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**Can Managerial Knowledge of Executive Compensation Encourage or Deter Real Earnings
Management?
An Analysis of R&D Reporting Methods**

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of
Philosophy in Business at Virginia Commonwealth University.

by

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Abstract

CAN MANAGERIAL KNOWLEDGE OF EXECUTIVE COMPENSATION ENCOURAGE OR DETER REAL EARNINGS MANAGEMENT? AN ANALYSIS OF R&D REPORTING METHODS

By Andrea L. Gouldman, Ph.D., CPA

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Business at Virginia Commonwealth University.

Virginia Commonwealth University, 2013.

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This study examines the effects of research and development (R&D) reporting method and managerial knowledge of supervisor compensation on R&D project continuation decisions. The current study employs an experiment with a 2x3 between-participants design, manipulating both R&D reporting method (expense vs. capitalize) and knowledge of supervisor compensation (control group with no knowledge vs. knowledge of non-restricted stock compensation vs. knowledge of restricted stock compensation). Using salient short-term incentives to motivate real earnings management, this study demonstrates that capitalization may result in managers foregoing economically efficient R&D investment opportunities. The results indicate that managerial knowledge of supervisor compensation structure has little influence on managers' R&D project continuation choices. However, when managers capitalizing R&D expenditures had knowledge that their supervisors received non-restricted (short-term) stock compensation their perceived personal responsibility for the decision significantly decreased. Participants who

capitalized R&D expenditures and had knowledge that their supervisor received restricted (long-term) stock compensation rated the importance of making a decision to please their supervisor significantly higher than all other participants. Additionally, participants with knowledge that their supervisors restricted stock compensation were significantly more concerned about the likelihood of negative personal repercussions regardless of R&D reporting method. These findings contribute to the management accounting literature by providing new insights on the influence of knowledge of supervisor compensation on managerial decision making as well as additional insights into the factors that contribute to and limit real earnings management. This study also extends the literature on R&D by providing evidence of the potential for real earnings management when R&D expenditures are capitalized in the absence of personal responsibility.

I. INTRODUCTION

Since the issuance of Statement of Financial Accounting Standards (*SFAS*) No. 2, there has been an ongoing discussion of the pros and cons of expensing versus capitalizing research and development (R&D) expenditures. One aspect of this debate centers on the opportunities for real earnings management (RM). RM is a type of earnings management that occurs when managers undertake actions that deviate from best practices to meet certain earnings thresholds (Roychowdhury 2006). The preponderance of prior research proposes that mandatory R&D expensing provides incentives for managers to underinvest in R&D as a means to increase reported earnings (Baber et al. 1991; Cohen and Zarowin 2010; Gunny 2010; Roychowdhury 2006). However, recent research suggests that R&D capitalization may also provide incentives for RM in the form of overinvestment in failing R&D projects (Seybert 2010). More specifically, when R&D is capitalized, managers may delay discontinuing or overinvest in a failing project to avoid the negative reporting consequences of impairing the original project asset. The present study further investigates the potential for RM when R&D expenditures are capitalized.

The Institutional Shareholder Services, Inc.'s (ISS) most recent global survey on corporate governance proposes that executive compensation will be the most important governance topic for the upcoming year (ISS 2012). Further, the Securities and Exchange Commission (SEC) has been taking actions to address concerns about executive compensation for several years. In 2006, the SEC overhauled the old executive compensation disclosure rules. Item 402 of Regulation S-K was revised (effective December 2006) requiring public companies to increase and simplify executive compensation disclosures, among other things, to assist with shareholder understanding (SEC 2007). Notwithstanding these changes, concerns about

executive compensation practices at public companies continued and were addressed again in specific provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) (Morrison and Foerster 2010). More specifically, the Dodd-Frank Act requires the SEC to come up with disclosure rules addressing the association between executive compensation and the company's financial performance in addition to the proportion of the executives' total compensation relative to the median compensation of all other employees (Deloitte 2012; SEC 2012).

While additional information about executive compensation may provide shareholders with more clarity about how executives are compensated, an interesting question arises: Will knowledge of an executive's compensation package impact the behavior or decisions of that individual's subordinates? Taken together with R&D, it remains an open question as to how (or if) a firm's R&D reporting method might interact with knowledge of a supervisor's compensation package to impact certain managerial decisions, such as whether or not to continue a failing R&D project. To better understand the factors that may help managers make value maximizing R&D investment decisions, this study examines the impact of R&D reporting method and managerial knowledge of supervisor compensation on R&D project continuation decisions.

The current study employs an experiment with a 2x3 between-participants design, manipulating both R&D reporting method (expense vs. capitalize) and knowledge of supervisor compensation (control group with no knowledge vs. knowledge of non-restricted stock compensation vs. knowledge of restricted stock compensation). While prior research investigates reputation or project responsibility based motivations for RM under the capitalization reporting method (Seybert 2010), motivations related to performance-contingent incentives remain

unexplored. The current study addresses this gap in the literature by examining RM decisions in an experimental setting with salient performance-contingent incentives. Specifically, project continuation or RM is motivated by a short-term performance-contingent incentive. Short-term incentive structures have been linked to both real and discretionary accrual earnings management (Balsam 1998; Carter et al. 2009; Chow et al. 2000; Healy 1985; Ibrahim and Lloyd 2011).

Participants in this study are asked to allocate R&D funds between two projects. They may either allocate funds towards continuing an original failing project or towards developing a new alternative project. When R&D expenditures are expensed, the manager does not benefit from project continuation. Regardless of supervisor incentive horizon, it is expected that managers will be less likely to continue the project when R&D expenditures are expensed. In contrast, when R&D expenditures are capitalized, the manager benefits from project continuation. An impairment loss would be triggered if the original project is discontinued prohibiting participants from receiving their current year bonus. It is predicted that RM will be dependent on the supervisor's compensation package. Under capitalization, when managers have knowledge that their incentive horizon is aligned with that of their supervisor (i.e. both short-term) altruism, other regarding preferences, moral disengagement theory, and attribution theory indicate that the presence of an additional beneficiary will create an additional motivation for managers to continue the original project or engage in RM. In contrast, when managers have knowledge that their incentive horizon is misaligned with that of their supervisor (i.e. the manager has a short-term horizon and the supervisor has a long-term horizon) accountability pressures and impression management can deter managers from engaging in RM. Therefore, it is anticipated that supervisor incentive horizon will moderate the relationship between R&D reporting method and managers' willingness to continue with a failing project.

This study makes several valuable contributions. First, due to the magnitude of spending on R&D, research that can inform practice is important (Seybert 2010). For example, the U.S. is the worldwide leader in R&D spending and for the past three decades R&D spending accounted for approximately 2.5 percent of the gross domestic product (Bernanke 2011). In the past 35 years, median R&D spending accelerated nearly twice as fast as average spending. Additionally, corporate R&D spending approximately doubles that of print and broadcast media advertising and is equivalent to roughly half of the amount spent on capital expenditures (Hirschey et al. 2012). Observably, R&D is a significant expense for many companies (Oswald and Zarowin 2007).

Second, the increased use of R&D capitalization in the U.S. and worldwide suggests that the present study has the potential to inform regulators. Given the R&D reporting differences between U.S. Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS), there is continued discussion regarding what method will ultimately be adopted upon the convergence of these standards. U.S. executives have expressed concerns over the significance of potentially changing R&D reporting methods. These executives rank the differences of accounting for R&D under U.S. GAAP and IFRS as an area that will require substantial effort for conversion and impact their companies' financial statements (PwC 2011). It is important for regulators, executives, and investors to understand the economic differences and behavioral implications associated with these alternative R&D reporting methods as they prepare for the more widespread adoption of IFRS.

Third, results of the present study may shed light on corporate practices that might be used to circumvent transparency in financial reporting. The passage of the Sarbanes-Oxley Act (SOX 2002) significantly changed the financial reporting environment by providing greater

penalties for fraudulent financial reporting. However, Bartov and Cohen (2009, 508) warn that “investors and other capital market participants should pay more attention to real earnings management activities used to meet certain earnings targets than in the pre-SOX period”. These authors suggest that some companies may be using RM as a covert method for questionable financial reporting.

When managers were asked to make an absolute decision to continue or discontinue the original project, as expected managers were more likely to continue the project when R&D expenditures were capitalized relative to expensed. One implication of this study is that even in the absence of personal responsibility, there is the potential for RM when R&D expenditures are capitalized. However, in the absence of an absolute choice the differential impact on project continuation between the two R&D reporting methods was less clear.

The results of this study do not support the hypotheses that managerial knowledge of supervisor compensation structure influences R&D project continuation choices. However, analyses of the debriefing questions provide some meaningful insight into the potential psychological effects of knowledge of supervisor compensation in managerial decision making. Consistent with attribution theory, when decision makers who capitalized R&D expenditures had knowledge that their supervisors received non-restricted stock compensation their perceived personal responsibility for the decision significantly decreased. As predicted by self-presentation theory, participants who capitalized R&D expenditures and had knowledge that their supervisor received restricted, long-term stock compensation rated the importance of making a decision to please the CTO significantly higher than all other participants. Additionally, participants with knowledge that their supervisors receive restricted stock compensation were significantly more

concerned about the likelihood of negative personal repercussions regardless of R&D reporting method.

The remainder of this proposal is organized as follows. The next section identifies the appropriate literature for the study and develops the hypotheses. Section three describes the methodology for the study, which is followed by the results in Section four. Section V concludes by offering limitations of the study and suggestions for future research.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Real Earnings Management

Earnings management involves using accounting principles or making business decisions in such a way that allows the company to present itself in the best possible light. RM occurs when a manager alters the operations of the firm in a way that is not consistent with normal or best business practices with the intent of meeting certain earnings thresholds (Roychowdhury 2006). This is achieved by timing investment or financing decisions in a manner that intentionally alters reported earnings (Schipper 1989). These actions tend to be short sighted, generating a desired short-term gain or loss in exchange for lower future cash flows. Because RM directly affects cash flows in the current period, it may also be more costly to firms from a taxation perspective (Zang 2007). Therefore, unlike accruals-based earnings management, RM is often accompanied by a real cost to the firm in the form of decreased long-term firm value (e.g., Cohen and Zarowin 2010; Ewert and Wagenhofer 2005; Gunny 2010; Hunton et al. 2008).

Although accruals-based earnings management may be less costly than giving up long-term firm value, managers appear to prefer managing earnings through real activities over accrual manipulations (Graham et al. 2005). There are several potential explanations for why

managers may prefer RM techniques over accruals-based earnings management. Prior empirical evidence implies that accounting standards can influence how firms choose to manage earnings (Cohen et al. 2008; Ewert and Wagenhofer 2005; Zang 2007). The majority of this research focuses on the substitution effect between accruals-based and RM. As accounting standards become more restrictive, discretion for manipulating accruals is reduced (Ewert and Wagenhofer 2005). Thus, when managers have fewer permissible accounting alternatives available or less opportunities to manipulate accruals, they are likely to replace accruals-based earnings management with RM (Chi et al. 2011; Demski 2004; Drymiotes 2011; Ewert and Wagenhofer 2005; Schipper 2003; Wang and D'Souza 2006).

The substitution between accruals-based and RM is also likely to occur when regulatory or auditor scrutiny increases (e.g., Cohen et al. 2008; Demski 2004; Gunny 2010; Schipper 2003; Zang 2012). RM tends to be less transparent and thus more difficult for shareholders, regulators, and auditors to detect (Cohen et al. 2008; Wang and D'Souza 2006). Both Cohen et al. (2008) and Bartov and Cohen (2009) find evidence consistent with an increase in RM in the periods following the passage of SOX. Similarly, while higher quality auditors are effective in curtailing accruals-based earnings management, such a situation is often accompanied by higher levels of RM (Chi et al. 2011).

In addition to the passage of SOX, the recent global economic crisis and recession has challenged the U.S. financial regulatory system and auditing profession (Kothari and Lester 2012). In response to the economic crisis, the American Institute of Certified Public Accountants (AICPA) submitted several legislative reform recommendations to Congress, all of which support enhanced transparency in financial reporting (Melancon 2010). In addition to changing the accounting standards to provide greater transparency, any changes in accounting standards

should be accompanied by “greater enforcement, sound auditing practices, and commensurate regulatory vigilance (Kothari and Lester 2012, 350).” These authors suggest that such mechanisms will remain important as the U.S. standards continue to evolve through the convergence with IFRS. Further, the Dodd-Frank Act is working to improve transparency in the financial system (SEC 2012). In view of the fact that prior research indicates that increased regulatory and auditor scrutiny, and transparency, make accruals-based earnings management more difficult, it is likely that RM will continue to be the preferred method for managing earnings.

There are a number of methods of RM that companies might choose, all of which impact earnings in current and future periods. Some of the choices might be to lower prices near the end of the year to move sales into the current year, to delay investments until a later period, to extend more lenient credit terms, to sell fixed assets, or to delay or overinvest in R&D projects. R&D expenditures have a material impact on earnings and stock returns for most companies engaged in R&D activities (Oswald and Zarowin 2007). Given the prevalence of RM and the potentially significant long-term economic consequences of managers’ R&D investment decisions, it is important to understand how R&D accounting methods influence managers’ use of RM techniques.

R&D Reporting Method

With the exception of certain software costs (*SFAS* No. 86, 1985), R&D capitalization is not permissible for U.S. firms. U.S. GAAP requires material R&D activities to be expensed and disclosed in the financial statements when incurred (*SFAS* No. 2, 1974; Codification Topic 730, 2009). Since the release of *SFAS* No. 2, there has been an ongoing debate about whether the U.S. should revert back to capitalization (Oswald and Zarowin 2007). The recent convergence efforts

between the FASB and IASB, as well as the SEC's acceptance of the use of IFRS without reconciliation from foreign filers, have reenergized this dialogue. Unlike U.S. GAAP, qualified development costs are permitted to be capitalized under IFRS (*IAS 38*, 2004). The ability to manage earnings through the use of real techniques also differs between these two standards, as discussed in the next section. The FASB continues to work with the IASB in an effort to converge to a single set of high quality, global accounting standards (FASB 2012). Given the R&D reporting differences between U.S. GAAP and IFRS, it is important to understand the economic differences and behavioral implications associated with these differing reporting methods as the discussion continues about what method will ultimately be adopted upon the convergence of these standards.

Effects of R&D Reporting Method on Real Earnings Management

Following the adoption of *SFAS* No. 2, early research provides evidence of a small or weak, but consistently negative, relation between mandatory expensing and R&D investment (e.g., Dukes et al. 1980; Wasley and Linsmeier 1992). These studies focus on expensing as a mechanism for managers to manipulate R&D spending. When R&D is expensed, a reduction in R&D expenditures results in an equivalent increase in pretax income which immediately improves earnings. Several studies provide additional insight into the motivation behind this form of RM. Archival evidence suggests that managers reduce their investments in R&D to meet or exceed earnings targets and analysts' expectations, (Baber et al. 1991; Dechow and Sloan 1991; Gunny 2005; Gunny 2010; Perry and Grinaker 1994; Roychowdhury 2006), avoid seasoned equity offering underpricing (Cohen and Zarowin 2010), and avoid potential debt covenant violations (Kim et al. 2010). Survey evidence supplements archival findings. For example, Graham et al. (2005) find that the majority of executives they surveyed admit that they

would be willing to engage in RM to meet earnings targets (80 percent) or smooth earnings (78 percent). Collectively, these studies suggest that managers view R&D expenditures as an opportunity to alter short-term income in a way that is more appealing to the market.

Requiring mandatory R&D capitalization has been suggested as a potential remedy for the RM problems identified with expensing R&D. Capitalization reduces the impact of R&D expenditures on current period earnings because the R&D expense is spread over several periods (Seybert 2010). Oswald and Zarowin (2007) investigate firms in the United Kingdom that voluntarily chose whether to expense or capitalize their R&D expenditures. Consistent with the premise that capitalization reduces underinvestment in R&D, firms voluntarily capitalizing have significantly higher investment levels in R&D than firms that expense. Other studies advocating the use of capitalization focus on the potential informational benefits such as stock price informativeness and correlations with future economic returns (e.g., Healy et al. 2002; Kothari et al. 2002; Lev and Zarowin 1999; Oswald and Zarowin 2007).

While there are potential benefits to capitalizing R&D expenditures, there may also be unintended consequences. An innovative experimental study by Seybert (2010) takes behavioral considerations into account and offers evidence suggesting that capitalization can provide incentives for managers to engage in RM in the form of overinvestment in R&D. Discontinuing a failing R&D project under capitalization requires impairment of the R&D project that was recorded as an asset in prior years when the carrying value of the asset exceeds the sum of future cash flows.¹ Thus, when R&D is capitalized managers may delay discontinuing or overinvest in

¹ *SFAS* No. 144 uses undiscounted future cash flows whereas *SFAS* No. 142 and *IAS* 36 use discounted future cash flows.

a failing project, potentially forgoing a superior alternative project, to avoid the negative reporting consequences of impairing the original project asset.²

Capitalization and Responsibility Driven Real Earnings Management

Seybert (2010) finds that managers personally involved in selecting a R&D project are more likely to continue with the failing project when expenditures are capitalized despite the availability of a more profitable alternative than managers assigned to the project. This tendency to overinvest with personal responsibility is consistent with “escalation of commitment.” Escalation of commitment was first described by Staw (1976) as the tendency of individuals to commit additional resources to a chosen course of action despite the risk of future negative consequences in order to justify a prior decision. The motivation to escalate commitment is stronger when an individual is personally responsible for selecting a project as personal responsibility tends to exacerbate an individual’s perceived need to justify their previous investment (Brockner 1992; Sleesman et al. 2012; Staw 1976).

Seybert (2010) also demonstrates a link between overinvestment and reputation concerns, as his results indicate that high self-monitors (individuals who closely monitor their behavior to maintain desired public appearances) are more likely to overinvest than low self-monitors to avoid reputation damage. Managers may feel that abandoning a project that they previously selected reveals a possible flaw in their prior decision making logic. Admitting that a previous decision was mistaken could potentially bring into a question a manager’s talent and hurt his or her opportunities in the labor market (Kanodia et al. 1989). To supplement and further support

² Entwistle (1999) conducts a series of interviews with firm executives and finds that many opposed capitalization based in part on the concerns about future impairments if the project turns out to be unprofitable. The executives interviewed tended to have a preference for recognizing expenses in the current period in exchange for higher future profits.

his findings, Seybert (2010) conducted a follow-up survey and found that experienced executives anticipate that managers will be more likely to overinvest when R&D is capitalized.

Seybert (2010) only finds a significant difference in RM between R&D methods when managers are personally responsible for the original investment decision. He observes no significant difference in the tendency to conduct RM between R&D methods when managers are not personally responsible for making the original investment decision. Thus, Seybert (2010) concludes that when managers are personally responsible for the original investment, RM increases when R&D is capitalized. As acknowledged by Seybert (2010, 675) this result is consistent with escalation of commitment behavior.

The question arises as to whether his results are driven by escalation of commitment. If not, the question arises as to why he finds no relation between R&D capitalization and RM in the absence of manager responsibility for the original investment. This study posits that R&D capitalization can significantly impact RM in the absence of escalation of commitment if managers' incentives to manage earnings are salient. By assigning the project to the manager rather than giving the manager personal responsibility for the selection of the project, this study removes the confounding influence of escalation of commitment. Further, this study provides salient incentives for overinvestment by describing the manager's short-term performance-contingent annual bonus.

Capitalization and Performance Contingent Incentives for Real Earnings Management

If the opportunity arises, the principal-agent model presumes that responsible decision makers will act in a self-serving manner (Hunton et al. 2008). Further, the bonus-maximization hypothesis purports that managers are likely to make discretionary accounting decisions to

maximize their short-term bonus compensation (Ibrahim and Lloyd 2011). There is extensive prior research linking short-term bonus compensation to accruals-based earnings management behavior (e.g., Balsam 1998; Carter et al. 2009; Guidry et al. 1999; Healy 1985; Ibrahim and Lloyd 2011). Short-term incentive structures can also provide motivation for managers to engage in R&D related RM. An archival study conducted by Hoskisson et al. (1993) documents a negative relation between short-term performance incentives and total R&D intensity. These findings suggest that managers reduce discretionary R&D spending or engage in RM to maximize their incentive compensation. An experimental study by Hunton et al. (2008) also provides evidence consistent with RM (reducing discretionary R&D spending) increasing in the presence of a short-term incentive horizon.

Consistent with agency theory, the bonus maximization hypothesis, and the findings of Hoskisson et al. (1993) and Hunton et al. (2008), it is expected that short-term performance-contingent incentives will also encourage RM in the form of overinvestment in a failing R&D project. As previously discussed, discontinuing a failing project under the capitalization reporting method typically requires impairment of the R&D project that was recorded as an asset in prior years. If the impairment loss reduces current net income to a level that precludes managers from meeting their annual bonus target, they may delay discontinuing or overinvest in the failing project to secure their annual bonus. This conflict of interest does not exist when R&D expenditures are expensed because prior period expenditures have already been deducted from net income. Thus, there is no asset to impair in the current year. In sum, when short-term incentives to maximize current income are present, the expected influence of reporting method on the continuation decision of a failing project is that capitalization will provide incentives for managers with short-term incentives to engage in activities that are consistent with earnings

management of real activities (i.e., overinvesting in a failing R&D project). In contrast, managers required to expense R&D expenditures will benefit the most from discontinuing the project.

They will be more likely to discontinue the project and redirect resources into a more profitable alternative project. This leads to the following hypothesis:

H1: Managers with short-term incentives to maximize current earnings will be more willing to continue with a failing project when R&D expenditures are capitalized relative to when such expenditures are expensed.

Knowledge of Supervisor Incentive

Drawing on agency theory and the bonus-maximization hypothesis, Hypothesis 1 posits that managers with short-term performance contingent incentives will be more likely to engage in RM when the R&D reporting method provides economic incentives to do so (i.e., when R&D expenditures are capitalized relative to when such expenditures are expensed). However, monetary rewards may be an incomplete motivation. Prior research provides evidence that individuals oftentimes deviate from the behavior that agency or conventional economic theory would predict, even if doing so decreases their payoff (Camerer 2003; Cohen et al. 2007; Evans et al. 2001; Rabin 2002). Thus, it is expected that managers will not be motivated exclusively by self-interest to maximize their personal wealth by continuing the project when expenditures are capitalized despite the financial incentive to do so. The expected benefits or utility that an individual receives from a course of action is a combination of both nonsocial (personal) and social utility. One type of social utility would be the influence of an action or decision on another's payment or wealth (Gino et al. 2012). This study argues that knowledge of a supervisor's compensation structure is a social factor that potentially influences managers' project continuation decisions.

Non-Restricted Stock Compensation (Short-Term Incentive)

If a supervisor has an incentive to maximize short-term earnings, then both the manager and supervisor will benefit from project continuation when R&D expenditures are capitalized. The presence of an additional beneficiary, the supervisor, may influence managers' project continuation choices. Theory and data suggest that altruism, or making decisions and behaving with the goal of benefiting another, is a part of human nature (Piliavin and Charng 1990). Thus, there may also be intrinsic motivations to arrive at an outcome that benefits others (Gino et al. 2012; Itoh 2004; Loewenstein et al. 1989). Prior data provides evidence that people have *other-regarding* preferences. Individuals are willing to sacrifice for others and incorporate features such as fairness, equity, and reciprocity into decision making (Itoh 2004). Concern for others can potentially lead to undesirable behavior, such as RM. This effect is amplified when combined with benefits to one's self. For example, a recent study by Gino et al. (2012) finds an increased propensity to engage in acts of dishonesty that benefit others when such actions also provide benefits to one's self. Accordingly, the additional benefit that RM provides the supervisor may provide increased motivation for managers to engage in RM beyond the incentive to maximize personal wealth.

Managerial behavior is likely influenced by factors other than altruism and other regarding preferences. The shared financial rewards resulting from RM when both the manager and their supervisor are compensated with short-term incentives are expected to help managers more easily justify and rationalize their self-interested actions (Church et al. 2012; Davis et al. 2006; Gino et al. 2012). Bandura's (1990) moral disengagement theory purports that individuals are more likely to behave unethically if they are not the sole beneficiary of such behavior. People self-regulate their behavior using generally accepted moral standards. Individuals tend to avoid

behavior that violates these standards as doing so creates a psychological cost which is self-condemnation. However, these moral standards are not fixed. An additional beneficiary may enable individuals to cognitively process the decision in a way that allows them to morally disengage or discount the moral concerns associated with the decision without feeling distress. In other words, individuals unconsciously shift the decision to be compatible with their moral standards (Church et al. 2012).

Moral disengagement theory implies that a shared interest makes unethical or questionable behavior more self-justifiable to an individual. In general, humans have an unconscious self-serving bias predisposing them to gather, process, and remember information in a self-serving way. Self-serving justifications are based on genuine, but biased, self-assessments. This unconscious bias helps people protect their self-image, feel better about their decisions, and ultimately persuade themselves that their behavior is acceptable (Gino et al. 2012; Merkl-Davies and Brennan 2011; Moore et al. 2006; Prentice 2007).

Attribution theory suggests that individuals who engage in unethical behavior tend to externalize attribution for such acts to other individuals or environmental factors. For example, rather than admit that unethical behavior was motivated by personal self-interest, an individual might claim that such behavior was necessary to conform with social expectations or norms (e.g., behaviors that superiors demand from subordinates, or behaviors that are consistent with what others would do under those conditions). Making external attributions or shifting responsibility is a coping mechanism that allows individuals to rationalize their behavior (Baird and Zelin 2009; Davis et al. 2006). When supervisors have short-term incentives, managers may assume that their supervisor would make wealth maximizing choices and would expect subordinates to act in a similar manner. Thus, managers may attribute their RM behavior to factors beyond their control.

Such reasoning will likely allow managers to shift some or all of the responsibility of RM away from themselves and onto their supervisors.

Per moral disengagement theory it is expected that managers will be able to more easily justify RM and thus be more likely to continue a failing project when the benefit of doing so is shared. Further, attribution theory proposes that managers can more easily rationalize their self-interested behavior by attributing their behavior to what their supervisor would expect them to do. Collectively these theories, as well as a preference for altruism, suggest that when a manager is aware that the supervisor has an incentive that encourages maximizing current period earnings, s/he will be more likely to continue the project when expenditures are capitalized (or engage in real earnings management) than in the absence of this knowledge. Accordingly, when R&D expenditures are capitalized, it is predicted that the potential benefits to the supervisor will create an additional motivation for managers to continue the original project or manage earnings through real activities. This predicted effect is formally recognized in the following hypothesis:

H2: When R&D expenditures are capitalized, managers with knowledge that their supervisors have non-restricted stock compensation will be more willing to continue with a failing project than will managers with no knowledge of their supervisors' compensation package.

Restricted Stock Compensation (Long-term Incentive)

When a supervisor has a long-term incentive, then s/he will not benefit from continuing a failing R&D project when R&D expenditures are capitalized. Given a situation where the manager has short-term incentives, the resulting incentive misalignment creates a potential conflict of interest. While avoiding an impending impairment loss by continuing a R&D project will increase short-term earnings (consistent with the manager's short-term incentives), project

continuation conflicts with the long-term welfare of the supervisor, organization, and its stakeholders.

Knowledge that the supervisor's compensation structure incentivizes long-term earnings may discourage managers from engaging in RM. Managers' decisions in conflict of interest situations may be influenced by accountability pressures. A conflict of interest can enhance managers' perceived accountability or the obligation to explain previous decisions when asked to do so. Accountability demands create pressure to behave in a way that can be acceptably justified (Beeler and Hunton 1997; Hunton et al. 2010; Kirby and Davis 1998; Merkl-Davies and Brennan 2011). The dominant accountability pressure a manager experiences at work originates from individuals in positions of power within the organization (i.e., a manager's supervisor). Managers are likely to perceive that their supervisors will more closely scrutinize their behavior when there is a conflict of interest such as misaligned incentive horizons. Prior accountability research indicates that the misalignment between managers' and supervisors' incentive horizons may compel managers to become unsure and more critical of their decision making (Merkl-Davies and Brennan 2011).

The requirement to justify one's previous judgments and decisions encourages deliberate attitude shifting which typically results in a de-biasing effect (Fox and Staw 1979; Moore et al. 2006; Tetlock et al. 1989). Specifically, accountability encourages more accurate decision making by causing decision makers to be less influenced by prior beliefs, focus more on available evidence, and ultimately make more complex judgments (Simonson and Staw 1992). Accordingly, when a manager is aware that his or her supervisor has a conflicting incentive horizon, it is expected that demands for accountability will discourage project continuation as it will be more challenging for managers to justify overinvestment in the failing project. In other

words, it will be more difficult for managers to defend decisions driven by the desire to maximize personal wealth when they know that such decisions will have a detrimental impact on their supervisor's wealth.

According to self-presentation theory, individuals are motivated to purposefully manage the impression others have of them (Sleesman et al. 2012). Managers may make choices they feel will be viewed favorably by their superiors in order to manage their superiors' perceptions or impressions of them as subordinates. Impression management, a common phenomenon in organizations, is a process where individuals attempt to present themselves in a way that will be perceived positively by others (Bolino and Turnley 1999; Merkl-Davies and Brennan 2011; Wayne and Linden 1995). Prior organizational behavior research indicates that impression management strategies can alter supervisors' perceptions about employees and lead to employee benefits, such as better future performance evaluations and career advancement opportunities (Wayne and Linden 1995). Research in social psychology suggests that impression management can be motivated by the social presence of others whose behavior management is trying to anticipate. Other psychological factors driving impression management include the desire to maximize rewards and minimize sanctions (Merkl-Davies and Brennan 2011).

A company's incentive structure creates an implicit pressure for managers to infer what their supervisors want without being given explicit direction (Baird and Zelin 2009; Prentice 2007). In the context of the current study, managers will likely anticipate that their supervisors will not support the use of RM because it conflicts with their supervisors' incentives. Managers' fears of negative repercussions and reputation damage may intensify suspecting that the supervisor views RM as undesirable behavior. Further, the fear of failing to please their supervisors may cause managers significant stress due to the negative impact it could potentially

have on their careers. Managers will likely anticipate that engaging in RM will cause their supervisors to respond in undesirable ways, for example, in the form of unfavorable performance evaluations or recommendations for career advancement. Thus, it is expected that self-presentational motives will encourage managerial behavior or choices consistent with the preferences of upper-level management (i.e., avoiding the use of RM) to counteract the potential negative consequences of failing to do so.

Managers are expected to take their supervisors' compensation into account when making decisions that influence net income in current and future periods. When a manager is aware that their supervisor has a conflicting long-term compensation structure, it is likely that they will feel greater accountability pressures to behave in ways that can be acceptably justified. Further, self-presentation theory suggests that managers may avoid RM in an effort to present themselves favorably to supervisors. Personal financial gains that managers would receive from making the decision to continue a failing R&D project will likely be outweighed by the increased perceived need to justify their decisions and the desire to maintain a positive reputation in the organization. In other words, the conflict of interest created by the knowledge that the supervisor has a long-term incentive will deter managers from continuing the original project or managing earnings through real activities. Accordingly, when R&D expenditures are capitalized, it is anticipated that managers who are aware that their supervisor has a compensation package with restricted stock compensation will be less likely to continue the original project (or engage in real earnings management) than in the absence of this knowledge. The above discussion leads to the following hypothesis:

H3: When R&D expenditures are capitalized, managers with knowledge that their supervisors have restricted stock compensation will be less willing to continue with a

failing project than will managers with no knowledge of their supervisors' compensation package.

Interaction between R&D Reporting Method and Supervisor Incentive Horizon

When R&D expenditures are expensed, the manager does not benefit from project continuation. Regardless of supervisor incentive horizon, it is expected that managers will be less likely to continue the project with the expensing method. Conversely, the effect of capitalization on RM is dependent on the supervisor's incentive horizon. When a manager's incentive horizon is aligned with that of their supervisor (i.e., both short-term) moral disengagement theory, attribution theory, and a preference for altruism indicate that the presence of an additional beneficiary, the supervisor, will increase managerial motivation to continue the original project or engage in RM when R&D expenditures are capitalized. In contrast, when the manager has a short-term horizon and the supervisor has a long-term horizon, accountability pressures and impression management are hypothesized to deter managers from continuing the original project when R&D expenditures are capitalized. The predicted difference in RM between the two R&D reporting methods should be greatest when the managers have knowledge that their supervisors are being compensated with short-term, non-restricted stock compensation, next greatest when managers have no knowledge of supervisor compensation and lowest when managers have knowledge that their supervisors are compensated with long-term, restricted stock compensation. Accordingly, it is anticipated that supervisor incentive horizon will moderate the relationship between R&D reporting method and managers' willingness to continue with a failing project. This predicted interaction is formally reflected in the following hypothesis:

H4: The difference in managers' willingness to continue with a failing project between R&D reporting methods will be greatest when managers have knowledge that their supervisors are compensated with non-restricted stock compensation, next

greatest when managers have no knowledge of their supervisors' compensation, and lowest when managers have knowledge that their supervisors are compensated with restricted stock compensation.

III. METHOD

Design and Participants

This study utilizes a 2x3 between-participants design, manipulating both R&D reporting method (expense vs. capitalize) and knowledge of supervisor compensation (control group with no knowledge vs. knowledge of non-restricted stock compensation vs. knowledge of restricted stock compensation). Graduate students enrolled in business courses from a large public university were recruited for voluntary participation in experimental sessions and were randomly assigned to one of the six treatment groups. Graduate business students were used as proxies for managers. Given the experience and business knowledge of the graduate business students, this participant group was deemed to have adequate knowledge to achieve the goals of the experiment (Libby et al. 2002). Seybert (2010) uses M.B.A. students for a similar task and finds evidence supporting this participant group has the knowledge necessary and sufficient to meaningfully complete the task. Additionally, to help ensure that participants understood the accounting concepts, the case materials explicitly explained the reporting and income consequences of both decisions for the assigned R&D reporting method.

Task and Procedures

Participants read a hypothetical case where they were asked to assume the role of a manager who faces a R&D investment decision. Experimental materials included an information sheet describing informed consent, case materials, case questions, and a post-experimental

questionnaire including questions related to manipulation checks, debriefing items, and demographic variables. Participants were instructed to return the experimental materials back to the administrator immediately after they finished the last section. During the experimental session, participants were not allowed to communicate with one another about the task, which required approximately 15 minutes to complete.

The case materials provide background information on the company, the independent variable manipulations, and the decision context. Consistent with Seybert (2010), participants were asked to assume the role of a R&D manager tasked with managing and evaluating the investments in various R&D projects at a public company that produces electronic devices. However, there is an important distinction from Seybert (2010). Rather than manipulating project responsibility, all participants in this study were informed that they had recently been reassigned the main case project to minimize the potential for escalation of commitment. The case also included information about the financial goals of the company and the participants' compensation structure. All participants were incentivized with a short-term (annual) bonus equivalent to 30 percent of their salary if company earnings targets were met. This bonus rate is consistent with rates reported in prior literature examining managerial compensation (e.g. Guidry et al. 1999; Jackson et al. 2008; Hunton et al. 2008). Consistent with Guidry et al. (1999) bonuses were awarded based on earnings before interest and taxes (EBIT).

After the R&D reporting method and knowledge of supervisor compensation manipulations, which are discussed in the next section, consistent with Seybert (2010) participants were informed that the technology in the assigned project was not performing as well as originally anticipated. Participants were presented with information about an alternative

R&D project that required the same current investment but had higher expected future cash flows than the original project.

In the expense condition, prior period expenditures were already deducted from net income and recording an impairment loss would not be a concern for either of the project choices. When R&D expenditures are capitalized, both the discounted and undiscounted future cash flows of the original project asset exceed its carrying amount. Thus, under both U.S. GAAP (i.e., *SFAS* No. 114, *SFAS* No. 142) and IFRS (i.e., *IAS* 36) an impairment loss would be triggered if the original project was discontinued to write-down the value of the long-term asset that was originally recorded in a prior year. The company would *not* have to recognize an impairment loss if the project was continued. This created a conflict for participants in the capitalization condition. If they chose to discontinue the original project to increase future period cash flows, the impairment loss and related decrease in current period income prohibited them from receiving their current year bonus. The bonus was not interrupted if participants chose to continue with the original project.

After the case was created, it was pilot tested with 92 undergraduate business students at a large state university. Slight revisions were made after the pilot test. The revisions were aimed at improving the clarity of the experimental manipulations and decreasing the time required for completing the experimental task.

Independent Variables

The first independent variable, R&D reporting method, was manipulated at two levels (capitalize vs. expense). Participants were informed that R&D expenditures were either expensed

or capitalized. Consistent with their treatment, participants also received information explaining how the R&D reporting method impacted net income. Project-specific financial statements prepared in accordance with the randomly assigned R&D reporting method were provided as a supplement to the case materials. In the expense condition, current net income is not impacted by the project continuation decision. However, discontinuing the original project and switching to the alternative project improved future net income. In contrast, for participants in the capitalization condition, switching to the alternative project triggered an impairment loss which decreased current net income and excluded them from any bonus potential.

The second independent variable, knowledge of supervisor compensation, was manipulated at three levels (knowledge of non-restricted stock compensation vs. knowledge of restricted stock compensation). A control group with no knowledge of their supervisor's compensation was also included as the third level. Patterned after Bierstaker et al. (2012) and consistent with practice, the compensation plan for all executives was comprised of 20 percent cash and 80 percent stock compensation. In the short-term incentive horizon treatment the stock compensation was described as non-restricted and could be sold at any time. In contrast, the long-term incentive horizon was characterized by restricted long-term stock compensation that could be sold five years after it was received. Consistent with prior research (i.e., Bierstaker et al. 2012; Magilke et al. 2009), the supervisor compensation package was deliberately simplistic to provide a basic orientation of the compensation horizon.

Dependent Variable

Participants were required to allocate six million dollars of R&D funds in the current year. They were asked to decide between the following two actions: (1) authorizing six million

dollars to continue the original large LCD screen project, or (2) discontinuing the original large LCD screen project and authorizing the six million dollars to be used towards the development of a new product. The primary dependent measure captured the likelihood of participants continuing with the originally selected failing project as opposed to the new, more profitable project. The dependent variable was captured with three different questions. This choice to continue the original project or switch to the new project was captured in absolute terms. Additionally, participants indicated their willingness to continue with the original project and likelihood of switching to the new project on 11-point Likert scales.

Post-Experimental Questionnaire

The post-experimental questionnaire included questions related to manipulation checks, debriefing items, and demographic variables. Two manipulation check questions about the independent variables were included to ensure the participants attended to the details of the case and to ascertain the validity of the dependent variable responses. Debriefing questions about the independent variables were included to ensure that the manipulations had the intended effect. Questions were also included to better understand the psychological motivations driving the participants' decisions. Demographic information about the participants' education, age, gender, and employment experience were also collected to test as potential covariates and to ascertain randomization.

IV. RESULTS

Sample Demographics and Covariates

A total of 161 graduate business students participated in the experiment. Table 1 summarizes participants' demographic information. As indicated in Panels A and B, the average participant was 27 years old (39.0 percent of the sample was between 20 and 24 years old). Participants had approximately five years of professional work experience (45.2 percent of the sample had between one and four years of work experience). Of the total sample, 103 (64.4 percent) were male. None of the collected demographic variables were significant covariates (smallest $p = 0.39$). Accordingly, these variables were not included as covariates in the subsequent analyses. To investigate randomization, R&D reporting method and managerial knowledge of supervisor compensation were included as the independent variables in a MANOVA model. The demographic variables were included as the dependent variables. A lack of significance (smallest $p = 0.42$) provides reasonable assurance that the randomization procedure was effective.

Manipulation Checks

To verify the successful manipulation of the independent variables, manipulation check questions were included in the post-experimental questionnaire. The first question asked participants to indicate whether R&D expenditures were expensed or capitalized. Of the 160 participants responding to this question, 147 (91.3 percent) responded correctly. The second manipulation check question concerned supervisor incentive horizon. Participants designated whether their supervisors' stock compensation was short-term and available for immediate sale or long-term and vesting in five years. Participants in the control group did not receive the second manipulation check question. Of the 108 participants responding to this question, 98 (90.7 percent) responded correctly. To provide further assurance that participants properly

attended to the experimental manipulations, only observations for participants that passed the manipulation check questions (n = 138) were used for the analyses in the results that follow.³

TABLE 1
Participant Demographics

Panel A: Means and Standard Deviations

Variable	n	Mean	SD
Age	159	27.29	5.97
Work Experience	155	4.80	5.73

Panel B: Frequencies and Percentages

Variable	Response	n	Percent
Gender	Male	103	64.4%
	Female	57	35.6%
Age	20-24	62	39.0%
	25-29	54	34.0%
	30-34	30	18.9%
	35-39	9	5.7%
	40+	4	2.5%
Professional Work Experience	Less than 1 yr.	28	18.1%
	1-4 years	70	45.2%
	5-9 years	35	22.6%
	10+ years	22	14.2%

To provide further assurance that the responses to the dependent measures were not confounded by escalation of commitment, participants were asked a question to gauge their perceived involvement with the original LCD project. Participants indicated whether they made the original decision to start the project or the project was reassigned to them because the original project manager left the firm. Of the 161 participants that responded to this question,

³ The majority of results are unchanged if the participants that failed the manipulation check questions are included. The main effect of R&D reporting method becomes insignificant if these participants are included.

152 (94.4 percent) responded correctly, indicating a successful manipulation of original project responsibility.

Dependent Variables

Descriptive statistics for each of the dependent measures, the absolute choice to continue or discontinue the original project, likelihood of continuing the original project, and likelihood of switching to the new project, are summarized in Table 2, Panels A, B, and C. Panel A provides a contingency table with row percents for the absolute choice dependent measure. When participants were asked to make an absolute choice between the two projects, 28 percent of participants were willing to continue the original project. Participants who capitalized R&D expenditures were more likely to continue the original project than participants who expensed R&D expenditures (38.6 percent vs. 17.6 percent, respectively, $t = 5.57$, $p < 0.01$, one-tailed). Participants with knowledge that their supervisors were compensated with short-term incentives were more likely to continue the project than participants with no knowledge of their supervisors' compensation, but this difference is not statistically significant (32.6 percent vs. 28.9 percent, respectively, $t = 0.76$, $p = 0.35$, one-tailed). Participants with knowledge that their supervisors were compensated with long-term incentives were insignificantly less likely to continue the project than participants with no knowledge of their supervisors' compensation (23.4 percent vs. 28.9 percent, respectively, $t = 1.19$, $p = 0.28$, one-tailed).

As reported in Panel B, the mean likelihood of project continuation is 3.94 for all participants. Participants who capitalized R&D expenditures were more likely than participants who expensed R&D expenditures to continue the original project (4.14 vs. 3.75, respectively, $t = 1.50$, $p = 0.23$, one-tailed). Participants with knowledge that their supervisors were compensated

with short-term incentives were more likely to continue the original project (4.13) than participants with knowledge that their supervisors were compensated with long-term incentives (3.94) or participants with no knowledge of supervisory compensation (3.78). However, the mean differences between these groups were not statistically significant ($t = 0.17$ and $p = 0.39$, and $t = 0.67$ and $p = 0.28$, respectively).

As reported in Panel C, the mean likelihood of switching to the new project is 7.04 for all participants. Consistent with Panel B, the results presented in Panel C indicate that participants who capitalized R&D expenditures were less likely to switch to the new project than participants who expensed R&D expenditures (6.96 versus 7.13, respectively, $t = 0.82$ and $p = 0.34$, one-tailed). Consistent with expectations, participants with knowledge that their supervisors were compensated with short-term incentives were less likely (6.50) to switch to the new project than participants with knowledge that their supervisors are compensated with long-term incentives (7.50) and participants with no knowledge of supervisor compensation (6.83). However, the mean differences were not statistically significant ($t = 0.05$ and $p = 0.43$, and $t = 0.01$ and $p = 0.47$, respectively).

TABLE 2
Descriptive Results

Panel A: Contingency Table with Row Percents for Absolute Choice of Project Continuation

R&D Reporting Method	Yes	No	Total
EXP ^a	12 17.6%	56 82.4%	68 49.3%
CAP ^b	27 38.6%	43 61.4%	70 50.7%
Total	39 28.3%	99 71.7%	138 100.0%

Descriptive Results

Panel B: Means (Standard Deviations) for Likelihood of Continuing the Original Project

Variable	NON	RES	CONT	Average
EXP ^a	3.58 (3.13) n = 24	4.22 (3.55) n = 23	3.43 (3.03) n = 21	3.75 (3.22) n = 68
CAP ^b	4.73 (2.68) n = 22	3.67 (3.34) n = 24	4.08 (2.78) n = 24	4.14 (2.95) n = 70
Average	4.13 (2.95) n = 46	3.94 (3.42) n = 47	3.78 (2.88) n = 45	3.94 (3.07) n = 138

Panel C: Means (Standard Deviations) for Likelihood of Switching to the New Project

Variable	NON	RES	CONT	Average
EXP ^a	7.62 (2.34) n = 24	6.48 (2.81) n = 23	7.29 (2.51) n = 21	7.13 (2.57) n = 68
CAP ^b	6.50 (2.13) n = 22	7.50 (2.67) n = 24	6.83 (2.46) n = 24	6.96 (2.44) n = 70
Average	7.09 (2.29) n = 46	7.00 (2.78) n = 47	7.04 (2.47) n = 45	7.04 (2.50) n = 138

^a EXP = Expense

^b CAP = Capitalize

Table 3, Panel A presents the correlations between the independent and dependent variables. The relationship between R&D reporting method and participants' absolute decisions to continue the original project was positive and significant ($r = 0.23$, $p < 0.01$, two-tailed). This suggests that the tendency to recommend continuance was higher when R&D was capitalized relative to when R&D was expensed. Table 3, Panel A presents the correlations between the independent and dependent variables. The relationship between R&D reporting method and participants' absolute decisions to continue the original project was positive and significant ($r = 0.23$, $p < 0.01$, two-tailed). This suggests that the tendency to recommend continuance was higher for R&D capitalization in relation to immediately expensing R&D expenditures. In addition, as anticipated, all of the dependent variable measures were significantly correlated (all $p < 0.01$). To simplify the presentation of the results, the scaled dependent variables were combined to create a single variable. To create the composite variable, the scaled dependent measure capturing the likelihood of switching to the new project was reverse coded and averaged with the other scaled dependent measure that captures the likelihood to continue the original project. Therefore, a higher number represents a greater likelihood to continue the original project. This leaves two dependent measures; (1) the absolute choice and (2) the composite measure.

Tests of Hypotheses

Hypothesis 1 explores the main effect of R&D reporting method. More specifically, it investigates how the presence of personal short-term incentives influences a manager's propensity to engage in RM in the form of overinvestment in a failing project when R&D expenditures are capitalized relative to when R&D expenditures are expensed. Hypotheses 2 and 3 investigate the influence of knowledge of a supervisor's compensation on a manager's

TABLE 3
Bivariate Correlations between Dependent and Independent Variables
Pearson (Spearman Rank) above (below) Diagonal

	METH	COMP	CONT	SWITCH	CHOICE
METH^a	1.000	0.450	0.640	-0.350	0.232***
COMP^b	0.045	1.000	-0.047	-0.007	-0.034
CONT^c	0.086	-0.060	1.000	-0.683***	0.724***
SWITCH^d	-0.066	0.017	-0.712***	1.000	-0.755***
CHOICE^e	0.232***	-0.034	0.674***	-0.700***	1.000

^a METH = R&D reporting method; 1 if R&D expenditures were capitalized; 0 if expensed

^b COMP = Managerial knowledge of supervisor compensation; 0 if manager received information that supervisors receive non-restricted stock compensation, 1 if manager received information that supervisors receive restricted stock compensation, and 3 if the manager did not receive information about supervisor compensation (control)

^c CONT = Control group; no knowledge of supervisor compensation

^d SWITCH = composite dependent variable; 0 = Discontinue, 10 = Continue

^e CHOICE = Absolute choice dependent variable; 0 = Discontinue, 1 = Continue

***, **, * denote statistical significance at 1%, 5%, and 10% levels (two-tailed), respectively.

propensity to engage in RM. More specifically, H2 postulates that when R&D expenditures are capitalized, managers with knowledge that their supervisors are receiving short-term, non-restricted stock compensation will be more willing to continue with the original project than managers with no knowledge of their supervisors' compensation. Managerial knowledge that supervisors are receiving long-term, restricted stock compensation is predicted to have a different impact. Hypothesis 3 posits that when R&D expenditures are capitalized, managers with knowledge that their supervisors are receiving long-term, restricted stock compensation will be less willing to continue with the original project than managers with no knowledge of their supervisors' compensation. Hypothesis 4 predicts an interaction between R&D reporting method and managerial knowledge of supervisor compensation. The difference in RM between the two R&D reporting methods is expected to be greatest when managers have knowledge that their supervisors are being compensated with short-term, non-restricted stock compensation, next greatest when managers have no knowledge of supervisor compensation and lowest when

managers have knowledge that their supervisors are compensated with long-term, restricted stock compensation.

The hypotheses were first tested using logistic regression and discriminant analysis. Results for the categorical dependent variable are presented in Table 4, Panel A. When all three predictors were considered together, the model was significant ($\chi^2 = 8.35$, $df = 3$, $N = 138$, $p < 0.10$). Consistent with H1, the main effect for R&D reporting method was positive and significant ($p < 0.05$) with an odds ratio of 4.11. This suggests that capitalizing R&D expenditures increases the odds of deciding to continue the project by 4.11 times. Managerial knowledge of supervisor compensation had the next highest odds ratio (effect size) of 1.08. However, the main effect for this variable ($p = 0.84$) as well as the interaction between R&D reporting method and managerial knowledge of supervisor compensation were not statistically significant ($p = 0.50$). This suggests that there is no effect of managerial knowledge of supervisor compensation structure on participants' project continuance decisions and that this knowledge does not moderate the effect of R&D reporting method.

Discriminant analysis was conducted to assess whether the two predictors could distinguish participants who choose to continue the original project from those who did not. Wilks' lambda was significant, $\lambda = 0.94$, $\chi^2 = 7.76$, $p < 0.05$, which indicates that the model including these two variables was able to significantly discriminate the two groups. As indicated in Panel B of Table 4, the results from the discriminant analysis indicate that participants' choices to continue the original project varies depending on R&D reporting method ($\chi^2 = 7.76$, $p < 0.01$), but does not vary based on managerial knowledge of supervisor compensation ($\chi^2 = 0.16$, $p = 0.69$). This provides additional support for H1 but not the other hypotheses.

TABLE 4
Hypotheses Testing (Categorical Dependent Variable)

Panel A: Traditional Categorical Modeling Statistic Test (Logistic Regression)

Source	<i>B</i>	<i>SE</i>	Odds Ratio	Two-Tailed p-value
METH ^a	1.41	0.64	4.11	0.03
COMP ^b	0.08	0.39	1.08	0.84
METH*COMP	-0.34	0.50	0.71	0.50
Constant	-1.62	0.50	0.20	0.00

Panel B: Discriminant Analysis

Source	Chi-Square Statistic	df	Two-Tailed p-value
METH ^a	7.76	1	0.006
COMP ^b	0.158	1	0.692

^a METH = R&D reporting method; 1 if R&D expenditures were capitalized; 0 if expensed

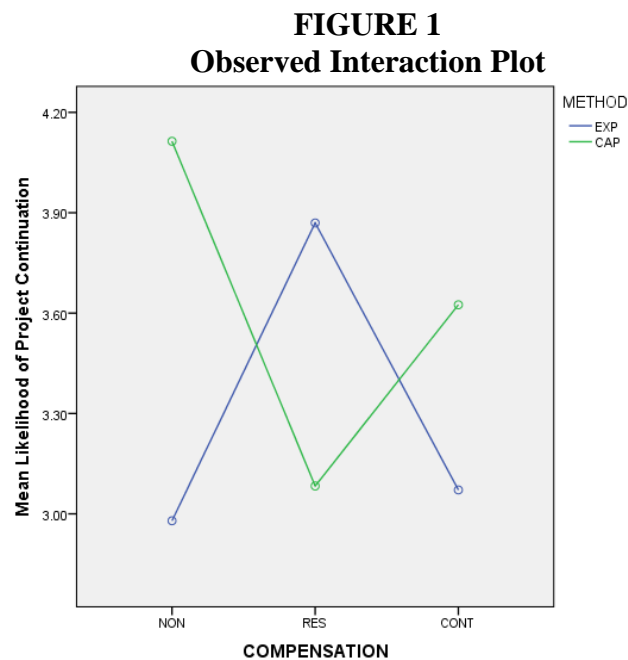
^b COMP = Managerial knowledge of supervisor compensation; 0 if manager received information that supervisors receive non-restricted stock compensation, 1 if manager received information that supervisors receive restricted stock compensation, and 3 if the manager did not receive information about supervisor compensation (control)

The hypotheses were also tested with an ANOVA, including the composite measure of project continuation as the dependent variable and R&D reporting method and managerial knowledge of supervisor compensation as the independent variables.⁴ Table 5 presents the results. As predicted, participants were more likely to continue the original project and less likely to switch to the alternative project when R&D expenditures were capitalized relative to expensed. However, as indicated in Panel A, the main effect for R&D reporting method was not significant ($F = 0.47$, $p = 0.49$, two-tailed). This does not support H1. The main effect for

⁴ Through randomly sampling and assignment, assumptions of independent observations were met. The skewness for each group of the dependent variable was $< +/-1.0$ indicating that the distribution of the dependent variable was approximately normal. Levene's test was not statistically significant ($p = 0.71$). Thus, the assumption of homogeneity of variances was not violated.

managerial knowledge of supervisor compensation was also insignificant ($F = 0.07$, $p = 0.93$, two-tailed). Again, the results are inconsistent with the predictions (H2 and H3). These main effect results must be viewed in light of the predicted interaction between the R&D reporting method and managerial knowledge of supervisor compensation variables.

Hypothesis 4 predicts an interaction between R&D reporting method and managerial knowledge of supervisor compensation. As hypothesized, when R&D expenditures were capitalized, managers with knowledge that their supervisors were compensated with non-restricted stock compensation were the most likely to continue the original project, followed by participants with no knowledge of supervisor compensation and participants with knowledge that their supervisors were compensated with restricted stock compensation, respectively. However, the interaction term was not statistically significant ($F = 1.71$, $p = 0.19$, two-tailed) indicating that the impact of R&D reporting method on RM was not dependent on managerial knowledge of supervisor compensation. Figure 1 illustrates the observed interaction pattern.



In addition to ANOVA, given the predicted ordinal interaction, planned contrast analyses were conducted to provide a more powerful test of the hypotheses.⁵ Two alternative sets of contrast weights were utilized to test H1 and H4 (see Panel B of Table 5). Simple effects tests were used to assess H2 and H3 and further interpret H4. The first contrast (-1, -1, -1, 1, 1, 1) consists of the weights +1 for the capitalize conditions and -1 for the expense conditions and tests whether the likelihood to continue the original project is higher when R&D expenditures are capitalized compared to when expenditures are expensed. Consistent with the findings of the ANOVA, the contrast is not statistically significant ($F = 0.69$, $p = 0.49$, two-tailed) (see Panel C of Table 5).

The contrast between D (capitalize and control) and E (capitalize and non-restricted stock compensation) can be used to further investigate H2. The contrast confirms that there is not a statistically significant difference in the propensity to engage in RM when R&D expenditures are capitalized between participants with no knowledge of managerial compensation and participants with knowledge that managers are compensated with non-restricted stock compensation ($F = 0.64$, $p = 0.52$). Thus, H2 is not supported. The contrast between D (capitalize and control) and F (capitalize and restricted stock compensation) concerns H3. The contrast provides no evidence of a significant difference ($F = 0.73$, $p = 0.47$) in the likelihood of continuing the original project between participants with no knowledge of supervisor compensation and participants with knowledge that supervisors receive restricted stock compensation when R&D expenditures are capitalized.

⁵ Buckless and Ravenscroft (1990) argue that the traditional ANOVA is not powerful for testing hypotheses involving ordinal interactions. Contrast analysis was deemed to be a more appropriate test of the predictions in this study as it improves statistical power over ANOVA without increasing Type I error rates.

The second planned interaction contrast (-2, -2, -2, 2, 3, 1) was also insignificant ($F = 1.03$, $p = 0.31$). Follow-up simple effect tests reveal that there is not a significant difference in the mean likelihood to continue the original project between participants with knowledge that their supervisors received non-restricted versus participants with knowledge that their supervisors received restricted stock compensation when R&D expenditures are capitalized ($F = 1.36$, $p = 0.18$). Consequently, the statistical results for the composite dependent variable do not provide support for any of the hypotheses.

Supplemental Analyses

Using the data that was collected in the post-experimental questionnaire, the supplemental analyses further investigate some of the assumptions that were used to develop the hypotheses related to managerial knowledge of executive compensation. Moral disengagement theory and attribution theory were used to develop H2. Per moral disengagement theory it is expected that managers will be able to more easily justify RM and thus be more likely to continue a failing project when the benefit of doing so is shared. Participants were asked to indicate the extent to which they believed they would be able to justify continuing the original project. Responses were measured on an 11-point Likert scale anchored at “not at all justifiable” (0) and “completely justifiable” (10) with a mean response of 5.04. Contrary to expectations, participants capitalizing R&D expenditures with knowledge that their supervisors were compensated with short-term incentives did not perceive continuing the original project to be more justifiable than participants in the other cells.⁶

⁶ A T-test and an ANOVA model with perceived ability to justify continuing the original project as the dependent variable and R&D reporting method and knowledge of supervisor compensation as the independent variables were used to test this assumption. The results (not tabulated) were not significant (all $p > 0.10$).

TABLE 5
Hypotheses Testing (Composite Dependent Variable)

Panel A: Analysis of Variance (ANOVA)

Source	Sum of Squares	df	Mean Square	F-statistic	Two-Tailed p-value
METH ^a	3.1	1	3.1	0.47	0.49
COMP ^b	0.9	2	0.5	0.07	0.93
METH*COMP	22.6	2	11.3	1.71	0.19
Error	874.4	132	6.6		

Panel B: Contrast Coefficients

Contrast	Cell A: EXP^c & CONT^d	Cell B: EXP^c & NON^e	Cell C: EXP^c & RES^f	Cell D: CAP^g & CONT^d	Cell E: CAP^g & NON^e	Cell F: CAP^g & RES^f
1	-1	-1	-1	+1	+1	+1
2	-2	-2	-2	+2	+3	+1

Panel C: Planned Contrast Tests and Follow-Up Simple Effect Tests

Source	t-statistic (two-tailed)	p-value
Contrast 1 (-1, -1, -1, 1, 1, 1) Overall Test: Expected likelihood of project continuation is greatest when R&D expenditures are capitalized and lowest when R&D expenditures are expensed.	0.69	0.49
Contrast 2 (-2, -2, -2, 2, 3, 1) Overall Test: Expected likelihood of project continuation is greatest when R&D expenditures are capitalized and managers have knowledge that supervisors receive non-restricted stock compensation, next greatest when R&D expenditures are capitalized and managers have no knowledge of supervisor compensation, next greatest when R&D expenditures are capitalized and managers have knowledge that supervisors receive restricted stock compensation, and significantly lower in the other three (expense) conditions.	1.03	0.31
Follow-up Simple Effect Tests:		
(1) D versus E	0.64	0.52
(2) D versus F	0.73	0.47
(3) E versus F	1.36	0.18

^a METH = R&D reporting method; 1 if R&D expenditures were capitalized; 0 if expensed

^b COMP = Managerial knowledge of supervisor compensation; 0 if manager received information that supervisors receive non-restricted stock compensation, 1 if manager received information that supervisors receive restricted stock compensation, and 3 if the manager did not receive information about supervisor compensation (control)

^c EXP = Expense

^d CONT = Control group; no knowledge of supervisor compensation

^e NON = Non-restricted stock compensation; can be sold at any time

^f RES = Restricted stock compensation; can be sold five years after receipt

^g CAP = Capitalize

When supervisors have short-term incentives, attribution theory suggests that their subordinates will likely assume that the supervisors would make and expect their subordinates to make wealth maximizing choices. Thus, when R&D expenditures are capitalized, managers likely shifted some or all of the responsibility away from themselves and onto their supervisors. Given this reasoning, when R&D expenditures are capitalized, a negative association is expected between perceived personal responsibility and knowledge that supervisors receive short-term, non-restricted stock compensation. Alternatively stated, it is expected that perceived personal responsibility will be the lowest in the cell where R&D expenditures are capitalized and managers have knowledge that their supervisors receive similar non-restricted stock compensation.

Participants were asked to rate the extent to which they felt they would be held personally responsible for the outcome of their investment decisions. The responses were measured on an 11-point Likert scale anchored at “not at all responsible” (0) and “completely responsible” (10). The mean response for this question was 7.37. Results from an ANOVA with participant responses to the aforementioned question as the dependent variable and R&D reporting method and managerial knowledge of supervisor compensation as the independent variables are presented in Panel A of Table 6. While the main effects of R&D reporting method and managerial knowledge of supervisor compensation were not significant ($F = 0.39$ and 0.72 , $p = 0.39$ and 0.72 , two-tailed, respectively), the interaction between these terms was significant ($F =$

3.69, $p < 0.05$). Panel A of Figure 2 plots the observed interaction results and suggests perceived personal responsibility is significantly lower when R&D expenditures are capitalized and managers have knowledge that their supervisors receive non-restricted stock compensation.

Since the interaction is significant, it is possible that there are significant main effects that are masked by the significant interaction. This means there may be no differences between the two methods or there are differences that the statistical test cannot determine. A planned contrast analysis was used to further explore the interaction between R&D reporting method and managerial knowledge of supervisor compensation on perceived personal responsibility. The contrast (-1,-1,-1,-1, 5, -1) weights Cell E (capitalize and non-restricted) 5 and the remaining cells receive a weight of -1. As predicted, the contrast is statistically significant ($F = -2.31$, $p < .05$, two-tailed) (see Panel B of Table 6). Consistent with attribution theory, these results suggest that when R&D expenditures are capitalized, participants with knowledge that their supervisors receive non-restricted stock compensation felt significantly less responsible for the outcomes of their decisions.

Self-presentation theory was the primary theory used to develop H3. When R&D expenditures are capitalized and managers have knowledge that supervisors receive restricted stock compensation, self-presentation theory suggests that managers may make choices that they feel will be viewed favorably by their supervisors in order to manage their supervisors' perceptions or impressions of them as subordinates. This theory implies that the personal financial gains that managers would receive from making the decision to continue a failing R&D project will likely be outweighed by the increased perceived need to justify their decisions and the desire to maintain a positive reputation in the organization. Impression management can be

motivated by the social presence of others whose behaviors individuals are trying to anticipate or by the desire to maximize rewards and minimize sanctions. Consistent with self-presentation theory, it can be expected that participants in the capitalization condition who have knowledge that their supervisors receive restricted stock compensation will be the most concerned about pleasing their supervisors and the likelihood of possible negative personal repercussions.

In the post-experimental questionnaire, participants were asked to rate the importance of making a decision to please the CTO and the likelihood that continuing the project would result in negative personal repercussions. The responses were measured on an 11-point Likert scale anchored at “not important at all” (0) and “very important” (10) and “not likely at all” (0) and “very likely” (10), respectively. The mean responses for these questions were 5.05 and 5.65, respectively. Similar to the analysis above, two ANOVA models with these questions as the dependent variables and R&D reporting method and managerial knowledge of supervisor compensation as the independent variables and planned contrasts were conducted (see Panels C through E of Table 6).

The main effects of R&D reporting method and managerial knowledge of supervisor compensation were not significant ($F = 0.05$ and 0.79 , $p = 0.83$ and 0.38 , respectively) in the ANOVA with importance of making a decision to please the CTO as the dependent variable.⁷ The interaction between R&D reporting method and managerial knowledge of supervisor compensation was significant ($F = 4.07$, $p < 0.05$). Again there is the potential that there are significant main effects that are masked by the significant interaction. The observed interaction results are presented in Panel B of Figure 2. As anticipated, the importance of making a decision

⁷ The control group did not receive this question and therefore was excluded from the analyses described in this paragraph.

that will please the CTO appears to be significantly higher when R&D expenditures are capitalized and managers have knowledge that supervisors receive restricted stock compensation. Results from the contrast analysis confirm this presumption ($F = 1.82, p < 0.10$).

The results from the ANOVA including participants' perceived likelihood of project continuation leading to negative personal repercussions as the dependent variable provides slightly different results. In this model, the main effect for managerial knowledge of supervisor compensation is significant ($F = 2.40, p < 0.10$) whereas the main effect for R&D reporting method and the interaction term are not ($F = .050$ and $0.25, p = 0.48$ and 0.78 , respectively). The observed interaction results are presented in Panel C of Figure 2. Participants with knowledge that their supervisors receive restricted stock compensation are significantly more concerned about the likelihood of negative personal repercussions regardless of R&D reporting method. Collectively, these findings suggest self-presentation theory is beneficial for explaining the results.

TABLE 6
Supplemental Analyses

Panel A: Perceived Personal Responsibility Analysis of Variance (ANOVA)

Source	Sum of Squares	df	Mean Square	F-statistic	Two-Tailed p-value
METH ^a	3.3	1	3.3	0.75	0.39
COMP ^b	2.8	2	1.4	0.32	0.72
METH*COMP	32.0	2	16.0	3.67	0.03
Error	572.9	132	4.3		

TABLE 6 (continued)
Supplemental Analyses

Panel B: Planned Contrast Test (Personal Responsibility)

<u>Source</u>	<u>t-statistic (two-tailed)</u>	<u>p-value</u>
Contrast 1 (-1, -1, -1, -1, 5, -1) Overall Test: Expected perceived personal responsibility is lowest when R&D expenditures are capitalized and managers have knowledge that supervisors receive non-restricted stock compensation.	-2.31	0.02

Panel C: Importance of Making a Decision that Pleases CTO Analysis of Variance (ANOVA)

<u>Source</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F-statistic</u>	<u>Two-Tailed p-value</u>
METH ^a	0.4	1	0.4	0.05	0.83
COMP ^b	5.9	1	5.9	0.79	0.38
METH*COMP	30.3	1	30.3	4.07	0.05
Error	662.4	89	7.4		

Panel D: Planned Contrast Test (Importance of Making a Decision that Pleases CTO)

<u>Source</u>	<u>t-statistic (two-tailed)</u>	<u>p-value</u>
Contrast 1 (-1, -1, -1, 3) Overall Test: Expected perceived personal responsibility is lowest when R&D expenditures are capitalized and managers have knowledge that supervisors receive non-restricted stock compensation.	1.82	0.07

Panel E: Likelihood of Negative Personal Repercussions Analysis of Variance (ANOVA)

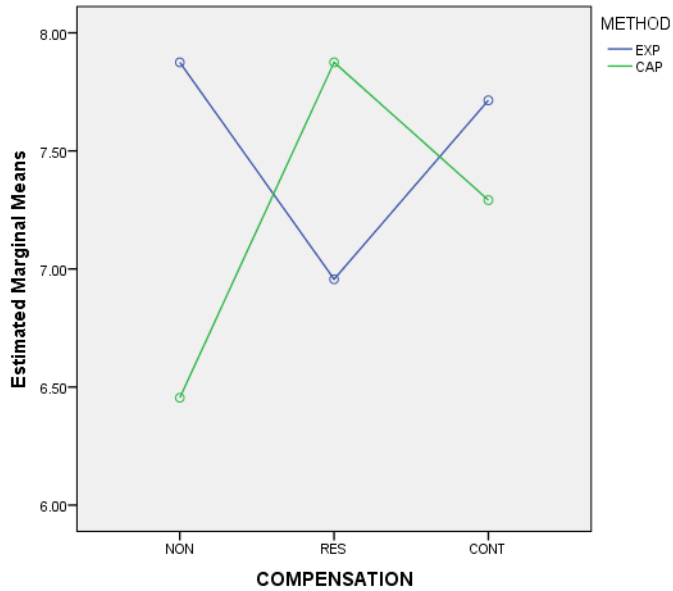
<u>Source</u>	<u>Sum of Squares</u>	<u>df</u>	<u>Mean Square</u>	<u>F- statistic</u>	<u>Two-Tailed p-value</u>
METH ^a	2.4	1	2.4	0.50	0.48
COMP ^b	23.0	2	11.5	2.40	0.095
METH*COMP	2.4	2	1.2	0.25	0.78
Error	632.1	132	4.8		

^a METH = R&D reporting method; 1 if R&D expenditures were capitalized; 0 if expensed

^b COMP = Managerial knowledge of supervisor compensation; 0 if manager received information that supervisors receive non-restricted stock compensation, 1 if manager received information that supervisors receive restricted stock compensation, and 3 if the manager did not receive information about supervisor compensation (control)

FIGURE 2
Supplemental Analyses

Panel A: R&D Reporting Method by Managerial Knowledge of Supervisor Compensation (Three Levels) on Mean Perceived Personal Responsibility



Panel B: R&D Reporting Method by Managerial Knowledge of Supervisor Compensation (Three Levels) on Mean Importance of Making a Decision to Please the CTO

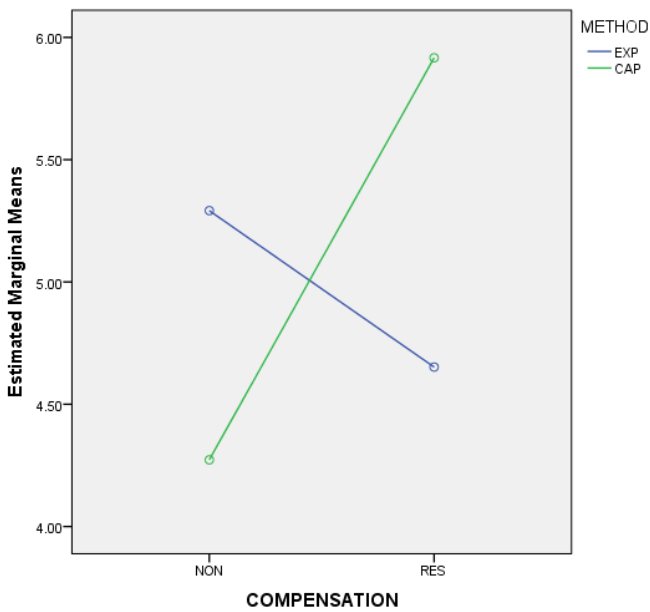
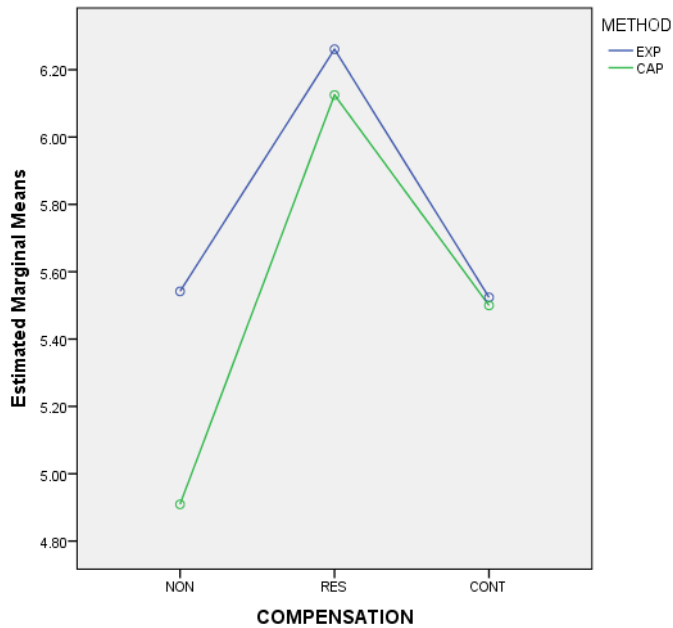


FIGURE 2 (continued)
Supplemental Analyses

Panel C: R&D Reporting Method by Managerial Knowledge of Supervisor Compensation (Three Levels) on Mean Perceived Likelihood of Project Continuation Resulting in Negative Personal Repercussions



V. SUMMARY, LIMITATIONS, AND FUTURE RESEARCH

This dissertation seeks to develop a better understanding of the potential for RM when R&D expenditures are capitalized and contributes to the debate on the pros and cons of expensing versus capitalizing R&D expenditures. Prior research finds a significant difference in RM between R&D expensing and capitalization when managers are personally responsible for the original investment decision (Seybert 2010). This study responds to Healy and Wahlen's (1999) call for additional research to provide a better understanding of the factors that contribute to and limit earnings management. It also extends the literature on R&D by providing evidence

of the potential for RM when R&D expenditures are capitalized in the absence of personal responsibility.

Using salient short-term incentives to motivate RM, this study removes the confounding influence of escalation of commitment and demonstrates that capitalization can have dysfunctional consequences even when there is no commitment to the project. When managers were asked to make an absolute decision to continue or discontinue the original project, managers were more likely to continue the project when R&D expenditures were capitalized relative to expensed. One implication of this study is that in the presence of economic incentives, R&D capitalization may result in managers foregoing economically efficient R&D investment opportunities. This in turn suggests that there is the potential for RM in the absence of personal responsibility. However, in the absence of an absolute choice the differential impact on project continuation between the two R&D reporting methods was less clear. While participants indicated that they were more likely to continue the original project and less likely to switch to the new project when R&D expenditures were capitalized, the difference in the mean response between the two reporting methods was not statistically significant.

This dissertation also contributes to understanding the influence of the effects of the incentive structure of the manager's supervisor. Specifically, it attempts to determine whether knowledge of an executive's compensation package will impact the project continuation decisions of that individual's subordinates and if a firm's R&D reporting method interacts with knowledge of executive compensation to impact managerial decisions on R&D project continuation. Prior research and theory suggests that there may be both functional and dysfunctional effects of capitalizing R&D expenditures that depend upon the incentives of those above the decision maker. Building on moral disengagement theory and attribution theory, it was

anticipated that knowledge of supervisors receiving short-term, non-restricted stock compensation would have a dysfunctional effect (i.e., managers with this knowledge were expected to be more likely to engage in RM than managers with no knowledge of supervisor compensation). In contrast, self-presentation theory suggests that knowledge of supervisors receiving long-term restricted stock compensation should curb managers' opportunistic behavior (i.e., managers with this knowledge were expected to be less likely to engage in RM than managers with no knowledge of supervisor compensation).

The results of this study do not support the hypotheses that managerial knowledge of supervisor compensation structure influences R&D project continuation choices. However, analyses of the debriefing questions provide some meaningful insight into the potential psychological effects of managerial knowledge of supervisor compensation in managerial decision making. Consistent with attribution theory, when decision makers that capitalized R&D expenditures had knowledge that their supervisors received non-restricted stock compensation their perceived personal responsibility for the decision significantly decreased. This suggests that the presence of an additional beneficiary allows managers to shift some of the responsibility of RM away from themselves and onto their supervisors.

Participants who capitalized R&D expenditures and had knowledge that their supervisor received restricted, long-term stock compensation rated the importance of making a decision to please the CTO significantly higher than all other participants. This suggests that knowledge that the supervisor's compensation structure incentivizes long-term earnings amplified managers tendencies to make decisions that were in the best long-term interest of the company.

Interestingly, participants with knowledge that their supervisors received restricted stock compensation were significantly more concerned about the likelihood of negative personal repercussions regardless of R&D reporting method. One interpretation of this finding could be that compensation with long-term, restricted stock indicates that supervisors will have a more long-term orientation and desire what is best for the firm long-term. Continuing a failing project, even if it does not impact current year earnings, is not in the best interest of the firm long-term. Thus, regardless of R&D reporting method, managers with knowledge that supervisors are compensated with restricted stock compensation will have heightened concerns about the negative personal repercussions of continuing a failing project. In contrast, non-restricted stock compensation implies more of a short-term orientation and does not trigger the same level of concern. These findings imply that managerial knowledge of executive compensation may have implications for other types of managerial decisions.

This study employs the rigor of the experimental method to isolate the effects of R&D reporting method and managerial knowledge of supervisor compensation. It would have been difficult to isolate the effects of these two variables or to obtain access to data to test the hypotheses using archival methods. Thus, an experiment was deemed the most appropriate method for studying the research questions proposed in this dissertation. An experimental setting also has the benefit of controlling for other individual characteristics that may influence managers' decisions in this context. Additionally, by using an experimental setting it was possible to rule out other confounding factors that may be present in the naturally occurring archival settings. The controlled environment made possible by using experimental design provides a high level of internal validity. However, similar to other experiments, external validity

is a limitation of this type of design. Thus, one must use caution when generalizing the results to other situations or when assessing the magnitude of the discovered effects in the real world.

This dissertation is also subject to other limitations. Graduate business students were used as a proxy for managers. While the experience and business knowledge of this participant group was deemed adequate to achieve the goals of the experiment, differences may exist between the student proxies and actual managers. Case materials were developed to be as realistic as possible, but experimental realism remains a concern. The task and information presentation may differ or be an over-simplification of what would be available to managers in the real world. Additionally, participants may not have felt as emotionally committed to the situation as managers who are actually faced with making R&D project continuation decisions. Thus, an experiment may not adequately reflect what participants would do if they were faced with this situation outside of the controlled experimental setting. Finally, participants received hypothetical compensation and so it is unclear whether the results would be markedly different if participants received real compensation.

Notwithstanding these limitations, this dissertation provides an initial investigation into how the compensation structure of executive management changes the R&D decisions of lower level managers which provides both interesting insights and potential for future research. The supplemental analyses suggest that managerial knowledge of supervisor compensation influences the way managers approach decision making. Examining whether other managerial decisions are influenced by knowledge of executive compensation could be a fruitful area for future research. This study focuses solely on financial performance measures and incentives. Future research could vary the bonus amounts or investigate the role of non-financial performance measures. In the current study, discontinuing the project results in a loss when R&D expenditures are

capitalized. It would be interesting to investigate whether managers respond differently in a non-loss scenario. This study could also be extended to include other factors which may affect their judgment related to resource allocation such as the relationship between supervisors and subordinates, the corporate culture, cultural differences, among others.

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VITA

Andrea L. Gouldman, daughter of Kevin and Pamela Gouldman, was born in Fredericksburg, Virginia, and grew up in rural Westmoreland County. She graduated from Saint Margaret's High School in Tappahannock, Virginia. In 2000, Andrea received her Bachelor of Science in Commerce with a dual concentration in Marketing and Management and minor in Spanish from the University of Virginia in Charlottesville, Virginia. Andrea obtained a Master of Accountancy from Virginia Commonwealth University in 2009. During her graduate studies, Andrea was recognized as a Dean's Scholar (both Master's and Ph.D. level) and J. Michael Cook Doctoral Consortium Fellow. She was also a scholarship recipient from the Virginia Society of CPAs and Becker Professional Education.

Andrea started her professional career as a Registered Client Associate with Merrill Lynch in Bend, Oregon. She then moved to Knoxville, Tennessee where she completed the Executive Trainee Program and became an Assistant Buyer at Saks, Inc., a position she held for three years. Andrea spent four years working in both the Accounting and Marketing departments of Circuit City as a Senior Financial Analyst before commencing her doctoral studies at Virginia Commonwealth University.

Andrea's primary research interest is in managerial judgment and decision making in accounting. She is an active licensed Certified Public Accountant (CPA) in the state of Virginia and member of the American Accounting Association, the Honor Society of Phi Kappa Phi, the Institute of Management Accountants, and the Accounting & Financial Women's Alliance.

Andrea accepted a full-time position as an Assistant Professor in Accounting at Weber State University in Ogden, Utah to begin in Fall 2013. She will continue to pursue experimental research and will teach managerial accounting and accounting information systems.