt a significantly lower likelihood of reaching their goal (i.e., they had low expectancy), they were still motivated to try to reach them as shown by their high levels of effort. Consequently, portions of goal setting theory and expectancy theory both influence this relationship.

Stretch goals were not effective in increasing effort. Results from my experiment also suggest that stretch goals can be harmful because of their effect on risk taking. Ordonez et al. (2009) proposed that stretch goals lead to excessive risk taking. My study supports this proposal by finding that individuals in the stretch goal condition take significantly higher risks than those

in the easy or difficult goal conditions. Supplemental analysis indicates that this increase in risk taking is amplified when individuals have high job insecurity. Specifically, individuals under a stretch goal who have high job insecurity take more risks than those with low job insecurity. Stretch goals combined with high job insecurity may help explain the excessive risk taking of executives in many companies, such as Enron and Continental Illinois Bank, which eventually lead to their collapse (Markowitz 2012, Ordonez et al 2009). Ordonez et al. (2009) also suggest that the effect of stretch goals on risk taking may have played a role in the financial crisis of 2008. However, it is important to recognize that stretch goals do not always fail. General Electric has successfully used stretch goals for many years to encourage innovation within their company. They credit the success of these stretch goals to their "don't punish failure" method of implementing them (Sherman and Kerr 1995). The findings of this study combined with anecdotal evidence of companies who successfully or unsuccessfully implemented stretch goals suggest that the harmful nature of stretch goals occurs when those goals are coupled with high job insecurity.

Stretch goals were also found to have other potentially harmful side effects. My findings suggest that stretch goals decrease goal commitment and increase job insecurity. Decreased goal commitment can have negative effects on performance (Locke and Latham 2002). Similarly, heightened job insecurity can have numerous negative consequences, including lower employee physical and mental well-being, decreased job satisfaction, higher turnover intentions, impaired performance, and lower organizational commitment (Hellgren et al. 1999, Sverke et al. 2002). In addition, analysis of a three-way interaction between budget goal difficulty and both measures of job insecurity indicates that individuals with a high sense of control over the outcome of their future that also have a high fear of being fired or punished take those actions that they believe

will prevent them from being fired. In my experiment, this meant that these individuals took higher risks. As described above, excessive risk taking can be detrimental to a company's well-being. However, this finding also suggests that stretch goals may lead individuals to take other harmful actions in order to prevent being fired or punished (i.e., unethical behavior and lack of cooperation with coworkers).

Contrary to prior research, the results of my experiment indicated that continuous monitoring did not have a significant effect on risk taking. Similarly, continuous monitoring did little to reduce the harmful effects of risk taking in the stretch goal condition. However, supplemental analysis revealed possible explanations for this finding. First, it was shown that my analysis had little ability to detect an effect of monitoring frequency on risk taking because of a lack of power. Second, theory suggests that an increase in monitoring frequency should decrease risk taking because of an increase in perceived accountability. Additional analysis showed that accountability mediated the monitoring frequency-risk taking relationship for both measures of risk taking. Consistent with theory, this finding revealed that continuous monitoring decreases risk taking behavior through an increased sense of accountability. Interestingly, my results also provided evidence of inconsistent mediation, suggesting that accountability suppresses an existing, unexpected positive relationship between monitoring frequency and risk taking.

While some may perceive this counterintuitive finding to reflect negatively on my study, I believe it provides a chance for theory regarding continuous monitoring to be clarified and expanded. As argued by Greenwald et al. (1986), it allows researchers to ask not only "Does a specific result occur?" but also "Under what conditions does a specific result occur?" Consequently, it provides an opportunity for researchers "to learn something new, to discover something unexpected" (Weick 1986, 525). One possible explanation for the positive

relationship between monitoring frequency and risk taking is that continuous monitoring leads individuals to believe that all of their behaviors are being monitored. Consequently, they put an increased focus on the behavior they feel is most important. For example, in my experiment, only the riskiness of participant customer contact decisions was being monitored by the continuous monitoring system. However, participants were responsible for managing both the riskiness of their customer contact decisions and reaching their sales revenue goal. Overall, 72% of participants believed that reaching their sales revenue goal was more important than controlling the riskiness of their customer contact decisions. This belief is stronger for those in the continuous monitoring condition where 75% of participants believed that reaching the sales revenue goal was more important compared to 69% of participants in the periodic monitoring condition. The continuous monitoring manipulation may have heightened participants' perceived accountability with regard to both the riskiness of their customer contact decisions and their attainment of the sales revenue goal. Greater accountability for the attainment of their sales revenue goal combined with the perceived importance of obtaining this goal would potentially explain the positive relationship between monitoring frequency and risk taking (i.e., individuals felt that reaching the goal was most important and they felt more accountability for reaching the goal, therefore, they took greater risks to improve their chances of reaching the goal). Similarly, greater accountability for the riskiness of their customer contact decisions would explain the suppression effect of the accountability mediation because this experiment only measured the perceived accountability associated with the riskiness of customer contact decisions. In this study, the nonsignificant relationship between monitoring frequency and risk taking suggests that the increase in perceived accountability associated with the continuously monitored behavior

was not strong enough to overcome the effects produced by the increase in perceived accountability associated with the other components of the management control system.

Contributions

This research makes several contributions to both academic research and practice. It contributes to managerial accounting research and practice by examining effort and risk taking at various goal levels, including the stretch goal level, and providing insight into how these goal levels affect individual behavior. Results suggest that individuals under a stretch goal exert a relatively high amount of effort, take greater risks, have decreased goal commitment, and have higher job insecurity. Consequently, my study has observed several of the harmful side effects of stretch goals. In addition, my study has identified conditions under which stretch goals can be harmful and how characteristics of the workplace environment can amplify these harmful effects. Specifically, stretch goals were found to have harmful effects when they were directly tied to an employee's bonus. These effects were increased when employees had high levels of job insecurity. If considering implementing stretch goals, companies should be aware of the harmful effects produced by stretch goals, the conditions under which they occur, and the possible ways to mitigate these effects.

My study also contributes to accounting information systems and managerial accounting research by analyzing how changes in monitoring frequency influence employee decisions. The study not only considered the influence of monitoring alone, but also the combined influence of monitoring and performance measurement system components on behavior. Accountability was found to mediate the relationship between monitoring frequency and risk taking and suppress a positive relationship between monitoring frequency and risk taking. These results indicate that

continuous monitoring decreases risk taking by increasing perceived sense of accountability related to risk taking. These results also illustrate the potential for continuous monitoring to increase employee attention to all aspects of the management control system, not just the portion of the system being monitored.

These findings allow practitioners to understand the potential benefits and drawbacks of implementing continuous monitoring systems and highlight the necessary considerations for practitioners during the implementation of continuous monitoring systems. Specifically, they bring attention to the need for companies to consider employee perceptions of the relative important of various management control system components and how increases in monitoring may influence behavior with regard to the portion of the management control system viewed as most important by the employees. Similarly, companies should carefully consider the mechanisms used to increase accountability with regard to the monitored behavior. This study suggests that accountability plays an important role in the effectiveness of continuous monitoring. If employees do not perceive the accountability associated with the monitored behavior to be strong enough, continuous monitoring may not function effectively, as demonstrated by this study.

Limitations and Suggestions for Future Research

My study was not without its limitations. As discussed earlier, when the effects of accountability are controlled, results indicate a positive relationship between monitoring frequency and risk taking. Unfortunately, my study was not able to conclusively determine what may have caused this effect. Future research should further investigate the relationship between monitoring frequency and risk taking to determine whether other management control system

components may lead continuous monitoring to increase risk taking and to establish whether increasing accountability associated with the monitored behavior is strong enough to overcome these influences.

Additionally, while my study identified some of the harmful effects of stretch goals, Ordonez et al. (2009) suggest that other harmful effects may exist. Similarly, proponents of stretch goals suggest that stretch goals can also be beneficial. For example, some argue that stretch goals increase innovation (Sherman and Kerr 1995). This study could not examine all of the possible effects of stretch goals on behavior. Future research should explore other potential beneficial or harmful side effects of stretch goals (i.e., innovation, unethical behavior, and lack of cooperation with teammates). In addition, future research should explore whether removing the direct effect of stretch goals on employee pay can mitigate the harmful effects of these goals and explore other workplace conditions that may amplify or mitigate these effects.

Another limitation to my study was the complexity of the hypothetical case scenario. The scenario was useful because it allowed me to control for various outside influences and easily manipulate the independent variables in my study. However, it also required me to develop a complex decision-making scenario in which participants were faced with multiple competing bits of information at one time. The complexity of the scenario may have made it difficult for some participants to fully process all of the information they were given and make choices based on all of that information. Future research may address this limitation by developing a simplified scenario that can accomplish the same goals as my experiment.

In addition, my monitoring frequency manipulation may have lacked realism to participants. Although survey responses were collected via an internet-based survey collection system, participants could have easily recognized that their customer contact decisions were not

actually monitored on a continuous basis. This lack of realism may have limited the effectiveness of my experiment.

The sample size was another limitation of my study. A total of 151 usable responses were collected. However, with six conditions, I had approximately 25 responses per condition. The relatively small size of the sample may have caused the low statistical power of the monitoring frequency-risk taking model. Collecting more data may provide greater statistical power and stronger support for my hypotheses.

The final limitation of my study was the use of student subjects. While many of the students had work experience, sensitivity analysis revealed some differences in results when subjects with one year or less professional work experience were excluded from the analysis. This finding suggests that individuals with more work experience may react differently than the student subjects I used. Future research may be able to address this limitation by collecting data from subjects with several years of professional work experience to explore in greater detail how the results of my study change when professional subjects are used.

APPENDIX A

RESEARCH INSTRUMENT

Part 1

Instructions:

Thank you for participating in this exercise! The exercise consists of 3 parts. The first part involves reading a scenario. The second part is a practice session and the third part requires you to make decisions based on the scenario you read in part one and your practice in part two. All parts must be completed in one sitting. So, please allow yourself plenty of time to complete all three parts.

Compensation:

In this exercise, you will have the opportunity to earn dollars based on the compensation scheme described in the scenario. At the end of the experiment, the dollars you earn will be converted into tickets at the rate of 1 ticket per $50 earned in the scenario. These tickets will be entered into a drawing where you have the chance to win one of three $50 Visa gift cards. Regardless of your performance in the scenario, you may also receive bonus points in your class as long as there is evidence that you took the survey seriously. However, these bonus points will only be given if your instructor has stated that they will be offering bonus points for survey completion.

During the exercise, you will be given 100 hours of effort. You can choose to use as many of these hours as you want. However, the effort you use will cost you. Refer to the table provided to you by the administrator, to determine how much each hour of effort will cost.

It is important for you to carefully consider your choices in the scenario. Other students in your class may have different information. Be sure to focus ONLY on your materials and do not be influenced by what others in your class may be doing.

Please refer to the table for the cost of using effort hours (provided for you by the administrator) to answer the following questions.

Q1. What is the total cost of using 20 effort hours? _____

Q2. How much does it cost you to use the 21st and 22nd effort hours? (i.e., how much money do you give up if you go from using 20 effort hours to 22 effort hours)

- ❍ $25
- ❍ $20
- ❍ $15
- ❍ $10
- ❍ $5
- ❍ $1

Q3. What is the total cost of using 80 effort hours? _____

Q4. How much does it cost you to use the 81st and 82nd effort hours? (i.e., how much money do you give up if you go from using 80 effort hours to using 82 effort hours)

- ❍ $25
- ❍ $20
- ❍ $15
- ❍ $10
- ❍ $5
- ❍ $1

Q5. Please indicate how much you agree or disagree with the following statement, based on your understanding of the payout for unused effort.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
The more effort I use, the more it costs per hour	❍	❍	❍	❍	❍	❍	❍
As I use more effort hours, the cost per hour increases	❍	❍	❍	❍	❍	❍	❍

Scenario:

You are the sales manager for Atlantis Manufacturing Supply Company. Atlantis Manufacturing Supply Company's mission statement is to be the leading supply company in their industry by being the best in the eyes of their customers, employees, and shareholders.

As the sales manager, you receive a monthly salary of $600. Each month, your supervisor also sets a revenue goal for you. This revenue goal represents the dollar value of sales revenue that your supervisor wants you to obtain and is used to calculate your monthly bonus. At the end of each month, you receive bonus pay of $500 for meeting your revenue goal. However, if you do not reach your revenue goal, you will not receive the any bonus. During the month, you also incur costs based on the number of effort hours you choose to use (refer to the table provided to you by your administrator to determine the cost of using effort hours). Consequently, your monthly pay is calculated as follows: $600 salary + $500 bonus (if earned) - cost of effort.

Your past performance for the last six months is shown below:

Month	Sales Revenue
Last month	$100,000
2 months ago	$118,000
3 months ago	$95,000
4 months ago	$106,000
5 months ago	$97,000
6 months ago	$122,000

The highest you have ever sold is $130,000. Your supervisor has set your sales revenue goal for this month at $50,000 *(110,000, 190,000)*.

This month, you have 100 hours available to make sales calls. With these hours you have the option to contact existing customers, new customers, or both. Your company wants you to contact at least 1 but no more than 4 new customers.

Each sales call to an existing customer requires you to spend 2 hours for preparation and on the phone. For each sales call to an existing customer, you will receive $2,500 in sales revenue (per hour sales revenue = $1,250). Since you already have established relationships with these customers, you are guaranteed to make this sale if you call. Once you have achieved your goal, each existing customer you contact increases your bonus by at least $10 ($2500 \ $1,000 = 2.5). Unlike your existing customers, sales to new customers are not guaranteed. As shown below you have the potential to increase your sales base and earn more revenue if you contact new customers. However, you must spend 10 hours per call to research the new customer, prepare for the call, and make the call; and the sale is not guaranteed. The table below shows the payout you received from the last 10 new customers you contacted:

New Customer	Sales Revenue	Sales Revenue per Hour
1	$5,000	$500
2	$0	$0
3	$50,000	$5,000
4	$2,000	$200
5	$3,000	$300
6	$75,000	$7,500
7	$23,000	$2,300
8	$0	$0
9	$10,000	$1,000
10	$12,000	$1,200

As shown above, sales to new customers typically range from $0 to $75,000 with an average sale of $18,000. Although the average sales revenue from new customers is $18,000, only 30% of the

last 10 customers you contacted had sales revenue greater than $18,000. The remaining 70% earned a sales revenue per hour that was less than the sales revenue per hour received from existing customers. By contacting new customers, you will have less time to devote to your existing customers and since the sales revenue received from new customers varies greatly, you may lose sales revenue.

Your supervisor monitors your customer contact decisions once a year (*daily*). Automated software collects information from the system's database on the number of new and existing customers you have contacted. Your supervisor accesses this information once a year (daily) to review the number of new and existing customers you have called. If significant differences between the company's expectations and actual customer contacts are found, your supervisor may ask you to justify your decisions about the types of customers you chose to contact.

Q6. How many dollars do you receive for your monthly salary? _____

Q7. How many dollars do you receive for meeting the sales revenue goal? _____

Q8. Your monthly bonus is calculated as follows: You receive $500 for meeting the sales revenue goal. Was this clearly communicated in the scenario?

- Yes
- No

Q9. If you do not meet your sales revenue goal, you will not receive a monthly bonus from the company. Was this clearly communicated in the scenario?

- Yes
- No

Q10. Does it cost you money to use effort hours?

- Yes
- No

Q11. How is your monthly pay calculated?

- ❍ $600 salary + $500 bonus (if earned)
- ❍ $600 salary + $500 bonus (if earned) - cost of effort
- ❍ $500 bonus (if earned) - cost of effort
- ❍ None of the above

Q12. What was your sales revenue goal?

- ❍ $50,000
- ❍ $110,000
- ❍ $190,000

Q13. What is the likelihood that you can achieve the sales revenue goal set by your supervisor?

_____ 0 = Very Unlikely to 100 = Very Likely

Q14. How difficult is your sales revenue goal?

- ❍ Very Easy
- ❍ Somewhat Easy
- ❍ Difficult
- ❍ Very Difficult
- ❍ Impossible

Q15. How often does your supervisor review your customer contact decisions?

- ❍ Once a year
- ❍ Daily
- ❍ Never

Q16. What is the likelihood that your supervisor will frequently monitor your customer contact decisions?

_____ 0 = Very Unlikely to 100 = Very Likely

Q17. How many new customers does your company want you to contact?

- ❍ None
- ❍ At least one but no more than 4
- ❍ At least one but no more than 6
- ❍ There was no stated preference

Q18. How risky is it to contact a new customer?

_____ 0 = Not risky at all to 100 = Very risky

Q19. How risky is it to contact an existing customer?

_____ 0 = Not risky at all to 100 = Very risky

Q20. Was Atlantis Manufacturing Supply Company's mission statement to be the best in the eyes of their customers, employees, and shareholders?

- ❍ Yes
- ❍ No

Remember you have 100 hours available to contact customers. For each existing customer you choose to contact, you will use 2 hours and receive a guaranteed sale of $2,500. For each new customer you choose to contact, you will use 10 hours. Past sales information shows that sales to new customers typically range from $0 to $75,000 with an average sale of $18,000. However, each new customer has an unknown payout and you are not guaranteed to make a sale. You will also incur a cost for using effort.

Q21. How many existing customers do you need to contact to reach your goal? (You only have enough hours to contact 50 existing customers.) _____

Q22. How many new customers do you need to contact to reach your goal assuming you got the average payout of $18,000 for each customer (Remember the average payout is not guaranteed, 70% of new customers will receive a payout less than $18,000)? You only have enough hours to contact 10 new customers. _____

Q23. Please come up with a username that is at least six characters long and enter it below. Write down this username on a sheet of paper because you will need to use it again in Part 3 of the survey. The username entered here MUST match the username entered in Part 3 exactly in order for you to be eligible to receive bonus points and tickets.

Username: _____

You will now have an opportunity to practice your customer contact decisions. This practice will allow you to see how your customer contact decisions will influence total sales revenue and your compensation for the month before you make your final decision. Click the "next page" button below to continue to your practice sessions.

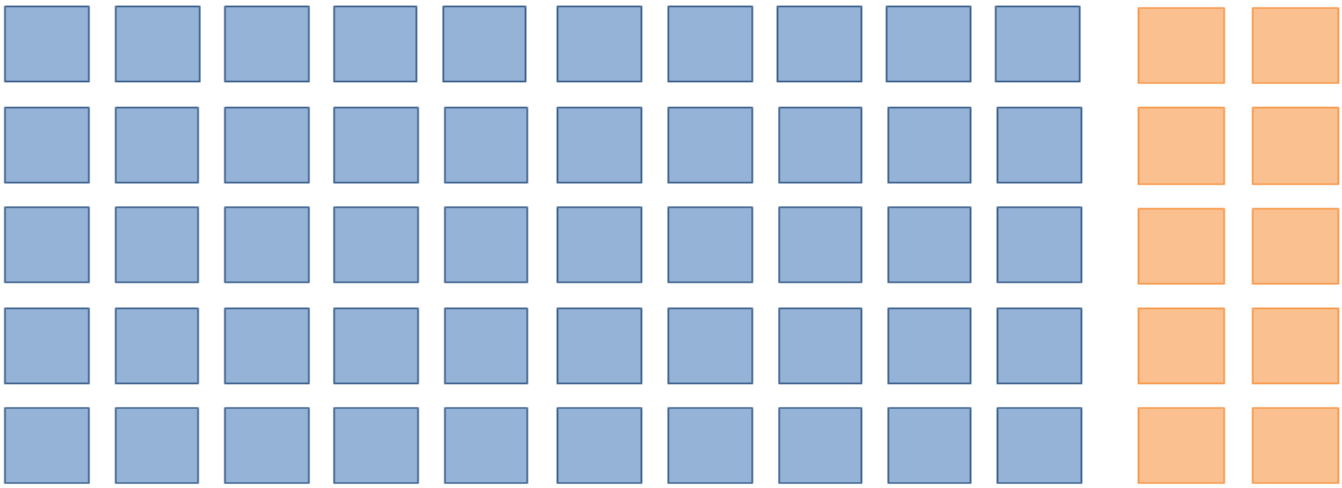
Practice Session – Part 2

Difficult/Continuous – Part 3

Q1. Please enter the username you came up with before the practice session. This username MUST match exactly in order for you to be eligible to receive your bonus points and your tickets.

_____

It is now time for you to make your final decision about the number of new and existing customers you wish to contact. The boxes below represent potential customers (one box = one customer). The blue boxes represent existing customers and the orange boxes represent new customers. Please select how many new and existing customers you wish to contact. You have 100 hours available to contact customers. For each existing customer you choose to contact, you will use 2 hours and receive a guaranteed sale of $2,500. For each new customer you choose to contact, you will use 10 hours. Past sales information shows that sales to new customers typically range from $0 to $75,000 with an average sale of $18,000. However, each new customer has an unknown payout and you are not guaranteed to make a sale. You will also incur a cost for using effort.



Q2. Please fill out the information referring to the question above:

Hours available to use: 100

Hours used contacting existing customers (1 existing customer = 2 hours): _____

Hours used contacting new customers (1 new customer = 10 hours): _____

Total Hours Used: _____

Cost incurred for using these effort hours (refer to table provided to you): _____

Q3. Please indicate how much you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
I put forth a lot of effort to contact customers.	❍	❍	❍	❍	❍	❍	❍
I expended a large amount of effort to reach my sales revenue goal.	❍	❍	❍	❍	❍	❍	❍
I made a lot of sales calls.	❍	❍	❍	❍	❍	❍	❍

Q4. Please indicate how much you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
The approach I used to try to reach my sales revenue goal was high risk.	❍	❍	❍	❍	❍	❍	❍
I took risk in my choice of customers to contact.	❍	❍	❍	❍	❍	❍	❍
My decision about which customers to call was risky.	❍	❍	❍	❍	❍	❍	❍

Please do not look back to the previous pages when answering the questions below.

Q6. How many dollars do you receive for your monthly salary? _____

Q7. How many dollars do you receive for meeting the sales revenue goal? _____

Q8. Your monthly bonus is calculated as follows: You receive $500 for meeting the sales revenue goal. Was this clearly communicated in the scenario?

❍ Yes

❍ No

Q9. If you do not meet your sales revenue goal, you will not receive a monthly bonus from the company. Was this clearly communicated in the scenario?
- ❍ Yes
- ❍ No

Q10. Does it cost you money to use effort hours?
- ❍ Yes
- ❍ No

Q11. How is your monthly pay calculated?
- ❍ $600 salary + $500 bonus (if earned)
- ❍ $600 salary + $500 bonus (if earned) - cost of effort
- ❍ $500 bonus (if earned) - cost of effort
- ❍ None of the above

Q12. What was your sales revenue goal?
- ❍ $50,000
- ❍ $110,000
- ❍ $190,000

Q13. What is the likelihood that you can achieve the sales revenue goal set by your supervisor?
_____ 0 = Very Unlikely to 100 = Very Likely

Q14. How difficult is your sales revenue goal?
- ❍ Very Easy
- ❍ Somewhat Easy
- ❍ Difficult
- ❍ Very Difficult
- ❍ Impossible

Q15. How often does your supervisor review your customer contact decisions?
- ❍ Once a year
- ❍ Daily
- ❍ Never

Q16. What is the likelihood that your supervisor will frequently monitor your customer contact decisions?
_____ 0 = Very Unlikely to 100 = Very Likely

Q17. How many <u>new</u> customers does your company want you to contact?
- ❍ None
- ❍ At least one
- ❍ At least one but no more than 4
- ❍ At least one but no more than 5
- ❍ None of the above

Q18. How risky is it to contact a <u>new</u> customer?
_____ 0 = Not risky at all to 100 = Very risky

Q19. How risky is it to contact an existing customer?
_____ 0 = Not risky at all to 100 = Very risky

Q20. Was Atlantis Manufacturing Supply Company's mission statement to be the best in the eyes of their customers, employees, and shareholders?
❍ Yes
❍ No

Q21. As I was making my customer contact decisions... (please indicate the extent to which you agree or disagree with the following statements)

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
The thought of getting fired really scared me.	❍	❍	❍	❍	❍	❍	❍
I was worried about the possibility of being fired.	❍	❍	❍	❍	❍	❍	❍
I felt that working hard would keep me from getting fired.	❍	❍	❍	❍	❍	❍	❍
I felt that I would not know how to tell people if I got fired.	❍	❍	❍	❍	❍	❍	❍
I felt that if I did good work, my job would be safe.	❍	❍	❍	❍	❍	❍	❍
I was so worried that I would do almost anything to keep my job.	❍	❍	❍	❍	❍	❍	❍
I was worried about the disgrace of being fired.	❍	❍	❍	❍	❍	❍	❍
I was afraid of being punished (but not fired) if I did not work hard.	❍	❍	❍	❍	❍	❍	❍
I was afraid of being fired if I did not work hard.	❍	❍	❍	❍	❍	❍	❍
I was worried that if I did not do a good job I would be punished (but not fired)	❍	❍	❍	❍	❍	❍	❍
I was worried that if I did not do a good job I would be fired	❍	❍	❍	❍	❍	❍	❍
I was worried about the possibility of being punished.	❍	❍	❍	❍	❍	❍	❍
I felt that my job would be safe if I worked hard.	❍	❍	❍	❍	❍	❍	❍

Q22. Please indicate the degree to which you agree or disagree with the following statements, based on the scenario you just completed.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
In this sales manager position, I am held very accountable for my customer contact decisions.	❍	❍	❍	❍	❍	❍	❍
In this sales manager position, I often have to explain why I make certain contact decisions.	❍	❍	❍	❍	❍	❍	❍
In this sales manager position, my supervisor holds me accountable for all of my decisions.	❍	❍	❍	❍	❍	❍	❍
In this sales manager position, if things at work do not go the way the company expects, I will hear about it from my supervisor.	❍	❍	❍	❍	❍	❍	❍
In this sales manager position, my efforts to contact customers are very important.	❍	❍	❍	❍	❍	❍	❍
In this sales manager position, my efforts at contacting customers are closely scruntized.	❍	❍	❍	❍	❍	❍	❍

Q23. Please indicate the degree to which you agree or disagree with the following statements, based on the scenario you just completed.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
In this sales manager position, I feel I may have to justify my decisions to others.	❍	❍	❍	❍	❍	❍	❍
In this sales manager position, I am prepared to justify my decisions.	❍	❍	❍	❍	❍	❍	❍
In this sales manager position, I understand that I may need to justify my decisions to others.	❍	❍	❍	❍	❍	❍	❍

In this sales manager position, it is likely that I will be asked to justify my decisions to my superiors.	❍	❍	❍	❍	❍	❍	❍

Q24. Referring to the goal you were assigned, please indicate the degree to which you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
It's hard to take this goal seriously.	❍	❍	❍	❍	❍	❍	❍
Quite frankly, I don't care if I achieve this goal or not.	❍	❍	❍	❍	❍	❍	❍
I am strongly committed to pursuing this goal.	❍	❍	❍	❍	❍	❍	❍
It wouldn't take much to make me abandon this goal.	❍	❍	❍	❍	❍	❍	❍
I think this is a good goal to shoot for.	❍	❍	❍	❍	❍	❍	❍

Q25. Please indicate the degree to which you agree or disagree with the following statements, based on the scenario you just completed.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
Regardless of personal benefit, I am willing to contact new customers for the betterment of my company.	❍	❍	❍	❍	❍	❍	❍
I am willing to sacrifice my bonus pay in order to expand my company's sales base.	❍	❍	❍	❍	❍	❍	❍
Even though it may have hurt my bonus, I felt it was important to contact new customers for the company's well-being.	❍	❍	❍	❍	❍	❍	❍

Q26. Please respond to the statements below based on the scenario you just completed.

I feel confident in my ability to… (0 = not confident at all to 100 = very confident)

_____ ….talk to existing customers on the phone that I already know

_____ ….talk to new customers on the phone that I do not know

_____ ….make decisions that positively affect my ability to complete sales

_____ ….build and keep rapport with customers

_____ ….get customers to commit to buy Atlantis Manufacturing Supply Company's products

_____ ….listen to the needs of existing and new customers

Q27. Please respond to the statements below based on the scenario you just completed.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
In the case described here, corporate superiors called me in to discuss sales revenue deviations in face-to-face meetings.	❍	❍	❍	❍	❍	❍	❍
In this case, sales revenue goal matters were discussed regularly with my corporate superiors even if there were no negative sales revenue goal deviations to report.	❍	❍	❍	❍	❍	❍	❍
In this case described here, I consulted with my corporate superior on how to achieve my sales revenue goal.	❍	❍	❍	❍	❍	❍	❍
In this case, I frequently communicated with the corporate parent for sales revenue-related issues.	❍	❍	❍	❍	❍	❍	❍

Q28. Please indicate the degree to which you agree or disagree with the following statements about yourself in you every day life.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Agree	Strongly Agree
1. If I play a game (e.g. cards) I prefer to play for money.	❍	❍	❍	❍	❍	❍	❍
2. I enjoy risk taking.	❍	❍	❍	❍	❍	❍	❍
3. I often take risks just for fun.	❍	❍	❍	❍	❍	❍	❍
4. I take risk only if it is absolutely necessary to achieve an important goal.	❍	❍	❍	❍	❍	❍	❍
5. I am attracted by different dangerous activities.	❍	❍	❍	❍	❍	❍	❍
6. While taking risks, I have a feeling of a very pleasant flutter.	❍	❍	❍	❍	❍	❍	❍
7. I avoid activities whose results depend too much on chance.	❍	❍	❍	❍	❍	❍	❍
8. Gambling seems something very exciting to me.	❍	❍	❍	❍	❍	❍	❍
9. In business, one should take risk only if the situation can be controlled.	❍	❍	❍	❍	❍	❍	❍
10. I make risky decisions quickly without an unnecessary waste of time.	❍	❍	❍	❍	❍	❍	❍
11. At work, I would prefer a position with a high salary which could be lost easily to a stable position with a lower salary.	❍	❍	❍	❍	❍	❍	❍
12. To achieve something in life, one has to take risks.	❍	❍	❍	❍	❍	❍	❍
13. If there is a big chance of profit, I take even very high risks.	❍	❍	❍	❍	❍	❍	❍
14. To gain high profits in	❍	❍	❍	❍	❍	❍	❍

business, one has to take high risks.							
15. If there was a big chance to multiply the capital, I would invest my money even in the shares of a completely new and uncertain firm.	❍	❍	❍	❍	❍	❍	❍
16. I willingly take responsibility in my workplace.	❍	❍	❍	❍	❍	❍	❍
17. The skill of reasonable risk taking is one of the most important managerial skills.	❍	❍	❍	❍	❍	❍	❍

Q29. How important did you think it was to use most of your effort hours regardless of how many it took to reach your goal?
_____ 0 = Not important at all to 100 = Very important

Q30. Referring to the previous question, why did you feel that it was important (or not important) to use most of your effort hours regardless of how many it took to reach your goal? (Open-ended)

Q31. Which of the following was more important to you?
❍ Reaching your revenue goal
❍ Spending a reasonable amount of time contacting new and existing customers

Q32. Please explain how you chose the amount of effort you wanted to use. (Open-ended)

Q33. Did the cost of using effort hours influence your decision about the amount of effort you wanted to use? Please explain. (Open-ended)

Q34. If you contacted a <u>new</u> customer(s), please explain why you decided to contact them? (Open-ended)

Q35. Please explain how you chose the number of <u>new</u> customers to contact. (Open-ended)

Q36. If you contacted an <u>existing</u> customer(s), please explain why you decided to contact them? (Open-ended)

Q37. Please explain how you chose the number of <u>existing</u> customers to contact. (Open-ended)

Q38. What is your gender?
❍ Male
❍ Female

Q39. What is your age? _____

Q40. How many years of total work experience do you have? _____

Q41. How many years of professional work experience do you have? _____

Q42. To what extent are you the major breadwinner in your home?
_____ 0 = I am not the major breadwinner to 100 = I am the major breadwinner

Q43. What course did you take this survey for? _____

Q44. What is your name? (This will used to enter your tickets in the drawing and provide you with extra credit in your class.) _____

Q45. What is your major? _____

APPENDIX B

COST OF USING EFFORT TABLE

Cost of Using Effort Hours		
Number of Effort Hours Used	Cost to use these 2 hours	Total Cost of Using Effort Hours
2	$1	$1
4	$1	$2
6	$1	$3
8	$1	$4
10	$1	$5
12	$1	$6
14	$1	$7
16	$1	$8
18	$1	$9
20	$1	$10
22	$5	$15
24	$5	$20
26	$5	$25
28	$5	$30
30	$5	$35
32	$5	$40
34	$5	$45
36	$5	$50
38	$5	$55
40	$5	$60
42	$5	$65
44	$10	$75
46	$10	$85
48	$10	$95
50	$10	$105
52	$10	$115
54	$10	$125
56	$10	$135

58	$10	$145
60	$10	$155
62	$10	$165
64	$15	$180
66	$15	$195
68	$15	$210
70	$15	$225
72	$15	$240
74	$15	$255
76	$15	$270
78	$15	$285
80	$15	$300
82	$20	$320
84	$20	$340
86	$20	$360
88	$20	$380
90	$20	$400
92	$25	$425
94	$25	$450
96	$25	$475
98	$25	$500
100	$25	$525

APPENDIX C

SAMPLE PRACTICE SESSION: EASY GOAL DIFFICULTY CONDITION

PRACTICE SESSIONS:	
FILL IN THE GREEN BOXES BELOW	
Number of *existing* customers you plan to contact (takes 2 hours each):	0
Number of *new* customers you plan to contact (takes 10 hours each):	0
Remember: The pay for new customers is not guaranteed. It ranges from $0 to $75,000.	

RESULTS	
Total Hours Used (# of Existing*2 + # of New*10)	0
Sales Revenue Earned for Company	$0
Bonus Received ($500 if sales revenue ≥ $50,000, $0 if sales revenue < $50,000)	$0
Cost of Effort (refer to cost of effort table)	#N/A
Your Monthly Pay ($600 salary + Bonus - Cost of Effort)	#N/A

Instructions: (READ THIS FIRST) - same as instructions in "Instructions" tab

This practice is designed to help you get an idea of how your customer contact decisions may influence the sales revenue you earn for your company and your monthly pay.

I recommend that you practice your customer contact decisions several times using this practice worksheet. Practicing a lot will allow you to fully understand the consequences of your decisions.

As you practice, you may notice that the same choices often render different results. This occurs because sales to new customers vary.

Try this example to see how this works: Input 20 in the existing customer box and 2 in the new customer box. Take a look at your results. Now, retype 2 in the new customer box. Do your results change?

After you try the example above, you can then enter your own customer contact decisions in the boxes to see the possible results. As you practice, remember that sales to existing customers are guaranteed at $2,500 per existing customer, but sales to new customers are not guaranteed and the sales revenue you receive from them will vary. **Practice several times** to fully understand how your decisions will influence the sales revenue you earn for your company and your monthly pay.

Once you are done practicing, open the link below to make your final decision. You must open this link and make your final decision to earn tickets for the drawing (right click link and press "Open Hyperlink").

http://untbusiness.qualtrics.com/SE/?SID=SV_eVbgK3KR8aVTpU9

APPENDIX D

PERCEIVED ACCOUNTABILITY SCALE

Adapted from Hochwarter et al. (2005)

1. I am held very accountable for my customer contact decisions.
2. I often have to explain why I make certain contact decisions.
3. My supervisor holds me accountable for all of my decisions.
4. If things at work do not go the way the company expects, I will hear about it from my supervisor.
5. My efforts to contact customers are very important.
6. My efforts at contacting customers are closely scrutinized.

APPENDIX E

PERCEIVED NEED TO JUSTIFY DECISIONS SCALE

Adapted from Mero et al. (2006) and Hunton et al. (2010)

1. I feel I may have to justify my decisions to others.
2. I am prepared to justify my decisions.
3. I understand that I may need to justify my decisions to others.
4. It is likely that I will be asked to justify my decisions to my superiors.

APPENDIX F

RISK PREFERENCE SCALE

Adapted from Zaleskiewicz (2001)

Stimulating Risk Taking Preference

1. If I play a game (e.g. cards) I prefer to play for money.
2. I enjoy risk taking.
3. I often take risks just for fun.
4. I take risk only if it is absolutely necessary to achieve an important goal. (R)
5. I am attracted by different dangerous activities.
6. While taking risks, I have a feeling of a very pleasant flutter.
7. I avoid activities whose results depend too much on chance. (R)
8. Gambling seems something very exciting to me.
9. In business, one should take risk only if the situation can be controlled. (R)
10. I make risky decisions quickly without an unnecessary waste of time.

Instrumental Risk Taking Preference

1. At work, I would prefer a position with a high salary which could be lost easily to a stable position with a lower salary.
2. To achieve something in life, one has to take risks.
3. If there is a big chance of profit, I take even very high risks.
4. To gain high profits in business, one has to take high risks.
5. If there was a big chance to multiply the capital, I would invest my money even in the shares of a completely new and uncertain firm.
6. I willingly take responsibility in my workplace.
7. The skill of reasonable risk taking is one of the most important managerial skills.

APPENDIX G

GOAL COMMITMENT SCALE

Adapted from Klein et al. (2001)

1. It's hard to take this goal seriously. (R)
2. Quite frankly, I don't care if I achieve this goal or not. (R)
3. I am strongly committed to pursuing this goal.
4. It wouldn't take much to make me abandon this goal. (R)
5. I think this is a good goal to shoot for.

APPENDIX H

SELF-EFFICACY SCALE

Adapted from Bandura (2006)

1. I feel confident in my ability to talk to existing customers on the phone that I already know.
2. I feel confident in my ability to talk to new customers on the phone that I do not know.
3. I feel confident in my ability to make decisions that positively affect my ability to complete sales.
4. I feel confident in my ability to build and keep rapport with customers.
5. I feel confident in my ability to get customers to commit to buy Atlantis Manufacturing Supply Company's products.
6. I feel confident in my ability to listen to the needs of existing and new customers.

APPENDIX I

BENEVOLENCE SCALE

1. Regardless of personal benefit, I am willing to contact new customers for the betterment of my company.
2. I am willing to sacrifice my bonus pay in order to expand my company's sales base.
3. Even though it may have hurt my bonus, I felt it was important to contact new customers for the company's well-being.

APPENDIX J

JOB INSECURITY SCALE

Adapted from Johnson et al. (1984)

1. The thought of getting fired really scared me.
2. I was worried about the possibility of being fired.
3. I felt that working hard would keep me from getting fired.
4. I felt that I would not know how to tell people if I got fired.
5. I felt that if I did good work, my job would be safe.
6. I was so worried that I would do almost anything to keep my job.
7. I was worried about the disgrace of being fired.
8. I was afraid of being punished (but not fired) if I did not work hard.
9. I was afraid of being fired if I did not work hard.
10. I was worried that if I did not do a good job I would be punished (but not fired).
11. I was worried that if I did not do a good job I would be fired.
12. I was worried about the possibility of being punished.
13. I felt that my job would be safe if I worked hard.

APPENDIX K

PERCEIVED INTERACTIVE CONTROL SYSTEM SCALE

Adapted from Van der Stede (2001)

1. Corporate superiors called me in to discuss sales revenue deviations in face-to-face meetings.
2. Sales revenue goal matters were discussed regularly with my corporate superiors even if there were no negative sales revenue goal deviations to report.
3. I consulted with my corporate superior on how to achieve my sales revenue goal.
4. I frequently communicated with the corporate parent for sales revenue-related issues.

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