

**ADVANCES IN MANAGEMENT
ACCOUNTING**

ADVANCES IN MANAGEMENT ACCOUNTING

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ADVANCES IN MANAGEMENT
ACCOUNTING VOLUME 34

ADVANCES IN MANAGEMENT ACCOUNTING

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STATEMENT OF PURPOSE

Advances in Management Accounting (AIMA) is a publication of quality, theoretical, and applied research in management accounting. The journal's purpose is to publish thought-provoking articles that advance knowledge in the management accounting discipline and are of interest to both academics and practitioners. The journal seeks thoughtful, well-developed articles on a variety of current topics in management accounting, broadly defined. All research methods including survey research, field tests, case studies, experiments, meta-analyses, and modeling are welcome. Some speculative articles, research notes, critiques, and survey pieces will be included where appropriate.

Articles may range from purely empirical to purely theoretical, from practice-based applications to speculation on the development of new techniques and frameworks. Empirical articles must present sound research designs and well-explained execution. Theoretical articles must present reasonable assumptions and logical development of ideas. All articles should include well-defined problems, concise presentations, and succinct conclusions that follow logically from the data.

REVIEW PROCEDURES

AIMA intends to provide authors with timely reviews clearly indicating the acceptance status of their manuscripts. The results of initial reviews normally will be reported to authors within eight weeks from the date the manuscript is received. The author will be expected to work with the Editor and Associate Editors, who will act as a liaison between the author and the reviewers to resolve areas of concern. To ensure publication, it is the author's responsibility to make necessary revisions in a timely and satisfactory manner.

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MANUSCRIPT FORM GUIDELINES

Manuscripts should include a cover page that indicates the author's name and affiliation.

Manuscripts should include a separate lead page with an abstract (not to exceed 250 words) and seven keywords.

The author's name and affiliation should not appear on the abstract.

Tables, figures, and exhibits should appear on a separate page. Each should be numbered and have a title.

To be assured of anonymous reviews, authors should not identify themselves directly or indirectly.

Manuscripts currently under review by other publications should not be submitted.

Authors should email the manuscript in two WORD files to the editor. The first attachment should include the cover page and the second should exclude the cover page.

Inquiries concerning *Advances in Management Accounting* should be directed to: Chris Akroyd at Advances.In.MA@Gmail.com

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INTRODUCTION

This volume of *Advances in Management Accounting (AIMA)* presents a diversity of management accounting topics, methods and author affiliations, which form the basic tenets of *AIMA*. Included are papers on performance measurement, management control, incentive compensation and budgeting, which are focused on areas of particular interest to management accountants in practice such as the effects that narcissism, psychological pressure, honesty, fairness, service quality and corporate social responsibility have on performance and the roles of management accountants. The articles in this volume employ a variety of methods from experiments to surveys and a diversity in authorship with affiliations from Australia, China, Germany, New Zealand, Singapore, South Africa, the United Kingdom and the United States.

This volume begins with an article by Dworkis and Young which examines bonus-based incentive plans and managerial decision-making. The authors draw on research from neuroscience and use an experiment to examine decision choices under high and low incentive thresholds to see how adaptive and maladaptive narcissism affects managers' decisions. Their results show that the bonus threshold in an incentive plan, the degree of narcissism and the relative level of adaptive and maladaptive components of narcissism have a significant interactive effect on decision quality. These results indicate that how personality characteristics affect various bonus thresholds influence decision-making performance and highlights how bonus thresholds and narcissism can have a significant interactive effect on decision-making quality.

Reichert and Sohn seek to understand how competition for monetary rewards influences cooperation. They use an experimental setting to simulate a context which is common in many job situations in practice, where an employee performs various tasks with one task being measured and rewarded with other tasks being difficult to measure and reward objectively. The authors draw on research from sports economics and psychology to propose that competition leads to a negative emotional response experienced as "psychological pressure" by the individuals competing. Their findings show that the effect of competition on cooperation results from psychological pressure which is an emotional response to competition. Thus, they suggest that incentive system design choices should take into consideration things like corporate well-being programs, which could play a critical role in reducing the psychological pressure employees experience, thus increasing both competition and cooperation which leads to higher levels of performance.

Teklay, Dow, Askarany, Wong and Shen investigate the relationship between transportation quality, customer satisfaction and profitability. Their study uses longitudinal data from the US airline industry to understand the simultaneous and asynchronous effect of quality of transportation services on customer

satisfaction and financial performance. They also seek to better understand the relationship between customer satisfaction and financial performance which has been an area with mixed research findings. They found that low service quality in transportation has adverse effects on customer satisfaction and financial performance, but the impact of customer satisfaction on financial performance mixed with customer satisfaction was found to have a significant effect on financial performance for full-service airlines, but not for low-cost airlines.

Baird, Tung and Moses sought to understand the relationship between interactive and diagnostic uses of management controls and the disparity in employees' perception of their organization's emphasis on corporate social responsibility disclosures relative to their actions which is known as the "disclosure-action portrayal gap." They also measure the subsequent impact on employees' perceptions of operational performance and corporate social performance. The authors use data from a survey of lower-level US managers which they analyze using structural equation modeling. They show the use of management controls both interactively and diagnostically reduces the disclosure-action portrayal gap. In addition, they found that a lower disclosure-action portrayal gap is associated with higher operational and corporate social performance. These findings provide some practical insights on the use of management controls to help mitigate the disclosure-action portrayal gap which can positively influence organizational performance.

Enslin, Hall and du Toit then examine the emerging roles of management accountants as hybrid accountants and business partners to help business make decision. This is a topical area as it has been argued that the role of management accountants has been undergoing a change in emphasis from information provider to business partner. They carried out a survey of members of the IMA (USA) and CIMA (UK) which asked about their involvement with business decision-making. Using role theory as their frame, the authors found that management accountants employed in smaller firms, and middle-aged professionals were more likely to be involved in making business decision, but a large proportion of management accountants still play traditional information provider roles. This has implications for both professional bodies and educators as they need to train management accounts to carry out both information provider and decision-maker roles.

This volume concludes with three papers examining budgeting practices which play a major role in many organizations. The first of these articles by Su and Baird uses a survey of Australian middle and lower-level managers to examine the mediating role of employee reactions to the extent to which top management places emphasis on subordinates' attainment of budget targets. Given the mixed findings in this area of research their paper provides new insights with their findings indicating that the reaction of employees to budgets fully mediates the association between budget difficulty with both budget value and job stress. They also show that employees reaction to budgets did not mediate the association between the emphasis on budgets with budget value and job stress. Rather, the emphasis on budgets was significantly negatively associated with job stress, implying that

a greater emphasis on budgets is desirable in alleviating job stress. These insights contribute to our understanding of how employees react to budgets, with their perception of the fairness of their performance appraisal being influenced by budget difficulty, which in turn influences budget value and job stress.

Li and Drake then use a budgeting experiment to provide evidence on the effect that peer influence has on managerial honesty using ideas from self-concept maintenance theory and vicarious loss avoidance theory. They show that the level of earnings affects managers' preferences for honesty which enables firms to effectively allocate resources to monitor activities. The practical finding is that firms that are financially strong should increase investment on monitoring as managers are likely to be less honest. Though employees' preferences for honesty can be influenced by many factors such as job tenure, loyalty, and cultural norms, the results of their study suggest that during good economic times employees are less likely to be honest and that employee ethical behaviors are more likely to be influenced by peers.

In a similar vein Cheng, Lim and Yuen use an experimental research design to investigate the effect that honesty reminders have on budgetary slack. Based on self-concept maintenance theory, they argue that honesty reminders can reduce budgetary slack by making people more aware of their own standards of honesty, resulting in more honest behavior. They find evidence that both honesty reminders and penalties reduce budgetary slack, but that penalties can cause adverse side effects such as distrust and resentment between managers and subordinates. Therefore, the authors conclude that organizations should use honesty reminders as they are a less costly method than penalties for reducing budgetary slack.

The eight articles in Volume 34 represent relevant, theoretically sound and practical studies that extend our knowledge within the management accounting discipline. These articles manifest the journal's commitment to providing a high level of contribution to management accounting research and practice.

Chris Akroyd
Editor

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ADAPTIVE NARCISSISM, MALADAPTIVE NARCISSISM, AND THE EFFECTIVENESS OF MANAGERIAL INCENTIVES

Kelsey Kay Dworkis and S. Mark Young

ABSTRACT

This study examines the effects of narcissism and bonus-based incentive plans on managerial decision-making performance. Using an experiment, the authors first examine decision choices under two levels of an incentive threshold (high and low). Narcissism is measured using the Narcissistic Personality Inventory (NPI). Typically, the NPI is used as a single monolithic construct in analyses; however, in this study, the authors subdivide it in two ways to gain more nuanced information about its impact on decision making. First, the authors split the NPI into three levels – high, medium, and low (Hascalovitz & Obhi, 2015), and then decompose it into its adaptive and maladaptive components (Campbell, Hoffman, Campbell, & Marchisio, 2011) to examine how these subdivisions affect performance. Results show that the different levels of incentive thresholds affect performance among narcissistic individuals. Results indicate that individuals higher in narcissism and higher in levels of adaptive and maladaptive narcissism outperform their low-trait counterparts in a lower-threshold environment, but not in a high threshold environment.

Keywords: Manager characteristics; adaptive narcissism; maladaptive narcissism; bonus thresholds; incentive systems; experiment; performance

INTRODUCTION

Recent studies in accounting have investigated the effects of narcissistic personality characteristics on managerial decisions; however, there is no consistent evidence regarding whether employing individuals with narcissistic personality characteristics is desirable from a control and decision-making perspective (Young, Du, Dworkis, & Olsen, 2015). For example, narcissistic behavior can lead to negative outcomes such as real earnings management (Olsen, Dworkis, & Young, 2013), misreporting behavior (Majors, 2015), and lower reporting quality by the chief financial officer (Ham, Lang, Seybert, & Wang, 2017).¹ Some studies indicate that when narcissists occupy leadership positions, they are often praised for their passion, vision, and innovative abilities (Braun, 2017; Campbell, Hoffman, Campbell, & Marchisio, 2011; Kets de Vries & Miller, 1984).

Subclinical studies² of the effects of narcissistic characteristics have been conducted using two approaches. The first is to employ unobtrusive methods such as analyzing the size of a chief executive officer's photo in an annual report (Chatterjee & Hambrick, 2007) or the size of an individual's signature (Ham et al., 2017). These studies assume that as signature or photo size increases, narcissism increases. The second, more frequently used approach to measure narcissism is to use a psychological instrument known as the Narcissistic Personality Inventory (NPI). Most studies have used the average score on the NPI in their analyses yet decomposing the NPI by the degree of narcissism may provide deeper insight into the effects of narcissism on behavior (Hascalovitz & Obhi, 2015). Further, Campbell et al. (2011) have decomposed the NPI into two types of narcissism, which they define as adaptive and maladaptive narcissism. Adaptive narcissism consists of traits that are considered the healthier components of narcissism, such as authority and self-sufficiency (Kernberg, 1975; Watson & Biderman, 1993). Maladaptive narcissism has been shown to be associated with the less healthy forms of narcissism, including aggressiveness, entitlement, and exploitativeness (Bushman & Baumeister, 1998; Cai & Luo, 2018). To date, the adaptive and maladaptive subconstructs of narcissism have not been studied in management accounting research.

In this paper, we propose that the effects of bonus-based incentive plans on managerial decision-making, specifically investment decision quality, will be affected by an individual's degree of narcissism and the relative level of adaptive and maladaptive traits. Research indicates that narcissists are more highly (weakly) motivated and increase their effort when faced with positive (negative) outcomes than their non-narcissistic counterparts (Foster & Brennan, 2011). Extrapolating these findings to managerial decisions involving bonus-based incentive systems could result in unintended consequences. Specifically, bonus plans differ regarding their thresholds or explicit performance goals above which a manager is rewarded. Plans that include bonus thresholds set at lower levels provide positive feedback across a wider range of possible outcomes and, thus, may be more effective at promoting good performance for those with higher levels of narcissism compared to those with lower levels of narcissism. On the other hand, plans that include bonus thresholds set at higher levels provide negative feedback across

a wider range of possible outcomes; such plans may be more effective for less narcissistic people compared to those who are more narcissistic. Specifically, we propose that the effects of a bonus-based incentive plan on investment decision-making will depend on the degree of overall narcissistic characteristics as well as the level of adaptive and/or maladaptive narcissistic characteristics present in the decision-maker.

Results show that the bonus threshold in an incentive plan, the degree of narcissism, and the relative level of adaptive and maladaptive components of narcissism have a significant interactive effect on investment decision quality. Overall, our findings indicate a systematic difference in the response of managers to bonus-based incentive systems based on the level of narcissism as well as the relative level of adaptive and maladaptive traits present. We find that the performance of individuals lower in narcissism may be more sensitive to differences in bonus thresholds than individuals higher in narcissism. Further, individuals with a lower level of adaptive traits exhibit more sensitivity to bonus thresholds than those with higher levels of adaptive traits. Additionally, individuals with higher narcissism levels and those with a higher relative level of maladaptive traits outperform those lower in narcissism with less maladaptive traits when bonus thresholds are low. These results indicate that personality characteristics affect how various bonus thresholds influence decision-making performance.

The remainder of the paper is organized as follows. The next section discusses the motivation of the study and develops the hypotheses, while the following section describes the experimental procedures, design, task, and measurement instruments. The final two sections present the results and conclusions, respectively.

HYPOTHESIS DEVELOPMENT

Bonus Incentive Thresholds and Decision-making

To increase the probability of high-quality investment decisions, firms often use monetary incentives to motivate behavior. While monetary incentives take several forms, one of the most commonly used is a *bonus threshold* or *quota scheme*. Bonus thresholds incorporate an explicit and assigned goal, which create a larger incentive for a manager when met. Despite differences in assigned thresholds across incentive plans, these schemes consistently show positive effects on performance on accounting tasks (Bonner, Hastie, Sprinkle, & Young, 2000).

Degree of Narcissism and Decision-making

The personal characteristics of managers are an increasingly researched topic. Studies on manager fixed-effects, for example, reveal that attributes like age and military service can have significant effects on accounting decisions and outcomes (Bamber, Jiang, & Yang, 2010; Bertrand & Schoar, 2003; Davis, Ge, Matsumoto, & Zhang, 2015; Dittmar & Duchin, 2015; Dikolli, Keusch, Mayew, & Steffen, 2020; Ge, Matsumoto, & Zhang, 2011; Roll, 1986). Recent research shows that one aspect of managers' personalities – their degree of narcissism – can affect

outcomes and behaviors, including riskier asset investments (Chatterjee & Hambrick, 2007), higher bid premiums, and less favorable shareholder reaction of M&A target firms (Atkas, De Bodt, Bollaert, & Roll, 2016), and higher earnings per share (EPS) and share price (Olsen et al., 2013). Because narcissism consists of a stable set of characteristics, it is an integral part of a manager's motivation.

These findings suggest that individuals with a higher degree of narcissism engage in systematically different behavior (Campbell, Brunel, & Finkel, 2006; Foster & Trimm, 2008). Studies indicate that narcissists exhibit a stronger level of motivation when there is a higher chance of a positive outcome, such as an increase in cash bonuses for good investment decisions. This occurs because narcissists are always seeking ways for self-enhancement (Roberts et al., 2019). In distinction, research shows that narcissists evince a weaker level of motivation when there is a higher chance of negative outcomes such as the loss of potential bonuses from bad investment decisions. In short, narcissists are less sensitive to losses than to gains. Given the preferences of narcissists, studies have examined whether their motivation to move toward positive events affect how quickly they adjust their tactics to suit changing situational demands (Brunell & Buelow, 2017; Foster, Misra, & Reidy, 2009; Foster & Trimm, 2008; Jones, 2018; Kohut, 2011; Yang et al., 2018).

In most subclinical studies, narcissism is assessed using the NPI developed by Raskin and Terry (1988).³ As noted earlier, the vast majority of studies have treated the NPI as a monolithic construct. Critical to our hypotheses development is the supposition that more accurate information about the effects of narcissism (as measured by the NPI) may be obtained if the construct is decomposed in two ways. First, consistent with Hascalovitz and Obhi (2015), we divide NPI scores into low, medium, and high categories. In contrast to using the average score, subdividing the measure allows us to determine how the extreme levels of narcissism affect decisions.

As discussed earlier, narcissists show a stronger (weaker) response to positive (negative) outcomes than their non-narcissistic counterparts (Foster & Brennan, 2011). Extrapolating from these findings to monetary outcomes, firms that employ bonus-based incentive systems that use high thresholds for achieving bonuses could decrease narcissistic managers' decision-making effectiveness. Specifically, while bonus plans may differ regarding their thresholds (explicit performance goals above which a manager is rewarded), conventional wisdom suggests that *difficult but attainable* goals are the most motivating and can lead to better performance (Merchant & Manzoni, 1989; Sprinkle, Williamson, & Upton, 2008). These higher-threshold bonus plans provide negative feedback across a wider range of possible outcomes and are likely to be more effective for non-narcissists than narcissists. Conversely, plans that include bonus thresholds set at lower levels provide positive feedback along with a wider range of possible outcomes and, thus, are likely to be more effective at promoting good performance among narcissists compared to non-narcissists.

In this study, we examine the role that that two different incentive thresholds play in decision-making. The narrower range of successful investment prospects under a higher bonus threshold conflicts with a highly narcissistic manager's

motivation toward positive events and can impede his or her motivation and performance under this restricted condition. Given the increased perceived opportunity for success in the low bonus threshold condition, where the range of positive feedback is less restricted, individuals higher in narcissistic characteristics may increase motivation and performance.

Thus, the motivations of narcissistic managers, coupled with a threshold condition consisting of positive (negative) stimuli across a wider range of investment criteria, will create differential effects on the performance of managers with High (H), Medium (M), and Low (L) levels of narcissism.

Our first set of predictions are as follows:

H1(a). Managers with a high degree of narcissistic characteristics will outperform managers with a low or medium degree of narcissistic characteristics under a low bonus threshold condition (LTC).

H1(b). Managers with a low degree of narcissistic characteristics will outperform managers with a medium or high degree of narcissistic characteristics under a high bonus threshold condition (HTC).

Degree of Adaptive and Maladaptive Narcissism and Decision-making

Next, we examine the effect of adaptive and maladaptive narcissism on investment performance. Both adaptive and maladaptive narcissism have been linked to performance; however, it is unclear if one subtype alone dominates the performance relationship (Roberts, Woodman, & Sedikides, 2018). Recent research indicates that the effects of adaptive and maladaptive narcissism are not independent (Zhang, Roberts, Woodman, & Cooke, 2020). Adaptive narcissism is indicative of high levels of self-confidence and self-enhancement, which in turn is often associated with better performance under pressure (Emmons, 1987; Woodman & Hardy, 2001). On the other hand, being overly confident can be counter-productive as individuals over-estimate their potential and fail to dedicate adequate resources to achieve their goal (Beattie, Dempsey, Roberts, Woodman, & Cooke, 2017). Thus, adaptive narcissism by itself may not be adequate for superior performance (see Beattie et al., 2017).

Similarly, maladaptive narcissism is associated with a strong sense of personal control and willingness to dominate (Washburn, McMahan, King, Reinecke, & Silver, 2004). While willingness to dominate serves an important function in performance (Neuicka, Baas, & Ten Velden, 2016), maladaptive narcissism has also been linked to anxiety which could hinder performance in a higher pressure setting (Cai & Luo, 2018). Taking these findings into account, Zhang et al. (2020) propose that the effect of adaptive narcissism depends on the presence of maladaptive narcissism. Thus, for adaptive traits to influence performance, maladaptive traits must be present.

In this study, we are specifically interested in whether relatively higher levels of adaptive or maladaptive characteristics will dominate in either threshold condition. Given the motivation of narcissists for positive events, we believe *a priori*, that in the LTC, managers with higher adaptive and maladaptive traits

will outperform those with lower levels of adaptive and maladaptive traits. The LTC offers a wider range of potential positive stimuli, which presents a relatively higher perceived (but not actual) opportunity for self-enhancement. This appeals to both adaptive and maladaptive narcissistic personality types. On the contrary, the HTC presents a narrower range of positive stimuli and presents a relatively lower perceived (but not actual) opportunity for self-enhancement. A high threshold condition (HTC) may seem (although not in fact be) more challenging, and, thus, maladaptive narcissists who are more likely to burn out (von Kanel, Herr, Van Vianen, & Schmidt, 2017) may be more prone to give up sooner and therefore perform worse. Additionally, the higher threshold may induce a high-pressure situation which can induce anxiety in maladaptive narcissists (Cai & Luo, 2018). Therefore, we predict that in a HTC, maladaptive narcissists (those with a higher level of maladaptive traits) have no advantage over individuals lower in these traits (Von Kanel et al., 2017). High adaptive narcissists who have a low level of anxiety have an advantage in this condition given their high opinion of their abilities that can be detrimental to maladaptive narcissists. Consistent with our previous hypotheses, we propose that performance will depend on the interaction of level of narcissism and threshold condition and that, in particular, that both adaptive and maladaptive narcissism influence these differences based on the relative level of both adaptive and maladaptive narcissistic characteristics present. Our second and third hypotheses are as follows:

H2. Under a low bonus threshold condition (LTC), managers with higher relative adaptive and maladaptive traits will outperform managers with lower relative adaptive and maladaptive traits.

H3. Under a high bonus threshold condition (HTC), managers with higher relative adaptive traits will outperform managers with lower relative adaptive traits.

METHOD

Experimental Design

To test *H1(a)* and *H1(b)*, we use a 3×2 between-subjects design with two between-subjects factors, narcissism (high, medium, and low), and bonus threshold (high, low). We follow Hascavolitz and Obhi (2015), who employ three levels of narcissism (high, medium, and low). Next, we test *H2* and *H3* using continuous variables representing the relative levels of adaptive and maladaptive narcissistic personality traits as well as three levels of this continuous variable (high, medium, and low) and bonus threshold (high, low).

Participants

We recruited 156 participants who were between the ages of 18 and 34 located in the United States. Participants were recruited using the Amazon Mechanical Turk Application⁴ (AMT, MTurk), an internet labor market (see https://www.mturk.com/mturk/help?helpPage=overview#what_is for detailed information).

MTurk (Buhrmester, Kwang, & Gosling, 2011) that has become popular because it enables a large, readily accessible, and representative subject pool (Buchheit, Dalton, Pollard, & Stinson, 2019; Paolacci, Chandler, & Ipeirotis, 2010). Prior accounting research has successfully conducted experimental research using MTurk to explore investor reaction (Bonner, Clor-Proell, & Koonce, 2014; Rennekamp, 2012), investor social norms (Koonce, Miller, & Winchel, 2015), and fraud and misconduct (Brown, Rennekamp, Seybert, & Zhu, 2014). Research indicates MTurk participants are similar to business and accounting students in their willingness to make costly choices and exert effort for monetary compensation (Farrell, Grenier, & Leiby, 2016). MTurk participants also tend to be more diverse and exhibit sound reliability and share psychometric properties with data collected in traditional surveys and experiments (Buhrmester et al., 2011; Johnson & Borden, 2012).

Research in accounting finds consistent evidence that MTurk is an appropriate subject pool for undergraduate accounting students (Brasel, Doxey, Grenier, & Reffett, 2016; Bucheit, Dalton, Pollard, & Stinson, 2019). Bucheit et al. (2019) suggest that MTurk workers perform similarly to undergraduate accounting students across both profit forecasting and risk assessment tasks. The task we use in our instrument is much like the decisions of a non-professional investor, who is using a limited set of information (only what is shown in the graph displayed to the participants). Rennekamp (2012) and Rennekamp, Rugar, and Seybert (2015) employ online platforms such as Amazon Mturk in tasks involving non-professional investors making similar investment decisions. While the MTurk participants may not be a perfect proxy for managers, MTurk samples can offer insights about general human cognition and behavior that can be generalized to management roles (Stritch, Pederson, & Taggart, 2017). Additionally, there is a pervasive argument in the social sciences that experimental research to date has over-relied on student populations (Davis & Holt, 1993; Kagel & Roth, 2016), and MTurk offers an opportunity to overcome this shortcoming (Stritch et al., 2017). A recent paper by Mummolo & Peterson (2019) finds that MTurk populations exhibit minimal demand effects with respect to hypothesis guessing even when provided explicit information about the nature of the experiment and even when financial incentives are provided.

Experimental Task

Decision Task Participants completed a managerial investment decision-making task. Participants played the role of a manager making a series of investment decisions on behalf of their firm. They were instructed to choose investments based on graphical representations of the hypothetical investments. To simulate such a setting, investments were shown as graphic depictions of the four balanced scorecard (BSC) dimensions: financial performance, customer satisfaction, internal process efficiency, and learning and growth. The BSC is a widely used tool in organizations and measures the performance of strategic management objectives (Kaplan & Norton, 1996) and firm performance (Bhagwat & Sharma, 2007).

Participants were told that their firm viewed an investment as “good” if the four categories averaged more than 50%, but their bonus compensation might be based on a different threshold. In order to capture performance increases attributable to sensitivity differences in motivation toward positive events and away from negative events, participants were not told their threshold, but they could learn their threshold through feedback provided after each investment.⁵

The task instructions and compensation details are shown in Appendix 1.⁶ As a comprehension check, participants were required to answer three questions correctly to ensure they understood the instructions. Once participants answered all three questions correctly, they were directed to begin the investment-decision phase.

Participants viewed graphical depictions for 40 prospective investments and made decisions either to invest or not to invest in each project. Appendix 2 shows an example of an investment prospect. The first 10 investments were used as practice rounds, and participants were given feedback after each decision but did not earn any bonus compensation. This feedback could be used to help the participant estimate their bonus threshold. The practice-round investments either satisfied both bonus threshold conditions (*high* and *low threshold*) or did not satisfy either threshold condition (i.e., they were either below 40% or above 60%). In other words, in the first 10 decisions, participants received the same feedback on any given investment depending on whether they chose to invest in the project, regardless of the condition to which the participant had been randomly assigned. The projects were sufficiently superior (i.e., over 60%) or sufficiently inferior (i.e., under 40%) in that they were either correct or incorrect regardless of the incentive condition. Following the 10 practice decisions, participants were reminded that for the next 30 decisions, they would be eligible for bonus compensation.

Participants were rewarded for each investment in which they met or exceeded their bonus threshold and penalized for every investment they undertook, which was below their bonus threshold. Decisions not to invest were neither rewarded nor penalized.⁷ Each participant started with a flat wage of \$1.00, and the bonus for each correct investment was 20% of the flat wage.⁸ In other words, participants could “play it safe” and neither gain nor lose money from their compensation if they did not take any investments.

Following the task, participants estimated their bonus threshold, evaluated their confidence of the estimate, completed a post-experimental questionnaire, and then received their final base and bonus compensation amount.

Bonus Threshold Manipulation The bonus threshold was manipulated between subjects. Participants were randomly assigned to one of two bonus threshold conditions: low or high. A low bonus threshold allows a wider range of positive outcomes, rewarding any investment averaging more than 40%. A high bonus threshold restricts the range of positive outcomes, only rewarding outcomes that average more than 60%.⁹ These two levels are proxies for the variation that exists in firm incentive plans. The bonus threshold manipulates the range of values over which a participant would receive positive feedback on a given investment decision.