Anchoring and Motivated Reasoning

in Managers' Review of Accounting Estimates

by

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ABSTRACT

Accounting estimates are developed in a bottom-up fashion; subordinates generate estimates that are reviewed by managers. The anchoring heuristic suggests managers may be highly influenced by subordinates' initial estimates. However, motivated reasoning theory predicts that reporting incentives will bias managers' review in favor of estimates that are incentive consistent, and managers will selectively attend to information that supports their preferred conclusion, including their perceptions of the subordinate. Using experimental methods I manipulate the consistency of the subordinate estimate with management reporting incentives, and the narcissistic description of the subordinate. Consistent with motivated reasoning theory, I find that managers anchor on incentive consistent subordinate estimates, regardless of subordinate narcissism, but anchor less on incentive inconsistent subordinate estimates, especially when the estimate comes from a narcissistic subordinate. I also find evidence that managers believe narcissistic subordinates act strategically in their own self-interest, and selectively attend to this belief to adjust away from incentive inconsistent subordinate estimates, but not incentive consistent subordinate estimate. My results reveal two potential weaknesses in the management review process: susceptibility to subordinate anchors, and bias created by reporting incentives.

DEDICATION

To my mom and dad for picking me out of the baby catalogue, I love you.

ACKNOWLEDGMENTS

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CHAPTER 1

INTRODUCTION

Management review processes are an integral part of a well-functioning internal

control system (COSO 2013). Recent PCAOB inspection results have led to the release of

Staff Audit Practice Alert No. 11, which highlights management review processes as an

area of weakness for auditors and managers (PCAOB 2013). In follow-up comments to

that practice alert, PCAOB Board Member, Jeanette M. Franzel expressed her view that,

> "We are currently in a 'perfect storm' in the area of internal control over
> financial reporting…we've seen multiple cycles in which company
> management and internal and external auditors simply didn't get it right,"
> (Franzel 2014).

While the PCAOB is primarily focused on improving the audit process, Ms. Franzel's

comments highlight the importance of management commitment for internal control

effectiveness. The management review process is designed to detect material

misstatements, but the effectiveness of the review depends on the integrity, competence,

and objectivity of the reviewer.

While the review process is highly dependent on managers, it is also dependent on

subordinates. Accounting estimates are generated in a bottom-up fashion. A subordinate

is responsible for evaluating the pertinent information, and developing an estimate, and

then the manager reviews the subordinate's work before approving or adjusting the

estimate. Prior accounting research has demonstrated that subordinates can influence

managers' conclusions in the context of the audit review process (Asare and McDaniel

1996; Ricchiute 1999; Tan and Jamal 2001; Frank and Hoffman 2015). The general

finding is that managers tend to rely, or anchor, on the conclusions of their subordinates.

This anchoring heuristic (Tversky and Kahneman 1974) is extremely robust and difficult

to overcome (see Furnham and Boo (2011) for a review of the literature), and suggests that managers will be significantly influenced by the initial estimate of the subordinate in the review process.

Psychology literature on motivated reasoning suggests that the anchoring effect may decrease when it is less consistent with incentives (Ditto and Lopez 1992; Ditto, Scepansky, Munro, Apanovitch, and Lockhart 1998). Motivated reasoning may enable managers to strategically justify adjusting away from subordinate estimates that are inconsistent with their incentives. Motivated reasoning occurs when an individual has a preference in regards to the outcome of a reasoning task, such as evaluating evidence and estimating the most likely outcome (Kunda 1990; Ditto and Lopez 1992). This causes preference-consistent information to be examined less critically than preference-inconsistent information. A large literature in accounting demonstrates that managers have incentives to misreport (Healy and Wahlen 1999; Dechow and Skinner 2000; Graham, Harvey, and Rajgopal 2005). Incentives to manage earnings should bias managers' evaluation of evidence against supporting an accounting estimate that is inconsistent with their incentives, thereby reducing anchoring on incentive-inconsistent subordinate conclusions.

This effect should be stronger when characteristics of the subordinate, such as narcissism, make justification easier. Narcissism is of particular interest because research has documented that its prevalence has increased over time (Macky, Gardner, Forsyth, Twenge, and Campbell 2008; Bergman, Westerman and Daly 2010). This means the newest generation entering the workforce is likely to be more narcissistic than its predecessors. Narcissism is associated with exploitive behavior, and management

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research finds that subordinate narcissism is negatively associated with manager perceptions of integrity and trustworthiness (Blair, Hoffman, and Helland 2008). It is important to understand how narcissism may influence management's judgment because of the increasing prevalence of narcissism in the workforce and its potential to be used by management to justify discounting subordinates' conclusions when such conclusions are inconsistent with management's incentives. I posit that managers will strategically use subordinate narcissism to justify diverging from incentive-inconsistent subordinate conclusions.

I examine managers' susceptibility to subordinate conclusions and their use of motivated reasoning in the context of a management review of an inventory valuation. The inherent ambiguity in an inventory valuation allows a range of acceptable estimates, making management more susceptible to motivated reasoning. Inventory valuations are typically made at the end of the reporting period, when it is easier to assess performance relative to a target. A decrease in inventory value requires a write down that reduces current period earnings. If financial performance is in danger of falling below expectations, managers should have a strong preference for minimizing a write down (maximizing the inventory valuation). Further, accounting estimates are discretionary, and allow for greater latitude in judgment. Managers are more likely to engage in motivated reasoning because there is no clear-cut answer.

Using experimental methods I construct a scenario where MBAs are put in the role of a division manager responsible for reviewing and approving an estimate for a valuation write down of damaged inventory. I manipulate the consistency of the subordinate's estimate with the manager's incentives; in the incentive-consistent

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condition the subordinate proposes a small write down (high valuation) that would allow the division to meet an earnings target, in the incentive-inconsistent condition the subordinate proposes a larger write down (low valuation) that would cause the division to miss the earnings target. I also manipulate characteristics of the subordinate that should make it easier or harder to justify adjusting away from the subordinate estimate. Holding knowledge, ability, and experience constant, I manipulate the personality of the subordinate as exhibiting either high or low narcissism.

I find evidence of a general anchoring effect. Relative to a control group with no subordinate estimate, participants provided a larger (smaller) subordinate write down make final estimates that are larger (smaller). I also find evidence of motivated reasoning in managers' behavior. Participants anchor less on incentive-inconsistent subordinate estimates, and this effect is strongest when the subordinate is described in more narcissistic terms. A test of moderated mediation shows that subordinate narcissism increases participants' beliefs that subordinates are strategically reporting to impress upper management. However, this belief only reduces management anchoring on incentive-inconsistent subordinate estimates.

My results suggest that subordinates have a significant impact on the reporting process and should not be overlooked. However, I also find that reporting incentives create a bias in the management review process that is robust enough to overcome anchoring effects. Incentives cause managers to engage in motivated reasoning in order to justify incentive-consistent reporting choices, even if it means disregarding a subordinate's conclusion. I demonstrate how managers selectively use information about a subordinate as an excuse to alter accounting estimates that are inconsistent with their

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reporting incentives, and conveniently ignore the same information when subordinate conclusions are incentive-consistent. This behavior conforms with motivate reasoning research showing that people are more critical of preference-inconsistent information, and speaks directly to managers' ability to maintain objectivity in the review process. A closer examination of the review process may be warranted to consider ways to mitigate motivated reasoning.

My findings also emphasize the collaborative nature of financial reporting, and highlight the importance of interpersonal interactions in accounting decisions. Prior reporting literature has focused on manager characteristics (including narcissism), and reporting quality (e.g. Murphy 2012; Schrand and Zechman 2012; Ahmed and Duellman 2013; Jia, Lent, and Zeng 2014; Olsen, Dworkis, and Young 2014). My research suggests subordinate employee characteristics should not be overlooked. Subordinate narcissism is of particular interest because of the documented generational increase, but corporate culture or a more broadly defined culture (e.g. country, region, etc.) could result in systemic personality traits within a company. As an example, Enron infamously sought to hire Ivy Leaguers who believed they were the most talented, and had strong desires for money and success to perpetrate their "win at all costs" mentality (Sims and Brinkmann 2003).

The remainder of the paper proceeds as follows: Section II discusses the development of my hypotheses, Section III explains my methodology and experimental design, Section IV reports the results of my experiment, Section V contains additional analyses, and Section VI provides a discussion of my results and conclusions of my research.

CHAPTER 2

BACKGROUND AND HYPOTHESIS DEVELOPMENT

Anchoring

The anchoring heuristic is one of the most robust psychological phenomena. A typical anchoring task asks people to provide an estimate for a scenario (a probability, a forecast, a valuation, etc.); before the estimates are made, half the participants are provided with an anchor value. Studies consistently find the estimates of participants in the anchor condition are significantly closer to the anchor than those in the control condition. In addition, research has documented anchoring even when participants know the anchor contains no informational value (Tversky and Kahneman 1974), when they know the anchor provider lacks expertise (Englich and Mussweiler 2001), and when they know the anchor provider is biased, or has opposing incentives (Englich, Mussweiler, and Strack 2005). While anchoring can be intentional (Epley and Gilovich 2006), anchoring often occurs unintentionally. If people are forewarned about anchoring, or incentivized to be accurate, researchers still find evidence of anchoring (Wilson, Houston, Etling, and Brekke. 1996).

In prior accounting literature, anchoring has been observed in the behavior of auditors. However, auditing tasks add a layer of complexity, relative to a typical anchoring task. The goal of the audit is to gather evidence and provide strictly independent assurance that the financial statements are presented fairly and in compliance with the relevant accounting principles. Auditing standards require auditors to maintain professional skepticism in testing clients' records and reviewing clients' estimates (AU 230). Even though auditors are supposed to be strictly independent

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evaluators, studies show they are susceptible to anchoring on management provided information (McDaniel and Kinney 1995; Earley, Hoffman, and Joe 2008). Research on the audit work paper review process likewise finds that reviewers may be over-reliant on preparers' conclusions. This effect can be exacerbated in certain situations, such as when the reviewer holds a positive impression of the preparer (Tan and Jamal 2001), or when the preparer's personal biases toward the client are known (Frank and Hoffman 2014).

These findings are consistent with anchoring effects observed among other professionals who are tasked with remaining unbiased. In particular, a series of studies on presiding judges demonstrate their sentencing judgments can be influenced by the prosecution's demands, and this behavior is not attenuated by greater experience on the bench (Englich and Mussweiler 2001). Similar to auditors, judges have a code of conduct, which requires independence and impartiality (General Council 2014). If auditors and judges engage in anchoring when it is their explicit job to remain independent, then managers are likely to exhibit similar behaviors in the review process when their independence and objectivity is under far less scrutiny.

The prevailing explanation for the anchoring phenomenon is that anchoring is caused by confirmatory hypothesis testing (Mussweiler and Strack 1999; Epley and Gilovich 2006; Furnham and Boo 2011). That is, the decision maker selectively attends to information consistent with the established anchor, resulting in estimates that are nearer to the anchor. However, I propose that in the context of a management review, reporting incentives may alter this process by causing managers to engage in motivated reasoning and adjust away from the anchor, or not engage in anchoring at all.

Motivated Reasoning and its Effect on Anchoring

Motivated reasoning causes biased reasoning, including biased information access, biased evidence evaluation, and biased judgments that support a preferred outcome (Kunda 1990). Information that is consistent with a preferred outcome is selectively sought out and is evaluated less critically than information that is inconsistent (Ditto and Lopez 1992). Given an anchor, how the anchor is evaluated may depend on whether or not the anchor is preferred. If the anchor is preferred, then confirmatory hypothesis testing will likely ensue, with predictable anchoring effects produced. However, if the anchor is not preferred, then the decision maker may ignore or seek to disconfirm the anchor. Instead of searching for evidence to support the anchor, resources will be devoted to finding evidence to ignore/reject the anchor. Thus, the key is the existence of a preferred alternative target.

Managers often have strong motivations to intentionally misreport, or manage (smooth) earnings (Healy and Wahlen 1999; Dechow and Skinner 2000; Graham, Harvey, and Rajgopal 2005). The literature documents a variety of settings where managers appear to act on these motivations (Jones 1991; Burgstahler and Dichev 1997; Cheng and Warfield 2005; Seybert 2010; Chen, Kelly, and Salterio 2012). In the context of reporting an accounting estimate, reporting incentives create a directional preference regarding the estimate, if not a specific target figure. For example, pressure to meet an earnings target creates a preference for more aggressive estimates (maximizing revenues and minimizing expenses). This may lead managers to engage in motivated reasoning (Kunda 1990; Ditto and Lopez 1992) in order to meet those preferences.

Motivated reasoning has previously been observed in investor, auditor, and manager behavior. Holding a "long" investment position creates investor preferences for favorable future outcomes related to the firm. Holding a "short" position creates investor preferences for negative future outcomes. Investors' self-interest biases them to agree (disagree) with evidence suggesting they will make (lose) money. Investors have been found to subsequently bias their earnings forecasts to be consistent with their preferences, even though they know that accurate forecasts are more useful (Hales 2007). Auditors sometimes face pressures to agree with a client. Research shows that to mitigate the potential loss of a client, auditors will allow the client to report aggressively, and auditors justify their decisions by using an aggressive interpretation of the relevant accounting standard (Hackenbrack and Nelson 1996). Corporate managers signal their competence by reporting strong financial performance. After establishing an operating strategy, managers find it hard to admit mistakes. To the contrary, when evaluating the effectiveness of business strategies (i.e. evidence evaluation), managers perceive self-selected strategies as more successful than strategies they were not involved in selecting (Tayler 2010).

Motivated reasoning is constrained by the availability of a convincing argument (Kunda 1990). Accordingly, anchors have their greatest influence when cogent, readily available reasons to reject them do not exist. Ambiguity in how to interpret evidence increases the likelihood of motivated reasoning (Mayorga, Trotman 2015). Additionally, in instances where Generally Accepted Accounting Principles (GAAP) are less specific, the potential for preparers of accounting information to engage in motivated reasoning increases. This is evident in the language of GAAP, which use terms that are open to

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interpretation such as "reasonably predictable costs" and "substantial and unusual losses" (ASC 330). Similarly, the more disparate the evidence is, the easier it becomes to reason one's way to a preferred conclusion by disproportionately weighting supporting evidence.

Management Review of Accounting Estimates

The purpose of this study is to examine the effects of anchoring and motivated reasoning within the context of a middle management (e.g., a corporate controller) review of a subordinate's accounting estimate. Reviews are controls designed to prevent misstatements; however, reviews of accounting estimates often require a high degree of judgment and, as such, the effectiveness of these controls depends on and unbiased process. The ambiguous nature of accounting estimates helps facilitate motivated reasoning. Accounting estimates are made to accrue for partially completed events. Interpretation of incomplete evidence is required. For example, the potential need for an inventory write down precipitated by a rare event is a difficult task. As a rare event, it lacks precedents to guide judgment; assumptions about the future are required and such ambiguity provides significant latitude to accounting managers. In such instances, management outcome preferences can be expected to exert high influence. I am interested in how features of the subordinate and the initial subordinate estimate influence the manager's review, given the existence of incentives to make an aggressive reporting choice. For example, the perceived expertise and credibility of the subordinate would appear to be highly germane.

A management review of an accounting estimate is similar to a senior auditor reviewing the work of a junior auditor. In both instances, the purpose of the review is to verify the soundness of the conclusion reached by a subordinate. Also, in both instances,

the information provided by the subordinate can be assumed to have informational value, because the subordinate is presumably qualified to complete the assigned task. To the extent that this is true, it may be rational for managers to have a certain degree of confidence in subordinate estimates. The anchoring heuristic predicts that managers will anchor on the initial estimates proposed by qualified subordinates.

However, reporting incentives that create directional preferences for the accounting estimate may cause managers to engage in motivated reasoning, resulting in adjustment away from subordinate estimates that are incentive-inconsistent. If incentivized to report aggressively, managers will look for ways to justify doing so. This is easily accomplished if the subordinate estimate is incentive-consistent, but more difficult if the subordinate estimate is incentive-inconsistent. When provided an incentive-inconsistent estimate, if managers are going to disregard it, they need to be able to rationalize doing so.

I examine to what extent managers will consider subordinate personality as grounds for justification, specifically subordinate narcissism. Narcissism is increasing in younger generations (Macky et al. 2008; Bergman et al. 2010). The youngest generations entering the workforce are more likely to be narcissistic than their superiors. Despite ample research on executive level narcissism (e.g. Buchholz, Lopatta, and Maas 2014; Olsen, Dworkis, and Young 2014; Ham, Lang, Seybert, and Wang 2015) research on the implications of the growth in narcissism at the lower levels of the workplace is only just emerging. Given the increase in subordinate narcissism, it is important to understand how it might affect management's judgments and decisions. Narcissism is a multifaceted construct, but of particular interest is narcissists' desire to look good and their willingness

to exploit others (Campbell, Hoffman, Campbell, and Marchisio 2011). Research shows that in the workplace, subordinate narcissism is negatively related to manager perceptions of interpersonal skills, integrity, and trustworthiness (Blair, Hoffman, and Helland 2008). If subordinate narcissism causes managers to question subordinates' intentions and objectivity, it should reduce management anchoring, especially on incentive-inconsistent estimates.

Hypothesis

Reporting incentives create preferences for the reporting of accounting estimates. When incentivized to increase earnings, managers will prefer to record a smaller inventory write down. I predict that when reviewing subordinate estimates, managers will anchor on estimates that are consistent with their incentives (and motivated reasoning), resulting in final estimates that significantly reflect the initial subordinate estimate. However, I expect anchoring to diminish under conditions where the subordinate's estimate is inconsistent with management's incentives.

Subordinate narcissism raises a potential "red flag" against the subordinate estimate. If managers interpret subordinate narcissism as affecting subordinate integrity and objectivity, this creates grounds for disregarding the subordinate estimate. Motivated reasoning suggests managers will use subordinate narcissism as an excuse to adjust away from incentive-inconsistent subordinate estimates, but will ignore the effects of subordinate narcissism when evaluating incentive-consistent subordinate estimates. I predict managers will anchor less on incentive inconsistent subordinate estimates, especially when provided by narcissistic subordinates. See Figure 1 for a graphical representation of the hypothesis.

H1: Managers will anchor less on subordinate estimates that are inconsistent with managers' incentives, especially when managers can reason that subordinate estimates are non-reliable due to subordinate narcissistic behavior.

CHAPTER 3

RESEARCH DESIGN

Experimental Design and Participants

I test my hypothesis in a 2 x 2 + 1, between subjects design, manipulating the consistency of the subordinate estimate with management incentives (consistent/inconsistent) and the narcissistic features of the subordinate (low/high). I include a control group with no subordinate estimate or subordinate description in order to compare managers' estimates developed with anchors to estimates developed independently. Participants assume the role of a mid-level manager responsible for reviewing an estimate for an inventory write down.

Participants were 184 MBA students from a major university in the southwestern United States. Libby, Bloomfield, and Nelson (2002) recommend matching participants to the goals of the study. My study is interested in how mid-level managers make reporting decisions. MBAs typically come from similar jobs, or fill these roles upon graduating. Participants were recruited via in class announcements and/or e-mail. To encourage participation, I offered compensation of $10.[1] The experiment was completed online via Qualtrics, which randomly assigned participants to one of the five experimental conditions. The average participant was approximately 32 years old and had completed three courses in accounting and finance. Participants came from full time, part time, online, and executive programs. Individual work experience was not recorded, but the programs averaged between 4.9 – 15.4 years of work experience. Participant age, gender, coursework, and type of MBA program do not influence any statistical results,

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[1] Some participants were offered class participation credit, in addition to the $10. The results are robust to controlling for compensation type.

nor are they individually statistically significant. See Table 1 for participant profile information.

Procedure

The full procedure is outlined in Figure 2. Participants (hereafter, "managers") assume the role of a division manager tasked with reviewing a proposed inventory write down and deciding on the final amount. In the control condition, managers are not fulfilling the review role, instead, they are asked to make an estimate based on the facts of the case, which are consistent across all experimental conditions. The case includes information to support both a lower (aggressive) and higher (conservative) write down estimate. Managers receive a probable range for the estimate ($100,000 - $500,000). The case mentions that the write down will most likely cause the division to miss its profit target, but that it is possible to book a smaller write down ($100,000 - $150,000) and meet the target.

The inventory accounting standard requires the write down to be the difference between the original cost of inventory and the net realizable value, which is the estimated selling price less any "reasonably predictable" costs of completion (ASC 330). The case involves damaged inventory that is handcrafted and made mostly of re-workable raw materials (metal and glass). This creates uncertainty regarding the estimation of selling and completion costs, and does not allow for an easily identifiable "most likely" outcome.

The case provides managers with incentives to manage earnings. These incentives create a management preference for lower (more aggressive) estimates in order to meet the profit target. Managers are informed that failure to achieve the profit target will result

in the loss of a personal bonus, as well as employee bonuses, and increased pressure and threats from management regarding job termination. Similar to Brown (2014), there are no real economic incentives in my experiment; experimental compensation is not tied to the amount of the write down. This design choice biases against finding my predicted results because the managers lack the extrinsic motivation found in the workplace. However, MBA students are taught the value of maximizing company performance, and are likely to understand the desirability of the goal and to incorporate that into their judgment process.

After reading the scenario, all managers (except those in the control group) are then provided a point estimate (within the probable range) from a subordinate. They review the estimate and make a final decision on the amount of the estimate. Following the main experimental materials I measure manager narcissism via the short from of the Narcissistic Personality Inventory, or NPI-16 (Ames, Rose, and Anderson 2006).[2] Finally, managers complete debriefing questions including questions about how they made their decisions, their impressions of the subordinate and demographic data.

Independent Variables

The estimate provided by the subordinate is manipulated to be either consistent with management's reporting incentives (a low estimate of $125,000 - allowing the division to exceed the profit target), or inconsistent (a high estimate of $475,000 - causing the division to fall short of the profit target). The narcissistic description of the subordinate is also manipulated. In the high narcissism condition the subordinate is

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[2] Prior accounting literature has found an association between measures of top level manager narcissism and earnings management behaviors (Buchholz et al. 2014; Olsen et al. 2014; Ham et al. 2015). My results are statistically robust when controlling for manager narcissism.

described as charming but vain, and manipulative, while in the low narcissism condition the subordinate is described as modest, personable, and transparent. Knowledge and ability are held constant. The control group receives no description of the subordinate and no subordinate estimate. See the Appendix for a full description of the manipulations.

Dependent Variables

Managers record the amount they would approve for the inventory write down. They are given a scale with endpoints encompassing the previously defined plausible range of the estimate ($100,000 – $500,000). A slider is set to the current subordinate estimate ($125,000/$475,000), and the manager is free to move the slider to any position on the scale, or accept the subordinate provided estimate.[3] A lower amount is indicative of more aggressive financial reporting. To measure anchoring I first examine managers' final estimates across the experimental conditions. If managers are anchoring on subordinate estimates, I expect manager estimates in the incentive consistent (low anchor) conditions to be lower than the control condition and manager estimates in the incentive inconsistent conditions (high anchor) to be higher than the control condition. To measure the amount of anchoring, I examine the divergence of the manager estimates from the subordinate estimates. I measure the divergence by taking the absolute value of the difference between the initial subordinate estimate and the final manager estimate.[4] Smaller divergence indicates greater anchoring on the subordinate estimate.

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[3] In the control group, the slider is set to the midpoint ($300,000).

[4] Results and statistical inferences are unchanged if the signed divergence is used. On average, final estimates in the incentive consistent (inconsistent) condition are higher (lower) than the respective subordinate estimate.

CHAPTER 4

RESULTS

Comprehension and Manipulation Checks

A comprehension check was included to assess managers' understanding of the

task and the effect of the write down on profitability. The question asked participants

(true or false) if increasing the write down would decrease current year income; 81.5% of

all participants answered the comprehension check correctly.[5]

A manipulation check asked managers to identify the amount of the subordinate's

estimate for the write down. Ninety-six percent of managers identified the correct amount

for their condition.[6] To evaluate the effectiveness of the narcissism manipulation,

managers were asked to rate their agreement with how well each of ten different

characteristics described the subordinate. The characteristics were identified from

previous research which associated them with high or low narcissism.[7] Ratings for each

characteristic were made on a 7-point Likert scale (endpoints of 1 = Strongly Disagree, 7

= Strongly Agree). The five low narcissism characteristics were reverse scored and

averaged with the five high narcissism characteristics to create a single subordinate

narcissism score.[8] A higher score indicates managers thought the subordinate was more

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[5] The reported results include all participants. However, when excluding those who failed this comprehension check the results are statistically robust.

[6] Those in the control condition were not given a subordinate estimate and did not answer this question.

[7] High narcissism traits: aggressive, bossy, self-centered, ambitious, self-confident. Low narcissism traits: sensitive, gentle, timid, modest, submissive. (Raskin and Terry 1988; Hart and Adams 2014; Adams et al. 2015)

[8] Principal components analysis support a single factor solution (eigenvalue = 5.34) accounting for 53% of the variance in the ten items. Additionally, Cronbach's alpha for the items is .901, which indicates high reliability.

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narcissistic. Those in the high narcissism condition (M = 5.67) thought the subordinate was significantly more narcissistic than those in the low narcissism condition (M = 4.04), t (145) = -14.41, p < 0.001[9].

The results suggest that both manipulations were effective; managers were cognizant of the subordinate estimates and they identified the subordinate as appropriately more or less narcissistic. I perform a median split on managers' subordinate narcissism scores and classify managers at or below the median as perceiving the subordinate to be low in narcissism, and anyone above the median as perceiving the subordinate to be high in narcissism. This measure is highly correlated with the actual narcissism manipulation, r(147) = 0.796, p < 0.01. All remaining statistical tests are done using the median split on subordinate narcissism, but results are statistically similar using the original manipulation categorizations.

Evidence of Management Anchoring

To examine the influence of subordinate estimates I compare managers' final estimates in the experimental conditions to the control group. Table 2, Panel A presents the findings: the mean final estimates for the write down made by managers. The mean for managers in the control group (M = $259,410) is significantly below the midpoint of the plausible range ($300,000), t(36) = -2.842, p = 0.007. This suggests that, on average, managers in the control group were slightly aggressive. However, the control group mean is also significantly above the estimate required to meet the profit target ($150,000), t(36) = 7.659, p < 0.001, implying that most managers acting independently were reluctant to report aggressively enough to meet the earnings target.

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[9] Reported p-values for all directional tests are one-tailed.

Table 2, Panel B reports the results of an analysis of variance (ANOVA) and planned contrasts are presented in Panel C. These tests show that manager estimates in the incentive consistent (low anchor) conditions are lower than the control condition and manager estimates in the incentive inconsistent conditions (high anchor) are higher than the control condition, all $p < 0.012$, providing evidence of a general anchoring effect.

Test of Hypothesis – Effect of Motivated Reasoning on Anchoring

Table 3, Panel A provides descriptive statistics for manager divergence from the subordinate anchor across the experimental conditions. The results are graphically depicted in Figure 3. Table 3, Panel B reports the results of an ANOVA, including a significant interaction $F(1,143) = 2.997$, $p = .043$. H1 predicts that management anchoring will diminish (divergence will increase) when subordinate anchors are inconsistent with incentives, especially if subordinates exhibit more narcissistic behavior. Buckless and Ravenscroft (1990) recommend using contrast coding to increase statistical power when testing specific "nonsymmetric patterns" of means. To test H1, I run the contrast test, reported in Panel C. The contrast tests if the divergence in the incentive consistent conditions (A = low narcissism, B = high narcissism) is less than the divergence in the incentive inconsistent/low narcissism condition (C), which is, in turn, less than the divergence in the incentive inconsistent/high narcissism condition (D). I assign contrasts weights of -2, -2, 1, 3, respectively. The contrast is significant, $t(143) = 5.116$, $p < 0.001$. Overall, these results support H1, management anchoring is reduced when subordinates provide incentive inconsistent estimates, and to an even greater extent when subordinates are described narcissistically.

CHAPTER 5

ADDITIONAL ANALYSES

Evidence of Motivated Reasoning – Moderated Mediation

Motivated reasoning predicts that in order to adjust away from higher (incentive inconsistent) subordinate estimates, managers should selectively attend to information that supports a lower estimate or undermines the higher estimate (Ditto and Lopez 1992). In this case, managers should selectively attend to subordinate narcissism. To examine how subordinate narcissism influences participant perceptions of the subordinate, I ask participants the following: "Rate your agreement with the following statement: (the subordinate) estimate was influenced by his desire to impress top management". Responses are recorded on a seven point Likert scale (endpoints of 1 – strongly disagree, and 7 – strongly agree). A higher score suggests that managers suspected subordinates are engaging in strategic and self-interested behavior. An ANOVA test of the managers' responses (untabulated) shows that they perceive narcissistic subordinates as more strategic ($M_{high} = 5.34$, $M_{low} = 4.61$, $p = 0.003$) and subordinates who provided incentive consistent estimates as more strategic ($M_{consistent} = 5.42$, $M_{inconsistent} = 4.53$, $p < 0.001$), but there is no significant interaction ($p = 0.746$).

These results demonstrate that managers have similar opinions of narcissistic subordinates, regardless of the consistency of the subordinate estimate with managers' incentives. However, managers may still selectively access these opinions in order to justify their anchoring to, or adjustment away from subordinate estimates. To investigate this possibility, I test a moderated mediation model. Figure 4 depicts a conceptual model (Panel A) and statistical model (Panel B). The model tests if the effect of manager

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perceptions of strategic subordinate behavior on manager divergence is moderated by the consistency of the subordinate estimate with manager incentives.

I use the Preacher, Rucker, and Hayes (2007) SPSS MODMED macro to test for moderated mediation; the results are reported in Table 4. I find that subordinate narcissism significantly increases perceptions of strategic subordinate behavior (p = 0.002), and that these perceptions increase manager divergence (p = 0.014). However, this mediation relationship is qualified by a significant mediator/moderator interaction (p = 0.058). The effect of manager perceptions of strategic subordinate behavior on manager divergence is not significant for incentive consistent estimates (p = 0.716), but the effect is significant for incentive inconsistent estimates (p = 0.045). The results are corroborated by a bootstrap analysis with 1,000 samples[10]. Overall, the results are consistent with motivated reasoning; subordinate narcissism increases perceptions of strategic subordinate behavior, but managers appear to selectively attend to their perceptions, resulting in decreased anchoring for incentive inconsistent estimates, but not for incentive consistent estimates[11].

Alternative Anchoring Measure – Distribution of Manager Estimates

Table 5, Panel A presents the percentage of managers that accepted the subordinate estimate without adjustment; Panel B presents the percentage of managers

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[10] The bootstrap method goes beyond the traditional Baron and Kinney (1986) regression approach, does not require data to be normally distributed, and is more suitable for small samples. Using resampling with replacement, the macro develops an estimate for the indirect effect and a confidence interval. If the confidence interval contains zero, the indirect effect is assumed to be statistically insignificant.

[11] Results are consistent using a two group SEM approach, similar to (Elliott, Hodge, and Sedor 2012). I test the mediating effect of perceived exploitive subordinate behavior on the relationship between subordinate narcissism and manager divergence separately for managers receiving an incentive consistent estimate and managers receiving an incentive inconsistent estimate. I find evidence of partial mediation in the incentive inconsistent estimate condition, and no mediation in the incentive consistent condition.

that only slightly adjusted the subordinate estimate (made a close estimate). I define an estimate as "close" when it is within $25,000 of the subordinate estimate (not including participants who accepted the subordinate estimate with no adjustment). I chose this threshold because in the incentive consistent conditions any adjustment of $25,000 or less would still allow the manager to meet the earnings target. Managers in the incentive consistent conditions are no more likely to accept the subordinate estimate (n = 73, 34% accept) than managers in the incentive inconsistent conditions (n = 74, 32% accept), χ^2 (1, 147) = 0.054, p = 0.862 (untabulated). However, managers in the incentive consistent conditions are more likely to make close adjustments (32% close) than managers in the incentive inconsistent conditions (8% close), χ^2 (1, 147) = 12.705, p < 0.001 (untabulated).

As an alternative test of management anchoring, I create an indicator variable (*NEAR*) equal to 1 if either *ACCEPT* or *CLOSE* equals 1 (as long as the manager estimate is within $25,000 of the subordinate estimate, including managers who made no adjustment), and 0 otherwise. The results are consistent with the main findings. Table 6, Panel B reports a logistic regression for the likelihood of making a near estimate. Examining the significant interaction of subordinate narcissism and estimate aggressiveness (β = 1.466, p = .04) reveals that manager estimates are equally likely to be near incentive consistent estimates from high narcissism subordinates (n = 39, 66.7% near) and low narcissism subordinates (n = 34, 64.7% near), χ^2 (1, 73) = 0.031, p = 0.86 (untabulated). However, manager estimates are much more likely to be near incentive inconsistent estimates from low narcissism subordinates (n = 40, 55% near) than from high narcissism subordinates (n = 34, 23.5% near), χ^2 (1, 74) = 7.551, p = 0.006

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(untabulated). These findings corroborate my main findings. Managers anchor on subordinate estimates that help them achieve their incentives, regardless of subordinate narcissism. However, when subordinate estimates are incentive inconsistent, subordinate narcissism reduces manager anchoring.

CHAPTER 6

CONCLUSION

I use an experiment to examine anchoring effects when managers review accounting estimates, and to test how reporting incentives affect managers' anchoring on subordinates' conclusions. I find evidence of a general anchoring effect. When subordinates provide lower (higher) estimates, managers' final estimates are lower (higher) than when managers independently develop their own estimates. However, I also find that the degree of anchoring is influenced by how consistent subordinates' estimates are with managers' reporting incentives. Managers anchor less on subordinate estimates that are inconsistent with reporting incentives. My results suggest that managers engage in motivated reasoning in order to justify adjusting away from incentive inconsistent anchors, or adhering to incentive consistent anchors. I find evidence that motivated reasoning causes managers to selectively attend to the personality of the subordinate. Specifically, that while managers generally believe narcissistic subordinates act strategically in their own interests, this belief only reduces anchoring on incentive inconsistent subordinate estimates.

My results speak to PCAOB Board Member comments regarding the failure of all parties involved in internal controls to "get it right" (Franzel 2014). It is apparent that reporting incentives impair the objectivity of managers during the review process by causing biased evaluation of the facts and circumstance. My experiment shows that managers appear willing to accept incentive consistent estimates with less scrutiny, and actively search for ways to dismiss incentive inconsistent estimates. This behavior should not be left to the auditors to rectify. In fact, research shows that accounting estimates are

among the most difficult items to audit effectively (e.g., Petroni and Beasley 1994; Martin, Rich, and Wilks 2006; Christensen, Glover, and Wood 2012). Future research can examine features of the process for preparing an estimate (e.g., how information is accumulated), as well as features of the review process itself (e.g., emphasizing the reasonableness of underlying assumptions, not just the resulting estimate) that may reduce manager anchoring and/or motivated reasoning.

My study is also informative to both the accounting and management literatures, as it highlights the importance of subordinates in the development of accounting information. The development of accounting information is a bottom-up process, but academic research frequently focuses only on how managers influence accounting choices. Accounting and management researchers have written widely on how manager characteristics and personality influence decisions and the company, but much less on the effects of subordinate personality. My study shows that subordinate personality can influence manager decision making, especially in collaborative tasks. Subordinate characteristics may affect decisions made in other accounting contexts, such as audit reviews, performance reviews, and capital budgeting decisions, which I leave to future researchers to examine.

My study also raises an important implication for the narcissism literature. An interesting paradox is that narcissists often make effective leaders (Campbell et al. 2011), but narcissistic subordinates are perceived as lacking traits of effective leaders like interpersonal skills and integrity (Blair et al. 2008). My research suggests that subordinate narcissism may not hinder career advancement, as long as subordinates help managers achieve their goals.

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There are several limitations to my study. First, while I believe MBA students are adequate proxies for managers, it is possible managers fulfilling the review role do acquire some knowledge or experience that alters the way they complete the task. However, prior research has shown the anchoring heuristic is robust to experience and knowledge in the domain (Furnham and Boo 2011), and that experienced professionals engage in motivated reasoning (Hackenbrack and Nelson 1996). Second, I manipulate a single personality trait in the description of the subordinate. In reality, personalities are comprised of many traits, and perceptions of others in the workplace are generally based off of some form of interpersonal relationship. While my method allows me to isolate and examine the specific effects of subordinate narcissism, it does not allow for interpersonal interaction, or for other subordinate personality traits to manifest. To the extent that the establishment of a working relationship between manager and subordinate, or the subordinate's other qualities, may influence the review process, the generalizability of my results is limited. Future research can examine these possibilities using alternate methodologies such as pairing participants over a multi-round experiment.

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APPENDIX A

EXPERIMENTAL MANIPULATIONS

High Narcissism Subordinate Manipulation
Casey Jones is your assistant controller, he is an ambitious employee, and has a strong desire for promotion. Becoming a CEO someday is constantly on his mind. He firmly believes he has the talent and intelligence to succeed. Casey graduated from an exclusive private business school, and frequently reminds people of his pedigree and education. He is charismatic, talented, good looking; he is always well dressed in expensive, designer clothing, and drives an expensive Italian Alpha Romeo sports roadster. Most people would likely describe him as quite narcissistic.

Casey has worked for the company for five years and has advanced quickly. Some co-workers seem to be drawn to his charm and confident personality; others are put-off by his aggressiveness and self-promotion (taking credit for good outcomes; but blaming others for bad outcomes). Casey has used his intelligence and a quick wit to get the attention of others. He likes to dominate the room.

Casey will do whatever it takes to stand out; he cares very much how he is perceived by top management. He thinks that the fastest way to promotion is to show management that he can make big things happen. Casey is very confident and optimistic that he can achieve anything and everything, and overcome any challenge.

Low Narcissism Subordinate Manipulation
Casey Jones is your assistant controller; he is a family man and very good at his job. Casey is graduated with honors from a highly rated public business school. He is attractive and talented, and very personable. Everyone likes him; he is not self-acclaiming but rather generously recognizes and gives credit to others for their contributions. He is always sharply but conservatively dressed, and drives a late model Cadillac.

Casey has worked for the company for five years, and has excelled at every level. Co-workers seem to be drawn to his good nature and genuine personality. Casey is transparent, welcoming and conservative in everything he does. Casey is intelligent, exhibits a quick wit and prefers to work as part of a team.

Despite his modesty, Casey's contributions have begun to stand out. He cares very much how he is perceived in the company, especially by top management; but he would prefer to err on the down side rather than build false expectations. While he has significant career aspirations, he thinks the fastest way to promotion is to show management that he is a good leader.

Aggressive Subordinate Estimate Manipulation
Casey has prepared a transaction to book the inventory write down for $125,000. If you approve this transaction, **your division will exceed its profit target by $25,000**. Casey notes that while the recovery/rework process is uncertain, the company's workers are highly skilled and he is confident that one way or another he can drive this successful outcome.

Conservative Subordinate Estimate Manipulation
Casey has prepared a transaction to book the inventory write down for $475,000. If you approve this transaction, **your division will miss its profit target by $325,000**. Casey notes that while the company's workers are highly skilled, they can only do so much and the rework/recovery process is too uncertain and subject to costly over-runs.

TABLE 1
Participant Demographic Data

Participants	184
Average Age*	32
Average Number of Accounting and Finance Courses*	2.7
Average NPI Score	.39
Percent Male*±	77%

*Not all participants completed the entire set of demographic questions. 24 observations for Age, 1 observation for Gender, and 3 observations for Coursework are missing.

±The MBA programs range from 72% - 81% male, thus, the sample is representative of the typical gender mix.

TABLE 2
Descriptive Statistics, ANOVA, and Planned Contrasts for Manager Final Estimate

Panel A: Descriptive Statistics for Manager Final Estimate, Mean [Standard Deviation]

| | | Subordinate Narcissism | | | |
		Low	High	Row Mean (SD)	Control
Subordinate Estimate	**Incentive Consistent**	$173,620 [$69,652]	$185,180 [$76,650]	$179,790 [$73,199]	$259,410 [$86,885]
	Incentive Inconsistent	$381,050 [$120,414]	$312,710 [$112,840]	$349,650 [$121,154]	
	Column Mean (SD)	$285,740 [$144,126]	$244,580 [$114,191]		

Panel B: ANOVA Model of Manager Final Estimate

Source of Variation	SS	df	MS	F-statistics	p-value
Condition	1,149,503	4	287,376	31.351	<0.001
Error	1,640,786	179	9,166		

Panel C: Planned Contrasts of Manager Final Estimate

Contrast	Difference	p-value
Control v Low-N/Consistent	-85,788	<0.001
Control v Low-N/Inconsistent	121,645	<0.001
Control v High-N/Consistent	-74,226	0.001
Control v High-N/Inconsistent	53,300	0.020

This table reports the results of a test for the anchoring effect, comparing the final estimates in the experimental conditions to a control condition. The control condition creates an unbalanced design. To test for anticipated differences between the conditions, a single independent variable, "Condition", was created in order to conduct a one-way ANOVA test with planned contrasts.

TABLE 3

Descriptive Statistics, ANOVA for Divergence from the Subordinate Estimate

Panel A: Descriptive Statistics for Divergence, Mean [Standard Deviation]

| | | Subordinate Narcissism | | Row Mean |
		Low	High	(SD)
Subordinate Estimate	**Incentive Consistent**	$50,009 [$68,570]	$62,740 [$74,510]	$56,850 [$71,592]
	Incentive Inconsistent	$93,950 [$120,414]	$162,290 [$112,840]	$125,350 [$121,154]
	Column Mean (SD)	$73,800 [$101,765]	$109,111 [$106,142]	

Panel B: ANOVA Model of Divergence

Source of Variation	SS	df	MS	F-statistics	p-value
Narcissism	59,936	1	59,936	6.340	0.013
Estimate	187,888	1	187,888	19.876	<0.001
Narcissism x Estimate	28,330	1	28,330	2.997	0.043$^{\pm}$
Error	1,351,793	143	9,453		

Panel C: Planned Contrast Test for H1

	A	**B**	**C**	**D**
Subordinate Estimate	Consistent	Consistent	Inconsistent	Inconsistent
Subordinate Narcissism	Low	High	Low	High
Contrast 1: $\overline{AB} < C < D$	-2	-2	1	3

	t	**df**	**p-value**
Contrast 1	5.116	143	<0.001

$\pm$ One-tailed test for directional hypothesis.

This table reports the results for the test of H1. Divergence is measured by taking the absolute value of the difference between the manager final estimate and the subordinate provided estimate. The subordinate estimate is $125,000 ($475,000) in the incentive consistent (inconsistent) condition. Lower divergence implies the manager anchored more on the estimate of the subordinate. See the Appendix for details on the manipulation of subordinate narcissism.

TABLE 4
Test of Moderated Mediation

Panel A: Effect of Subordinate Narcissism on Strategic Perception

Predictor	β	SE	t	p
Constant	3.765	0.404	10.484	<0.001
Narcissism	-0.802	0.256	-3.134	0.002

Panel B: Moderated Mediation Model, DV = Divergence

Predictor	β	SE	t	p
Constant	-31.946	82.667	-0.386	0.699
Narcissism	34.588	16.396	2.110	0.037
Strategic Perception	38.794	15.617	-2.484	0.014
Estimate	27.528	59.284	0.464	0.643
Strategic x Estimate	-21.174	11.096	1.908	0.058

Panel C: Conditional Indirect Effect of Strategic Perception

Subordinate Estimate	Effect	SE	z	p	LLCI	ULCI
Incentive Inconsistent	14.137	7.056	2.004	0.045	2.017	33.069
Incentive Consistent	-2.851	7.834	-0.364	0.716	-20.407	7.917

This table presents the results of a test for moderated mediation. Specifically that 1) subordinate narcissism increases manager perception of the subordinate's behavior as strategic and 2) the effect of this perception on management divergence (anchoring) is moderated by how consistent the subordinate estimate is with manager incentives. See Figure 3 for a diagram of the model. Panels A and B present the results of a regression-based test. Panel C presents the results of a bootstrap analysis with 1,000 samples to test the conditional indirect effect.

TABLE 5
Descriptive Statistics for *ACCEPT*, and *CLOSE*

Panel A: Descriptive Statistics for *ACCEPT*, Percentages [ratio]

| | | Subordinate Narcissism | | |
		Low	**High**	**Row Total**
Subordinate Estimate	**Incentive Consistent**	41.2% [14/34]	28.2% [11/39]	34.2% [25/73]
	Incentive Inconsistent	45% [18/40]	17.6% [6/34]	32.4% [24/74]
	Column Total	43.2% [32/74]	23.3% [17/73]	

Panel B: Descriptive Statistics for *CLOSE*, Percentages [ratio]

| | | Subordinate Narcissism | | |
		Low	**High**	**Row Total**
Subordinate Estimate	**Incentive Consistent**	23.5% [8/34]	38.5% [15/39]	31.5% [23/73]
	Incentive Inconsistent	10% [4/40]	5.9% [2/34]	8.1% [6/74]
	Column Total	16.2% [12/74]	23.3% [17/73]	

This table reports descriptive statistics for *ACCEPT,* and *CLOSE*. For each participant *ACCEPT* = 1 if the participant made no adjustment to the initial subordinate estimate, and 0 otherwise. *CLOSE* = 1 if the participant adjustment is between $1 and $25,000. $25,000 was chosen as the threshold for a close estimate because in the aggressive estimate condition, any adjustment exceeding that amount would result in failure to meet the earnings target.

TABLE 6
Descriptive Statistics for *NEAR*, Logistic Regression for *NEAR*

Panel A: Descriptive Statistics for *NEAR*, Percentages [ratio]

| | | Subordinate Narcissism | | |
		Low	**High**	**Row Total**
Subordinate Estimate	**Incentive Consistent**	64.7% [22/34]	66.7% [26/39]	65.8% [48/73]
	Incentive Inconsistent	55% [22/40]	23.5% [8/34]	40.5% [30/74]
	Column Total	59.5% [44/74]	46.6% [34/73]	

**Panel B:** Logistic Regression for the Likelihood of Making a *NEAR* Estimate

Source of Variation	β	Wald	Odds Ratio	p-value
Narcissism	-0.087	0.031	0.917	0.860
Estimate	-1.872	12.565	0.154	<0.001
Narcissism X Estimate	1.466	4.227	4.333	0.040

Model $\chi^2(3) = 17.285$, p < 0.001, Nagelkerke $R^2 = 0.148$

This table reports descriptive statistics for *NEAR*, and a logistic regression for the effects of subordinate estimate consistency with management incentives and subordinate narcissism on the likelihood of making a *NEAR* estimate. *ACCEPT* and *CLOSE* (Table 5) are mutually exclusive, *NEAR* combines the two into one measure, *NEAR* = 1 if *ACCEPT* = 1 OR *CLOSE* =1.

FIGURE 1
Experimental Design and Predictions for H1
Manager Divergence from Subordinate Estimates

		Subordinate Narcissism	
		Low	High
Subordinate Estimate	**Incentive Consistent**	**A** – Small divergence (more anchoring)	**B** – Small divergence (more anchoring)
	Incentive Inconsistent	**C** – Moderate divergence (less anchoring)	**D** – Large divergence (less anchoring)

Manager Divergence
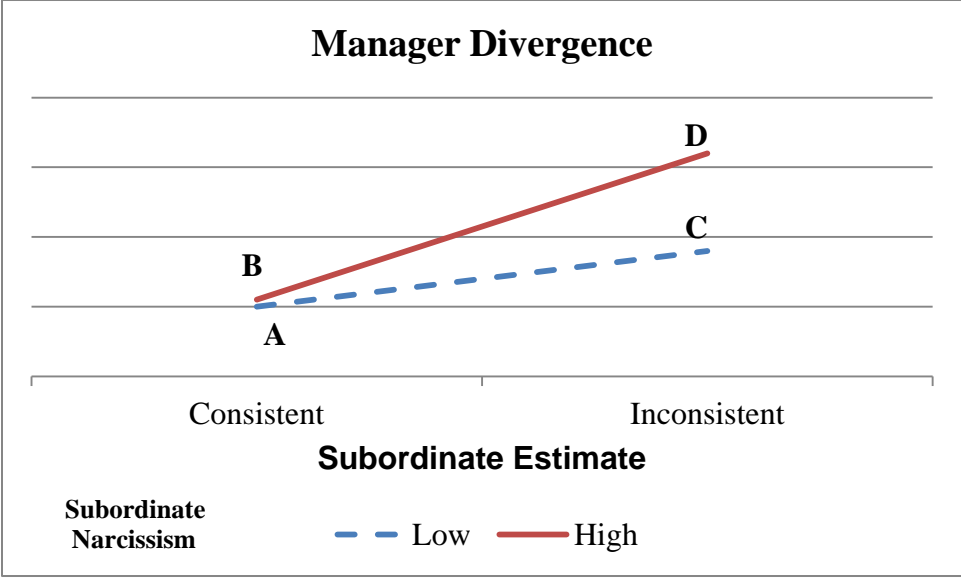
This figure depicts the experimental design and the hypothesized effects of subordinate estimate consistency with incentives and subordinate narcissism on management anchoring (measured via divergence from the subordinate estimate). Divergence is calculated as the absolute value of the difference between the manager's final estimate and the subordinate's initial estimate. Greater divergence implies less anchoring.

H1: $\overline{AB} < C < D$
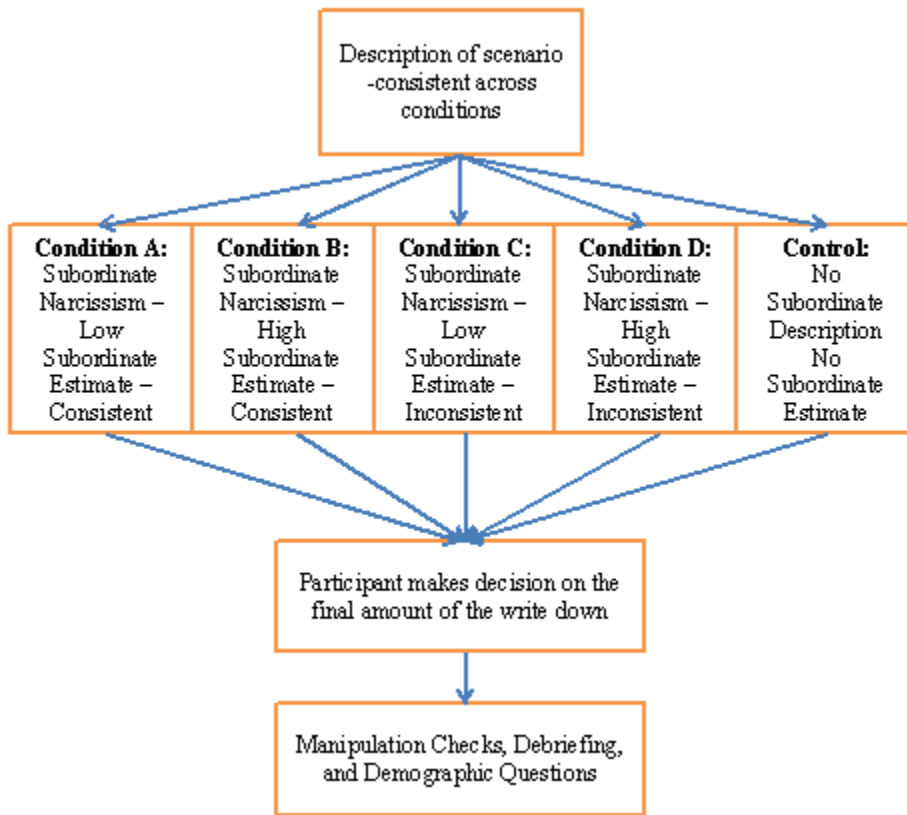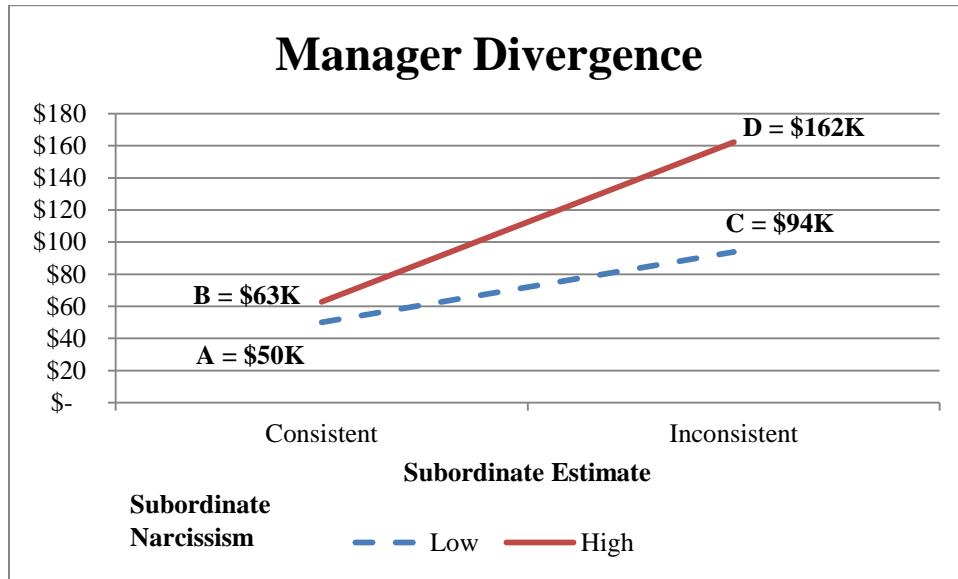
FIGURE 2
Experimental Procedure


```
┌─────────────────────────────┐
│   Description of scenario    │
│    -consistent across        │
│        conditions            │
└─────────────────────────────┘
```

Condition A:	**Condition B:**	**Condition C:**	**Condition D:**	**Control:**
Subordinate Narcissism – Low Subordinate Estimate – Consistent	Subordinate Narcissism – High Subordinate Estimate – Consistent	Subordinate Narcissism – Low Subordinate Estimate – Inconsistent	Subordinate Narcissism – High Subordinate Estimate – Inconsistent	No Subordinate Description No Subordinate Estimate

```
┌─────────────────────────────┐
│ Participant makes decision on the │
│  final amount of the write down   │
└─────────────────────────────┘
              │
              ▼
┌─────────────────────────────┐
│ Manipulation Checks, Debriefing, │
│  and Demographic Questions       │
└─────────────────────────────┘
```

This figured depicts the observed effect of subordinate estimate consistency with manager incentives and subordinate narcissism on management divergence from (anchoring on) the subordinate estimate. Lower divergence implies greater anchoring.

FIGURE 4
Moderated Mediation Model

Panel A: Conceptual Diagram

Panel B: Statistical Diagram