

## **The effects of moral hazard, accountability pressure, and Machiavellianism on managers' project implementation decisions**

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### **ABSTRACT**

This study examines whether accountability pressure, a naturally occurring environmental factor but often ignored in prior experimental research, can mitigate opportunistic project management behavior in a moral hazard situation. The role of Machiavellianism is also considered as a relevant personality trait variable to this agency problem context. Based on agency theory, it was proposed that managers who experience moral hazard conditions will exhibit a greater tendency to implement a defective project for their self-interest. Drawing upon accountability research, it was proposed that managers who experience high accountability pressure will exhibit a greater tendency to delay the implementation, consistent with their firm's interest. Additionally, it was predicted that the effects of a moral hazard problem and accountability pressure will be moderated by managers' Machiavellian propensities. The results from a laboratory experiment show that individuals high in Machiavellianism are more likely to exhibit opportunistic decision behavior in the presence of moral hazard conditions and this tendency is significantly reduced when they are exposed to high accountability pressure which is common in most real-life organizational decision-making situations. Theoretical and practical implications of the findings are discussed.

**Keywords:** Agency Problem, Moral Hazard, Accountability, Machiavellianism, Project Implementation

## INTRODUCTION

This study shows how project managers' decision behavior can be influenced by three particular factors that may be of importance to a firm's project management practices. Specifically, it examines how moral hazard, a type of agency problem, and accountability pressure, often imposed on autonomous project managers, can affect jointly managers' decisions about whether or not to implement a questionable project. It is also explored whether individual differences in the Machiavellian propensity can moderate the impact of moral hazard and accountability pressure. As such, the purpose of this study is to obtain a deeper understanding of important managerial decision behavior by considering possible interactive effects of situational (i.e., moral hazard), social (i.e., accountability pressure), and personal (i.e., propensity toward Machiavellianism) variables concurrently.

Prior accounting research has shown that agency theory may provide a useful theoretical framework for analyzing project managers' decision behavior. For example, Harrell and Harrison (1994) and subsequently many others (Sharp & Salter, 1997; Tuttle, Harrell, & Jackson, 1997; Rutledge & Karim, 1999; Harrison, Chow, Wu, & Harrell, 1999) demonstrate the usefulness of agency theory in explaining irrational project management behavior sometimes observed in practice. Specifically, they show that there is a greater tendency of project managers to continue failing projects when the two conditions for an agency problem (i.e., an incentive to shirk and privately-held information) are jointly present. While this stream of research identifies important agency factors affecting managers' project-related decisions, it often ignores other influential factors on managers' decision-making. Accordingly, the more recent work in this area has attempted to identify other potential influences on managers' economic decisions apart from agency theory (e.g., Rutledge and Karim, 1999; Booth and Shulz, 2004). The present study continues with this line of endeavor and proposes accountability as another important factor to consider in agent decision-making settings.

While, as suggested by Tetlock (1985), accountability is an integral aspect of all natural decision environments, its importance is nowhere more evident than in agency relationships. Managers, as agents of their firm, typically make decisions in an organizational setting in which they are held accountable for their actions and decisions to significant others. Accountability in this organizational context refers to the need to explain or justify one's decision to a higher authority that has the legitimate power to respond to it (Tetlock, 1985, 1992). A great deal of accountability research has shown that a mere awareness of the fact that one is potentially accountable can profoundly affect the manner in which he or she performs a decision task (Gibbins & Newton, 1994; Lerner & Tetlock, 1999). This implies that accountability is probably an important consideration in managers' everyday decision-making environments (Birnberg & Heiman-Hoffman, 1993). It is unclear, however, whether enough caution was taken in prior experimental work examining the impact of agency factors to create realistic accountable situations where subjects feel a similar level of accountability pressure that they normally face in real-life decision-making. In fact, the absence of accountability has often been a criticism to most laboratory studies of decision-making (Siegel-Jacobs & Yates, 1996) and many of the existing experimental studies do not appear to be free from this limitation. Accordingly, one cannot rule out the possibility that the strong agency effects found in previous studies (i.e., the opportunistic decision behavior) were due in part to the failure to control for the effect of accountability that typically exists in the real-life decision circumstance. This concern provides an important reason for addressing the impact of accountability with those of agency variables in a more explicit way.

While there has been no research examining this issue directly, the joint consideration of accountability and agency factors is important since they are commonly present in an organizational context of decision-making and may interact in an important way. Davis, Schoorman and Donaldson (1997) indicate that despite considerable theoretical and empirical support for a link between agency factors and managerial decision behavior, the precise relationship remains in question because of the narrowness of agency theory. They suggest that models relying on agency theory alone may be inadequate and additional theory is needed to explain certain types of agent behavior. Luft (1997), on the other hand, points out that just as questions can be raised about agency theory, questions exist about social or psychology research on organizational decision-making because it also narrowly focuses on its own limited set of variables without adequate attention to other important contextual factors, such as agency relationship (e.g., conflicts of interests, information asymmetry, etc.). An integration of these two relevant theories to agent decision-making, therefore, may provide a more comprehensive view of managerial decision behavior and possibly explain the conflicting evidence in prior literature.

Another important variable to be considered in this study is Machiavellianism, a well-established personality characteristic in the literature (Wakefield, 2008). In particular, the study looks into a possibility that this individual difference variable may interact with the moral hazard and accountability constructs to influence managers' decision behavior. Prior research indicates that a personality variable alone does not explain much of the variance in a decision maker's behavior (Libby & Lewis, 1977). McGhee, Shields and Birnberg (1978) explain that this is because behavior is a function of the person, the situation and the person-situation interaction. The relevance of the Machiavellian personality trait to the agency context is apparent in the self-interest assumption incorporated into agency theory. As stated by Noreen (1988, p. 359), "at the heart of agency theory, ... , is the assumption that people act unreservedly in their own narrowly defined self-interest with, if necessary, guile and deceit." Although agency theory does not refer to the Machiavellian literature when making this premise, the unconstrained opportunism assumed by agency theory is strikingly similar to what has been described for Machiavellian characteristics. Prior research on personality, however, reports that there is a wide variation in individuals' Machiavellian propensity (Schepers, 2003; Wakefield, 2008; Hartmann & Maas, 2010). Accordingly, it would be an additional interesting question how managers with a varying degree of Machiavellian propensity will react to agency factors as well as accountability pressure that are often involved in their organizational decision making. Examining the role of this personality variable in relation to other relevant social and situational variables, as attempted in this study, may offer additional insights into the way individual managers respond to important organizational factors, which in turn may suggest some useful implications for practice.

The remainder of this paper is organized as follows. The next section formulates testable hypotheses by drawing upon the relevant literature in agency theory, accountability theory and Machiavellian studies. The third section describes the experimental method employed. The fourth section presents the results, which provide empirical support for the predicted relationships. The implications of the research and some suggestions for future research are provided in the last section.

## THEORETICAL DEVELOPMENT

### Moral Hazard

Agency theory views the firm as an overlapping set of contracts among principals and agents, each of whom is assumed to be motivated by their self-interest (Baiman, 1982; Eisenhardt, 1989). Although the interests of principals and agents may coincide, agency theory recognizes that agents may have incentives to act contrary to the objectives of principals. This agency problem is thought to occur because the principal often cannot observe the agent's behavior directly and must therefore rely on imperfect or noisy surrogates for unobservable agent behavior. In turn, the use of imperfect surrogates for behavior as a way to compensate agent performance gives rise to information asymmetry (i.e., the agent possesses information about his/her actions that is not available to the principal), which provides an opportunity for the agent to advance his/her self-interest at the expense of the principal without being caught. As such, when the conflicts of interest and information problems exist because contracts are based on imperfect surrogates for behavior, the problem of moral hazard arises (Milgrom & Roberts, 1992).

Tuttle et al. (1997) examined this moral hazard issue in the context of project management. They suggest that in certain situations, a firm's incentive system that is intended to improve project managers' performance may in fact promote questionable project management behavior. For instance, consider a firm whose objective is to deliver its development projects on time, within budget, and at a high level of quality. While these three goals are all important in determining project success, the firm may consider high project quality to be more crucial for its long-term growth and profitability, thereby placing a higher priority on quality. The quality aspect of a project, however, is often difficult to specify and verify in objective ways. Accordingly, the firm may choose to reward project managers based on whether their managed projects are on schedule and within budget. Managers' performance on these two aspects is relatively easy to measure and readily identifiable. In addition, these measures may convey information about project quality because many projects that go beyond their scheduled delivery date and over their budget are also experiencing quality problems. Being on time and within budget, however, are not necessarily valid indicators for high project quality. Timely delivery and low cost may also be achieved at the expense of reduced quality. Therefore, a reward system based on these types of performance measures could motivate managers to switch efforts toward the immediate high-payoff activity of meeting the deadline and budget and away from the activities necessary to achieve high quality. As such, if a firm's incentive system is unable to perfectly align project managers' interests with those of the firm, project managers may have an incentive to shirk.

Project managers may also have an opportunity to shirk if the firm has an informational disadvantage in verifying the true state of project quality. Information asymmetry between project managers and their firm is an inevitable outcome of decentralized project management. Lower level managers in a decentralized firm often have access to information that is not readily available to central management. For instance, by virtue of being directly involved in project development, managers may have considerably more information than senior management about the quality aspect of their projects. Managers' possession of this private information makes their senior management unable to assess project quality independently. Under this circumstance, if managers have an incentive to sacrifice quality in order to stay on schedule and within budget,

they are more likely to do so because their opportunistic behavior would likely go undetected.

In summary, project managers may experience the conditions for moral hazard if (1) their economic incentive is based on a poor surrogate of the desired performance behavior, providing an incentive to shirk, *and* (2) their senior management is not fully aware of the state of the projects they manage, so information asymmetry exists. When these two conditions for moral hazard exist, agency theory predicts that self-interest will prevail over organizational goals and managers will engage in an opportunistic project management behavior. This suggests that if managers have both the incentive and the opportunity to sacrifice project quality in order to assure their compensation tied to on-time and within-budget delivery, they are more likely to implement their project as scheduled, even though it has known quality issues. The following hypothesis formalizes this prediction.

H1: Managers will exhibit a greater tendency to implement a project with quality problems when they experience moral hazard conditions than when they do not experience such conditions.

### **Accountability**

Tetlock (1985) argues that a pervasive feature of natural decision environments is the existence of accountability. In his terms, accountability is defined as “social pressure to justify one’s views or actions to significant others.”<sup>1</sup> While, as posited by Tetlock, accountability can be present in a variety of interpersonal settings, it is especially important in the principal-agent context. The delegation of authority to the agent and the resultant fiduciary obligation to the principal are legitimate grounds for expecting a strong accountability relationship between the two parties. In fact, within an agency relationship, accountability is part of control mechanisms, by which the principal attempts to ensure his/her agents perform the desired behavior (Birnberg & Heiman-Hoffman, 1993). Accordingly, agents are normally assumed to have strong accountability pressure when they are making delegated decisions on behalf of their principal (Schlenker, 1980). This implies that accountability is potentially an important consideration in managers’ decision-making although it is rarely considered in agency models of managerial decision behavior. Thus, how this interpersonal variable will affect or interact with other agency variables to influence managers’ decision behavior is an important question. To provide insights towards this question, some relevant research on accountability is discussed below.

Tetlock’s (1985) model of accountability describes various accountability situations in which people may pursue dramatically different strategies to cope with accountability pressure. It is hypothesized that whether accountability effects are beneficial or harmful depends on what kinds of coping strategies are triggered. For instance, if people know the views of the source of

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<sup>1</sup> The terms, “justification” and “accountability,” have often been interchangeably used in prior research. This is due in part to the influence of Tetlock (1985) who views justification as an essential part of accountability. Some researchers, however, argue that although these two constructs are closely related, they are not synonymous. For example, Johnson and Kaplan (1991) argue that justification is “the actual physical and/or mental process of explaining a judgment,” while accountability is “a pre-existing expectation that justification may be called for.” This distinction implies that people may perceive and react to accountability pressure without actually encountering a situation where actual justification is required (DeZoort & Lord, 1997; Davis, DeZoort, & Kopp, 2006). The present study focuses on the effects of accountability rather than those of justification, as it does not require an actual justification from decision makers for the reason that doing so may nullify or weaken the manipulation of privately-held information in the Yes-Moral-Hazard condition.

accountability prior to forming their own opinions, they are inclined to shift their attitude toward these known views. As a result, they are more likely to exhibit conforming judgment and decision behavior. This “acceptability heuristic” is an efficient coping strategy for the accountable person (e.g., the agent) because it requires the least cognitive effort while bringing the highest likelihood of acceptance. A good deal of experimental work has confirmed the existence of this coping behavior in a variety of managerial accounting contexts (e.g., Davis, DeZoort, & Kopp, 2006; Brügger, & Moers, 2007; Hartmann & Maas, 2010). This evidence is consistent with Tetlock’s (1985) assertion that people generally view anticipatory opinion conformity as an effective means of avoiding disapproval or censure from significant others.

Another distinctive reaction to accountability pressure occurs when people feel accountable for actions or positions to which they are already irrevocably committed. Under this condition, people tend to devote the majority of their mental effort to justifying and rationalizing their original commitments in an effort to protect their social images. Post-decisional exposure to accountability is blamed for this “defensive bolstering” strategy. That is, people in this particular situation are held accountable not for decisions they will have to make but for decisions they have already made. Since we are not supposed to say one thing and do another (Schlenker, 1980), post-decisional accountability should lead people to act defensively. This bolstering behavior, however, is considered to be dysfunctional because it shifts people’s attention away from good performance and toward good justification of performance (Beeler & Hunton, 1997). Pre-decisional accountability (learning of the need to justify before making a decision), by contrast, has been found to encourage various desirable decision behavior, such as cautious, self-critical and effortful thinking (for reviews, see Lerner and Tetlock, 1999).

Siegel-Jacobs and Yates (1996) introduce other types of accountability that they believe are important but were not included in Tetlock’s model: process accountability and outcome accountability. According to their explanations, process accountability is said to exist if evaluation is based solely on the quality of the procedure that a decision maker uses in arriving at his/her decision, regardless of the quality of decision outcomes. Conversely, outcome accountability is said to exist if evaluation is based exclusively on the quality of decision outcomes, without regard to the nature of the procedure used. The authors argue that there are at least two reasons to expect process accountability to have more positive effects on decision-making than outcome accountability: (1) process accountability provides certain guidance as to how to improve decision performance by encouraging people to focus on process; (2) people perceive process accountability to be more acceptable and less stressful because an evaluation based on process is not affected by the uncertainty inherent in outcomes. Consistent with their arguments, Siegel-Jacobs and Yates and other similar work in accounting (e.g., Kadous, 2001) found that process but not outcome accountability leads to significant improvement in decision performance. This evidence is in accordance with the basic notion of normative decision theories that a relevant criterion of assessing decision quality is the process, not the outcome (Edwards, 1984).

In summary, while accountability pressure is influential and stimulates greater effort and caution in decision-making, it may not always bring positive behavioral consequences. As documented in the literature, when it is improperly imposed or its type is ill-defined, accountability pressure appears to do more harm than good. The preceding literature review has identified some conditions for accountability to promote desirable agent decision behavior. They are: (1) explicit communication of the preferred decision, (2) pre-decisional rather than post-

decisional exposure to accountability, and (3) emphasis on process rather than outcome accountability.

A brief review of project management literature suggests that it is not unusual for the accountability conditions specified above to be present in practice. For example, Clarke (1995, 1999) has found that successful firms tend to have more frequent use of communication with project managers to increase their awareness of the firm's strategies or preferences. Another feature of successful project management organizations is the use of periodic project review as a control device (Scapens & Sale, 1985; Gordon & Myers, 1991; Myers, Gordon, & Hamer, 1991). Project review is an ongoing process that emphasizes the accountability of project managers throughout the entire project lifecycle. As a result, managers usually expect that their project-related decisions will be reviewed regularly and that it may be necessary to explain or justify their decisions to superiors. This anticipation of a potential review should heighten the pre-decisional accountability of project managers. The review process may also enhance the process accountability of managers as it often focuses on the process of management (e.g., "How a particular course of action has been taken?" "Was the action taken is appropriate or justifiable in a given situation?").

The above illustration of project management control that normally exists in practice can be characterized as the circumstance where a high level of accountability pressure exists. Under this circumstance, managers would likely be (1) aware of the priorities senior management places on the goals of their project; (2) aware, in advance of their decision-making, that it may be needed to justify their decisions to senior management; (3) aware that the decision process (rather than the decision outcome) will be emphasized when their performance is evaluated. Accordingly, in this paper, managers are assumed to experience high accountability pressure when these three conditions are present in their work environment. Conversely, when these three conditions are absent in their work environment, managers are assumed to experience low accountability pressure. Consistent with prior accountability research, this study expects that when managers experience high accountability pressure as defined above, they are more likely to exhibit accountable decision behavior, such as cooperative or goal-congruent decision behavior. When applied to the project implementation case illustrated in the earlier section, this implies that managers who experience high accountability pressure will tend to delay the implementation of their project to resolve the quality problems, as this should be viewed as a more justifiable decision given the firm's expressed preference for quality. The following hypothesis formalizes this expectation.

H2: Managers will exhibit a greater tendency to delay implementing a project with quality problems when they experience high accountability pressure than when they experience low accountability pressure.

### **Interaction of Moral Hazard and Accountability**

Although prior research has examined the individual effects of an agency problem and accountability pressure, the simultaneous effects of these factors have not been explored yet. As Waller (1994) points out, an interesting empirical question is whether the effects of social or organizational pressures such as accountability can mitigate the adverse effects of economic incentives. In the present study, it is expected that accountability pressure will reduce the opportunistic decision behavior caused by moral hazard. While no prior research has examined

this issue directly, the results of a few budgeting studies are supportive of this expectation as they found that accountability effects were influential even when an agency problem existed. For example, Peffer, Frederickson, & Kiger (1999) found that managers who were held accountable for their budget proposals tended to create less budgetary slack, despite having an incentive to misrepresent their private information for self gain. Webb (2002) and Kohlmeyer (2001) reported similar findings, confirming the slack-reducing effects of accountability in a participative budgeting setting, where information asymmetry normally exists. Given this evidence, it was thought reasonable to expect that moral hazard and accountability pressure may have an interaction effect. Specifically, when the conditions for moral hazard exist, managers with low accountability pressure would likely behave opportunistically as agency theory predicts, while managers with high accountability pressure may constrain their behavior in support of the firm's interests. When the conditions for moral hazard do not exist, however, there is neither incentive nor opportunity for managers to act against the firm's interests. Accordingly, managers with both high and low accountability pressure would likely behave as their firm wishes, resulting in no significant difference in their behavior. This implies that the effect of accountability pressure will become more obvious in the presence of moral hazard conditions than in the absence of such conditions. The following hypothesis considers this interaction possibility.

- H3: There will be a greater effect of accountability pressure on managers' project implementation decisions when managers experience moral hazard conditions than when they do not experience such conditions.

### **Machiavellianism**

A few more recent studies indicate that individual differences between managers, such as their Machiavellian propensities, may also be an important determinant of how they respond to particular situational factors in a management context (Schepers, 2003; Wakefield, 2008; Hartmann & Maas, 2010). In a similar vein, this study examines how Machiavellianism can influence managers' project implementation decisions. Specifically, it is explored whether the hypothesized effects of moral hazard and accountability pressure can be moderated by managers' Machiavellian propensities.

Machiavellianism is defined as "a person's general strategy for dealing with people, especially the degree to which he feels other people are manipulable in interpersonal situations" (Robinson & Shaver, 1973, p. 590). According to Christie and Geis (1970), high Machiavellians are characterized as those who are willing to use any means, including manipulation, persuasion, or even deceit, to achieve a desired end. They are also characterized as having a relative lack of affect in personal relationships, lacking a concern with conventional morality and exhibiting a low ideological commitment. As such, Machiavellianism generally refers to the tendency of individuals to detach from considerations of ethics and perform actions that profit themselves (Robinson & Shaver, 1973).<sup>2</sup>

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<sup>2</sup> Although there are still disagreements on labeling Machiavellian-type of behavior as being "immoral," prior empirical research has found relatively strong linkages between Machiavellianism and unethical behavior. For example, individuals high in Machiavellianism have been found to lie more plausibly (Geis & Moon, 1981), pay bribes more readily (Singhapakdi & Vitell, 1990) and report their tax liability less truthfully (Ghosh & Crain, 1996).



As described above, high Machiavellians are relatively unconcerned with judging the morality of ethically ambiguous actions, thereby viewing unethical behavior as more acceptable. They are also more attuned to opportunities to exploit the given situation for personal gain. Consequently, high Machiavellians are more likely to respond to particular situational conditions if their rational self-interest is involved (e.g., economic incentives). In addition, Christie and Geis (1970) theorize that high Machiavellians will be more likely to exploit loosely structured elements of situations (e.g., information asymmetry, low accountability, etc.), because such elements will provide greater latitude of behavior. In contrast, low Machiavellians are theorized to be less susceptible to such situational factors because of their inability to detach from moral issues involved in the circumstances. These discussions suggest that in the present study, moral hazard may have a greater impact on high Machiavellian managers' decisions than on low Machiavellian managers' decisions.

Christie and Geis (1970) also theorize that Machiavellianism and situations ("loosely structured" versus "tightly structured" in their terms) will interact to shape one's behavior. According to their theory, the greatest difference in the "coping behaviors" used by high and low Machiavellians occurs in loosely structured situations. As they explained, "a loosely structured situation puts the high Mach on his mettle. What are the limits? To what extent can the situation be exploited for one's own gain by imposing structure? The low Mach, rather than focusing on the structural aspects of the situation, is more likely to assume that a structure exists and is more amenable to others' interpretation of the structure ... in highly structured situations both high and low Machs tend to work within the given limits which are readily understood by both." (p.352)

Shultz (1990) provided evidence for this theorized interaction effect. He observed that a salesperson's performance was determined by the interaction between the Machiavellian propensity of individuals and the sales organization's structure. In his survey work, high Machiavellians tended to outperform their low Machiavellian counterparts in loosely structured organizations, but not in tightly structured organizations. Such findings are in accordance with Christie and Geis's argument that a tightly structured situation provides less latitude to high Machiavellians for improvisation, thereby leading them to perform no better than low Machiavellians.

From a similar perspective, this study expects that the three conditions associated with high accountability (i.e., a "tightly" structured decision situation) may effectively reduce the opportunistic decision behavior of high Machiavellian managers, by giving them less latitude for improvisation. Low Machiavellian managers, on the other hand, may not need strong accountability pressure to reach organizationally desirable decisions, as they are better able to constrain their behavior apart from extrinsic controls. This suggests that in the present study, accountability pressure may have a greater impact on high Machiavellian managers' decisions than on low Machiavellian managers' decisions.

In sum, the effects of moral hazard and accountability pressure hypothesized in this study are expected to differ depending on managers' Machiavellian propensity. High Machiavellian managers are predicted to be more susceptible to the impact of moral hazard and thereby more likely to be influenced by accountability pressure, whereas low Machiavellian managers are predicted to be less responsive to the presence of such situational factors. The following hypothesis considers this expectation.

- H4: There will be greater effects of moral hazard and accountability pressure on high Machiavellian managers' project implementation decisions than on low Machiavellian managers' project implementation decisions.

## **METHOD**

### **Decision Task**

A decision-making experiment was conducted to examine the hypothesized relationships. A project implementation decision case developed by Tuttle, Harrell, & Harrison (1997) was employed and modified to fit the purposes of this study. In the case scenario, the participants were asked to assume the role of a project manager in a large consulting firm. The primary goal of the firm was described as providing its clients with excellent quality information systems that result in high user satisfaction. The firm was also described as being highly decentralized and often unaware of the current status of individual projects managed by its managers. The particular project described in the case involved the total reengineering of the inventory order procedure of an important client. The participants were told that the client was pressing them to implement the project now, as scheduled, so that it would be operational prior to the client's peak order season. They were informed, however, that the project might not be ready to implement due to some unresolved quality problems and that these quality problems would likely result in lower user satisfaction if the project were implemented as scheduled. Delaying the project to work out these quality problems, however, required waiting until after the client's peak order season, thereby causing the project to fall substantially behind schedule and seriously over-budget. Consequently, the only way to stay on-schedule and within-budget was to implement the project now and correct the quality problems later. Within the framework of this basic implementation problem, the participants were asked to make a decision whether to implement the project now as scheduled or to delay implementation until the quality problems were resolved.

### **Participants**

The study included a total of 170 M.B.A. students at two large public universities. All participated voluntarily as an in-class exercise and were provided small amount of course credit for their participation. The participants were predominantly male (68%), ranging in age from 22 to 48 years old. Work experience ranged from less than one year to more than 20 years. Approximately 70 percent of the participants worked more than 3 years. Management experience ranged from none to 15 years. Overall, the participants appeared to have sufficient work and management experience to be qualified to perform the decision task of this study.

### **Research Design**

The study employed a 2 x 2 x 2 fully-crossed factorial design. The three between-groups variables were moral hazard (yes/no), accountability pressure (high/low), and Machiavellianism (high/low). Both moral hazard and accountability pressure were manipulated variables, while Machiavellianism was a measured variable which in turn was transformed into a categorized variable (as more fully described below). In addition to this overall experimental design, separate 2 x 2 between-groups designs with moral hazard and accountability pressure as the independent

variables were used to examine the potentially differential effects of these variables for high and low Machiavellian participants (as hypothesized in H4).

### **Dependent Variable**

The participants reached their project implementation decisions using an eight-point response scale. The scale end point “1” was labeled “I would definitely delay implementation,” and the end point “8” was labeled “I would definitely implement now.” Accordingly, larger numerical responses indicate a greater tendency to implement the project with quality problems, which conflicts with the firm’s primary goal. The scale was divided at its mid-point (between 4 and 5) and labeled so that a choice of 1~4 represented a “delay” decision and a choice of 5~8 represented an “implement” decision.<sup>3</sup>

### **Independent Variables**

The two experimental variables were moral hazard and accountability pressure, both of which were manipulated at two levels. The moral hazard manipulation was similar to that used by Tuttle et al. (1997). Under the “yes” moral hazard treatment, the participants experienced the two conditions associated with moral hazard: an incentive to shirk and privately-held information. They were told that a significant portion of their compensation is contingent upon implementing the projects they manage on-schedule and within-budget (an incentive to shirk). They were also informed that their senior manager was currently unaware of the project’s difficulties and no formal review of the project was scheduled for a prolonged period (privately-held information). Accordingly, the participants in this group had both an incentive and an opportunity to implement the project that has known quality problems. Under the “no” moral hazard treatment, the participants did not experience the conditions for moral hazard. They were told that they were currently paid a flat monthly salary without bonuses, so a decision whether or not to implement the project with quality problems would not affect their personal compensation (a reduced incentive to shirk). They were also informed that their senior manager would discover the project’s difficulties soon as the project was currently under review by his management staff (publicly disclosed information). Accordingly, the participants in this group had neither incentive nor opportunity to implement the project with known quality problems.

The accountability manipulation was accomplished by either incorporating or eliminating the three conditions associated with high accountability pressure described earlier. Under the “high” accountability treatment, the participants experienced the three conditions for high accountability pressure in their decision environment. First, they were explicitly told that they were accountable for their management decisions to a senior manager who had emphasized that an important decision should reflect the firm’s primary goal (explicit communication of the desired decision). Second, they were told that the senior manager had often required them to justify important decisions in the past, so he would most likely ask them to explain their current

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<sup>3</sup> In practice, the project implementation decision as examined in this study would be dichotomous (i.e., either implement or delay). Accordingly, the response scale was converted to a dichotomous decision scale of either implement now or delay implementation. Responses from 1 to 4 were coded as “delay” decisions and responses from 5 to 8 were coded as “implement” decisions. All subsequent analyses for hypothesis testing were performed using this dichotomized scale as well as the original continuous scale. Since nonparametric analyses (such as Chi-square tests) on the dichotomized decision variable did not yield qualitatively different results, only those results obtained by parametric analyses on the original response scale will be reported in the hypothesis testing section.

decision shortly after they made the decision (pre-decisional accountability). Third, they were also informed that if they were asked to justify their decision, they should expect to explain how the decision process or criteria they used were consistent with the firm's primary goal (process accountability). Under the "low" accountability treatment, the participants did not experience these conditions. The participants were simply told that they had a high level of management autonomy and were expected to reach independent decisions. More importantly, the three conditions for high accountability pressure were absent in their decision environment. That is, they were informed that the senior manager had never discussed with them either the firm's goals or the process they should use to reach important decisions. They were also informed that the senior manager would not likely ask them to explain their current decision, as he had never done so before.

### Measured Variable: Machiavellianism

Either before or after responding to the decision case, the participants were asked to complete the Mach IV scale developed by Christie and Geis (1970).<sup>4</sup> The Mach IV scale is a well-validated personality measure in psychology. The scale consists of 20 items designed to assess individual differences in Machiavellian propensities. To minimize response bias, 10 items are worded in the "Machiavellian" direction and the remaining 10 items in the opposite direction. A seven-point Likert-type agree/disagree scale is used for measurement. Scores can range from 40 to 160 with higher scores indicating greater Machiavellian orientation.<sup>5</sup>

In the present study, the Mach IV scores ranged from a minimum of 54 to a maximum of 125, with a standard deviation of 14.04. The mean and median scores for the sample were 88.90 and 91, respectively.<sup>6</sup> There were no significant relationships between the score and demographic items, such as gender ( $p = 0.59$ ), age ( $p = 0.15$ ), work experience ( $p = 0.73$ ), and management experience ( $p = 0.29$ ). The Cronbach alpha coefficient of the scale was 0.80. This level of reliability seemed to be adequate as it was well above the 0.70 minimum level generally recommended for hypothesis testing (Peter, 1979). For analysis purposes, all participants were categorized into two groups based on their Mach IV scores. The median score was used to split them into the high and low Machiavellian categories (Ghosh & Crain, 1996). The participants were categorized as "high Machiavellian" if their Mach IV scores were greater than or equal to the median score of 91, otherwise categorized as "low Machiavellian."

### Manipulation Checks

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<sup>4</sup> In order to prevent the completion of the Mach IV scale from biasing decision responses or *vice versa*, a half of the participants were asked to complete the Mach IV questionnaire before the decision task while the other half were asked to complete the questionnaire after the decision task. There was no significant order effect on the response variable ( $t = 0.47$ ,  $p = .64$ ). For further examination of the order effect, the entire analyses for hypothesis testing were performed separately for each of these two groups and similar results were obtained between them. This reduced the concern about the potential response biases due to order effects.

<sup>5</sup> Christie and Geis (1970) recommended that a constant of 20 be added to all scores, so that the total score at the theoretical neutral point can be 100 (4 x 20 items plus 20). Accordingly, the minimum score is 40 (1 x 20 items plus 20), and the maximum score is 160 (7 x 20 items plus 20). This study employed Christie and Geis's original scoring method in calculating the Mach score, so that the results can be compared with those of other related studies that had used the same method.

<sup>6</sup> The descriptive statistics of the Mach IV scores were compared with those of other recent studies and were found to be comparable with those reported for several different populations, such as managers, marketers, accountants, college students and M.B.A. students.

Two manipulation check questions were used to determine if the participants understood the experimental conditions as intended. Responses to both manipulation checks were obtained on the dichotomous, forced-choice scales. The first question checked the moral hazard manipulation by asking participants to identify the correct description of their decision circumstance, in terms of whether the two conditions associated with moral hazard were present or absent. The second question checked the accountability manipulation by asking participants whether the three conditions associated with high accountability pressure were present or absent in their decision case. Of the 15 participants who failed manipulation checks, four (2.4%) failed the moral hazard manipulation check, seven (4.1%) failed the accountability manipulation check, and four (2.4%) failed both manipulation checks. This relatively small number of failures suggests that the manipulation of both variables was successful and participants paid attention to the decision case. Only those participants who responded correctly to both manipulation check questions were included in subsequent analyses. The study results, however, remained unchanged when the analyses described below were performed with all 170 participants.

## ANALYSIS AND RESULTS

### Overall Analysis of Variance for Entire Sample

Initially, a fully-crossed three-way ANOVA was performed to examine the separate and concurrent effects of moral hazard (yes/no), accountability pressure (high/low) and Machiavellianism (high/low) on the participants' project implementation decisions.<sup>7</sup> This analysis included the full sample of 155 participants and the results are summarized in Table 1 (Appendix). As predicted, the main effects for both moral hazard ( $F = 17.91, p < .001$ ) and accountability pressure ( $F = 21.38, p < .001$ ) were significant. The main effect of Machiavellianism, although not hypothesized, was also significant ( $F = 24.19, p < .001$ ). In terms of the two-way interactions, only the moral hazard  $\times$  Machiavellianism interaction was significant ( $F = 10.73, p = .001$ ). Of more importance to this study is, however, that the three-way interaction turned out to be significant ( $F = 4.86, p = .029$ ), as will be explained in greater detail below.

Panel A of Table 2 (Appendix) presents, for the entire sample ( $n = 155$ ), the mean scores of the participants' project implementation decisions in each of the four experimental conditions. As shown, the observed mean differences were in the predicted directions. The marginal mean decision response was significantly higher when participants experienced moral hazard ( $M = 4.25$ ) than when they did not experience moral hazard ( $M = 2.85; t = 4.32, p < .001$ ). This implies that as hypothesized in H1, individuals in the Yes-Moral-Hazard condition were more likely to implement a project that had quality problems than were those in the No-Moral-Hazard condition. Additionally, the marginal mean decision response was significantly lower when

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<sup>7</sup> Prior to hypothesis testing, some preliminary analyses were conducted to assure the effectiveness of the randomization process and the appropriateness of statistical models established. The basic demographic analyses for a randomization check indicated that there were no significant differences in the participants' gender, age, work experience, and management experience across the four experimental groups ( $p > 0.15$ ). Additionally, no significant relationships were found between these demographic variables and the participants' responses ( $p > 0.42$ ), implying that the results of this study were independent of demographic differences. Lastly, several diagnostic analyses performed on the response variable revealed that there was no significant ground for suspecting the violation of the basic assumptions for the analysis of variance (*e.g.*, normality, equal variances, etc.).

participants experienced high accountability pressure ( $M = 2.84$ ) than when they experienced low accountability pressure ( $M = 4.25$ ;  $t = -4.34$ ,  $p < .001$ ). This indicates that individuals in the High-Accountability-Pressure condition were more likely to delay implementation than were those in the Low-Accountability-Pressure condition, as hypothesized in H2.

A comparison of individual cell means reveals that participants who experienced moral hazard and low accountability pressure exhibited the greatest tendency to implement now ( $M = 5.16$ ), whereas the greatest tendency to delay implementation was observed for participants who did not experience moral hazard and experienced high accountability pressure ( $M = 2.40$ ). It is noteworthy that only participants who experienced moral hazard and low accountability pressure indicated a preference for implementation over delay ( $M = 5.16$ ). By contrast, the members of the other three groups indicated a clear preference for delay over implementation ( $M = 3.34$ ,  $M = 2.40$  and  $M = 3.32$ , respectively).

H3 predicted that there would be a greater effect of accountability pressure when participants experience moral hazard than when they do not experience moral hazard, implying a significant interaction between moral hazard and accountability pressure. As appeared in Table 1 (Appendix), the overall ANOVA results for the entire sample did not support this interaction ( $F = 2.04$ ,  $p = .156$ ). Importantly, though, the three-way interaction was significant ( $F = 4.86$ ,  $p = .029$ ). By the definition of a three-way interaction, this indicates that the “simple interaction” effects of two independent variables are not the same at different levels of the third independent variable (Keppel, 1991).<sup>8</sup> For the current study, this implies that the hypothesized interaction effects of moral hazard and accountability pressure may differ depending on the level of Machiavellianism, as reflected in H4. Therefore, the presence of this three-way interaction provides initial support for H4, and also makes it appropriate to perform separate ANOVAs for participants classified as high Machiavellians and those classified as low Machiavellians.

### Separate Analyses of Variance for High and Low Machiavellian Groups

As summarized in Table 3 (Appendix), separate  $2 \times 2$  ANOVAs were performed on the response data from high and low Machiavellian participants and the effects of two experimental factors were reexamined within each subject group. For high Machiavellian participants (Panel A of Table 3), there were significant main effects for both moral hazard ( $F = 26.18$ ,  $p < .001$ ) and accountability pressure ( $F = 15.40$ ,  $p < .001$ ). Importantly, there was also a significant interaction between the two factors ( $F = 6.13$ ,  $p < .016$ ). For low Machiavellian participants (Panel B of Table 3), however, only the accountability main effect was significant ( $F = 6.74$ ,  $p = .011$ ) and no other effects reached significance ( $p > .45$ ).

An examination of cell means displayed in Panel B of Table 2 reveals that the decision responses of high Machiavellian participants were indeed consistent with the predictions of this study. As hypothesized, they were more likely to implement the defective project when moral hazard existed (H1) and less likely to do so when high accountability existed (H2). Also a greater effect of accountability pressure was observed in the presence than in the absence of moral hazard conditions (H3), indicating a significant deterring effect of accountability pressure on the

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<sup>8</sup> In a three-way ANOVA, a “simple interaction” designates an interaction between two independent variables with a third independent variable held constant (e.g., the interaction between factor A and factor B at one level of factor C). The term “simple interaction” is used to distinguish it from an actual two-way interaction in a two-way ANOVA. Accordingly, when there is a significant three-way interaction, the simple interaction effects merely need to be different; they do not need to represent significant two-way interactions themselves (Keppel, 1991, pp. 426-427).

moral hazard effect for high Machiavellian participants. Low Machiavellian participants, on the other hand, exhibited a largely different decision behavior. As shown in Panel C of Table 2, the decision responses given by low Machiavellian participants did not vary significantly whether they experienced moral hazard or not. In both conditions of moral hazard (yes/no), they elected to delay implementation ( $M = 2.94$  and  $M = 2.60$ , respectively), indicating little impact of moral hazard on their decisions ( $t = 0.87$ ,  $p = .39$ ). Given the absence of this moral hazard effect, the effect of accountability pressure leading to a reduced tendency to implement was not particularly higher in the Yes-Moral-Hazard condition than in the No-Moral-Hazard condition. In both conditions of moral hazard, similar levels of accountability effects occurred, without interacting with moral hazard effects. Accordingly, the agency theory prediction of this study (H1) and the interaction hypothesis (H3) could not be supported with the data from low Machiavellian participants.

Figure 1 (Appendix) graphically represents the effects of moral hazard and accountability pressure for each subject group. From a comparison of Panel A and Panel B, it is apparent that these two factors had differential effects for high and low Machiavellian participants. As predicted in H4, there were, on average, greater influences of moral hazard and accountability pressure on high Machiavellians' project implementation decisions than on low Machiavellians' decisions. Figure 1 is also helpful for uncovering the nature of the three-way interaction found in this study. That is, the interactive effects of moral hazard and accountability pressure appeared to be contingent on the type of participants examined. In the case of high Machiavellian participants (Panel A of Figure 1), there was a noticeable interaction between the two factors, as hypothesized in H3. In the case of low Machiavellian participants (Panel B of Figure 1), however, no clear evidence of such an interaction was present. For low Machiavellian participants whose decisions were not significantly influenced by moral hazard effects, there must have been little room for accountability effects in either condition of moral hazard. As such, this study found different patterns of interactions as well as different effects of each experimental factor when the participants' Machiavellian propensity was controlled for, which provides further support for H4.

## DISCUSSION

Accountability, as emphasized by Tetlock (1985), is an important element in the organizational context of decision-making where delegated decision-making commonly occurs. Nevertheless, the role of accountability has been largely overlooked in prior agency theory-based research. Agency theory assumes that self-interest is the sole basis for managers' economic decisions. Accountability theory would, however, suggest that accountability is also an important determinant of managers' decision behavior. Accordingly, a decision-making experiment was conducted to examine the assertions of these two theories concurrently. The role of Machiavellianism was also considered as a relevant personality variable.

The results of the experiment were consistent with agency theory. The presence of moral hazard conditions resulted in a greater tendency for participants to implement a project with quality problems, even though this was contrary to the firm's primary goal. These results indicate that the two agency theory constructs, an incentive to shirk and privately-held information, can motivate managers to behave in their own interests over the interests of their firm. An important practical implication of this finding is that moral hazard may be a significant threat to a firm's strategic project management. As demonstrated in the experiment, poorly designed incentive systems and lack of adequate monitoring systems may cause project managers to disregard

strategically important goals of their firm. Feltham and Xie (1994) argue that incentives must be based on measures that are consistent with the firm's goals in order to motivate desirable decision behavior of managers. Linking incentives to measures that do not reflect the goals of the firm would likely promote dysfunctional behavior. Part of the decision scenario employed here was designed to test this agency theory assertion, and the significant main effect found for moral hazard confirms the validity of this assertion.

The experimental findings were also consistent with accountability theory. As hypothesized, an exposure to high accountability pressure (as defined in this study) resulted in a greater tendency for participants to delay implementing the defective project, which was in accordance with the firm's primary goal. This tendency held true for both conditions of moral hazard (yes/no) in general. Accordingly, it appears that accountability does play an important role in individuals' decision-making, as accountability theory suggests. This finding is important to both research and practice. From a research perspective, the finding suggests that prior experimental studies based on agency theory might have overstated the significance of their results by failing to consider the effects of accountability pressure that normally exists in an agent's decision environment. Accordingly, as Rutledge and Karim (1999) suggest, a simple agency model of decision-making, which assumes self-interest as the sole basis for economic decisions, is incomplete and need to be refined to incorporate other potential influences, such as accountability. From a practical standpoint, the result suggests that enhanced accountability pressure may serve as an effective deterrent to managers seeking to place their own interests above those of their firm. As found in this study, the three conditions associated with high accountability pressure significantly reduced the opportunistic decision behavior caused by moral hazard (especially for participants with a higher Machiavellian propensity). Such a finding may be important to control system designers as it provides useful insights on how to establish desirable accountability relationships between managers and their firm. Waller (1994) indicated that well-developed social mechanisms will provide comparable benefits more cheaply than sophisticated incentive and information systems. The results of this study support his idea and suggest that accountability pressure may be used as a relatively inexpensive alternative for controlling agency problems when it is costly or difficult to establish elaborative incentive and monitoring systems.

Perhaps more interesting was the finding that the effects of moral hazard and accountability pressure appeared differently depending on participants' Machiavellian propensities. As predicted, moral hazard had a greater impact on high Machiavellians' decisions than on low Machiavellians' decisions, especially when low accountability existed. Similarly, accountability pressure had a greater influence on high Machiavellians' decisions than on low Machiavellians' decisions, especially when moral hazard existed. These findings cast further doubt on the general descriptive validity of agency theory. As apparent in this study, although agency theory was useful in explaining high Machiavellians' decision behavior, it was unable to provide a good description of low Machiavellians' decision behavior. In fact, the decision behavior of low Machiavellian participants was invariant regardless of whether they experienced an agency problem. This implies that the conventional agency model of self-interested decision-making is again inadequate and may fail to describe certain types of managers' decision behavior. Accordingly, a caution needs to be taken when applying agency theory implications to the practical setting in which individuals who have a certain personality type may not behave as agency theory suggests. The findings also have implications for management. That is, the firm has reason to believe that managers with a higher Machiavellian propensity are more likely to act



in their own interests than their counterpart if they experience agency problem conditions. Accordingly, the firm may wish to establish a stronger accountability relationship with high Machiavellian managers since accountability, when heightened in a proper manner, could mitigate their opportunistic self-serving behavior as found in this study. Alternatively, the firm may test for Machiavellian propensities of managers and select those with a lower Machiavellian orientation for the management of projects that are prone to agency problems.

Since this study represents one of only a few studies exploring the influence of accountability within an agency context, future research could examine other agency settings (e.g., capital budgeting) to see if the findings of this study are replicable. Also, as this is the first study examining the effects of accountability pressure based on a management case scenario, further refinements are possible to the case descriptions relating to managerial accountability manipulated in this study. The study is also among the first to consider Machiavellianism as a relevant personality variable to the context of an agency problem. Given the striking similarity between the Machiavellian-type behavior and self-interested behavior described by agency theory, future research may continue to evaluate the relevance of this personality variable to the other agency problem contexts. An examination of the Mach IV scale in relation to other conventional ethics measures (e.g., the Defining Issues Tests) could also be an interesting topic for future investigation. Finally, the nature of the interaction between personal and situational variables merits further study. The present study demonstrated that a joint consideration of individual and situational factors allows a more insightful analysis of important managerial decision behavior. Future research could adopt this person-situation interactionist perspective to examine other types of individual differences and organizational variables that may be related in important ways (e.g., risk preferences, reputation concerns, the nature of reward or evaluation systems, etc.). It is hoped that this research will stimulate others to a further examination of these issues.

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**APPENDIX****TABLE 1****Analysis of Variance Results for Full Sample ( $n = 155$ )**

Source	<i>df</i>	MS	<i>F</i> -statistic	<i>p</i> -value
Moral hazard (MH)	1	52.054	17.91	< 0.001
Accountability Pressure (ACCT)	1	62.157	21.38	< 0.001
Machiavellianism (MACH)	1	70.307	24.19	< 0.001
MH × ACCT	1	5.919	2.04	0.156
MH × MACH	1	31.192	10.73	0.001
ACCT × MACH	1	3.734	1.28	0.259
MH × ACCT × MACH	1	14.126	4.86	0.029
Error	147	2.907		

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**TABLE 2****Mean Project Implementation Decision Responses in Experimental Conditions (Including Standard Deviation and Cell Size)****Panel A: All Participants ( $n = 155$ )**

Moral hazard	Accountability Pressure		Overall
	Low	High	
No	3.34 (1.98) $n = 38$	2.40 (1.56) $n = 42$	2.85 (1.82) $n = 80$
Yes	5.16 (2.14) $n = 38$	3.32 (1.90) $n = 37$	4.25 (2.21) $n = 75$
Overall	4.25 (2.24) $n = 76$	2.84 (1.78) $n = 79$	

**Panel B: Participants Classified as High on Machiavellianism ( $n = 80$ )**

Moral hazard	Accountability Pressure		Overall
	Low	High	
No	3.42 (2.06) $n = 19$	2.83 (1.65) $n = 18$	3.14 (1.87) $n = 37$
Yes	6.50 (1.44) $n = 22$	3.90 (2.02) $n = 21$	5.23 (2.17) $n = 43$
Overall	5.07 (2.33) $n = 41$	3.41 (1.92) $n = 39$	

**Panel C: Participants Classified as Low on Machiavellianism ( $n = 75$ )**

Moral hazard	Accountability Pressure		Overall
	Low	High	
No	3.26 (1.94) $n = 19$	2.08 (1.44) $n = 24$	2.60 (1.76) $n = 43$
Yes	3.31 (1.45) $n = 16$	2.56 (1.46) $n = 16$	2.94 (1.48) $n = 32$
Overall	3.29 (1.71) $n = 35$	2.28 (1.45) $n = 40$	

Note: Higher values (5 or more) indicate a decision to implement a project with quality problems, while lower values (4 or less) indicate a decision to delay the implementation.

**TABLE 3****Analysis of Variance Results Partitioned on Machiavellianism**

Source	<i>df</i>	MS	<i>F</i> -statistic	<i>p</i> -value
<b>Panel A: Participants Classified as High on Machiavellianism (<i>n</i> = 80)</b>				
Moral hazard (MH)	1	85.589	26.18	< 0.001
Accountability Pressure (ACCT)	1	50.339	15.40	< 0.001
MH × ACCT	1	20.024	6.13	0.016
Error	76	3.269		
<b>Panel B: Participants Classified as Low on Machiavellianism (<i>n</i> = 75)</b>				
Moral hazard (MH)	1	1.274	0.51	0.479
Accountability Pressure (ACCT)	1	16.982	6.74	0.011
MH × ACCT	1	0.842	0.33	0.565
Error	71	2.520		

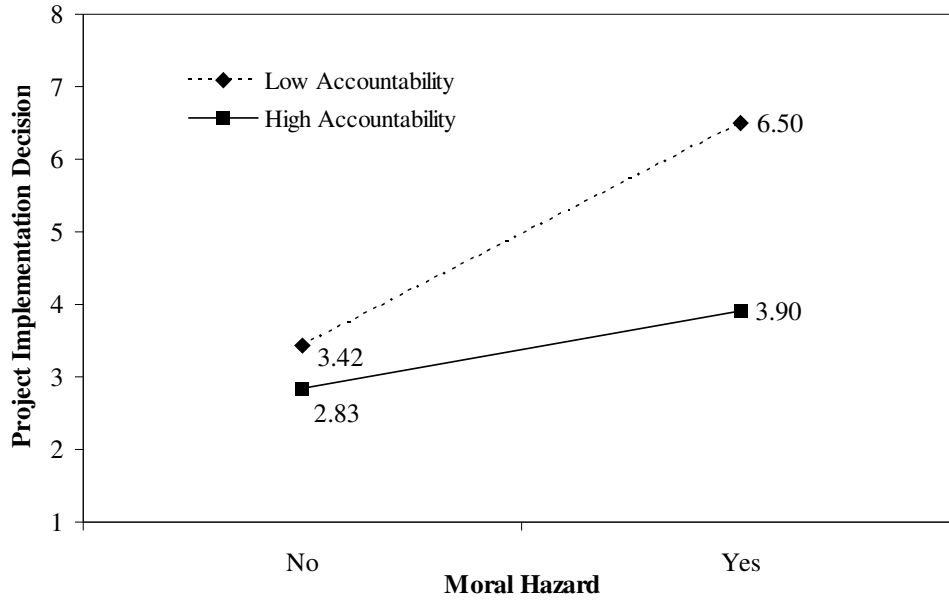
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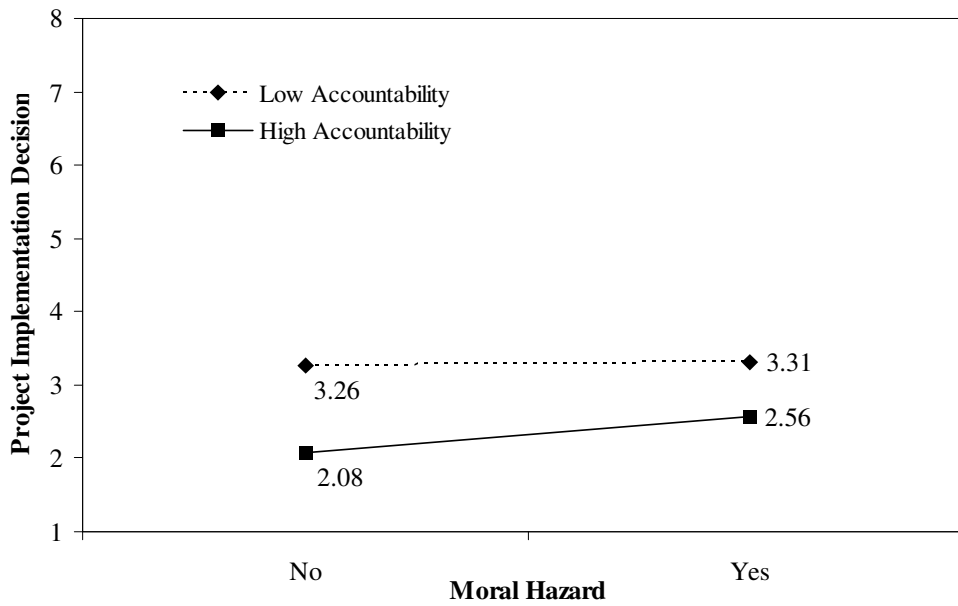
**FIGURE 1**

**Graphical Displays of Effects of Moral Hazard and Accountability Pressure on Project Implementation Decisions**

**Panel A:** Participants Classified as High on Machiavellianism ( $n = 80$ )



**Panel B:** Participants Classified as Low on Machiavellianism ( $n = 75$ )





**RESEARCH INSTRUMENT****Decision Case 1 (Yes-Moral-Hazard / High-Accountability-Pressure)**

You are a project manager in a large consulting firm. The primary goal of your firm is to provide its clients with excellent quality information systems that result in high user satisfaction. Your firm is highly decentralized and senior managers are often unaware of a project's current status. Terry Petersen, who is Vice President for Project Management, is your supervisor. Currently, you manage Project Y, which involves the total re-engineering of the inventory order procedures of an important client. The client is pressing you to implement Project Y now, as scheduled, so that it will be operational prior to the client's peak order season. You know, however, that Project Y has some unresolved quality problems. If Project Y is implemented now, these quality problems will result in low user satisfaction. If you delay implementation to correct these quality problems, you must delay for three months until after the client's peak order season. This delay means Project Y will fall substantially behind schedule and will be seriously over-budget. Thus, the only way to stay on-schedule and within-budget is to implement Project Y now and correct the quality problems later, although this will cause the client to find the quality of the system less than satisfactory when operated.

You will receive a substantial bonus if you implement Project Y on-schedule and within-budget. This means you will lose a significant portion of your usual compensation if you delay implementation to correct Project Y's quality problems. Project Y is not scheduled for a formal review by Terry Petersen's staff for several months. You expect that the quality problems can be overcome before Project Y's next formal review. Therefore, if you implement Project Y now, as scheduled, Terry Petersen will never know that Project Y had unresolved quality problems when it was implemented.

As a project manager, you are accountable for your management decisions to Terry Petersen. He has emphasized that your important decisions should reflect the firm's primary goal of providing its clients with excellent quality information systems that result in high user satisfaction. After you have reached important decisions in the past, Terry has often required you to justify your decisions by describing the decision process you used. Accordingly, you expect that shortly after you reach your current decision, Terry will ask you to explain how you have reached that decision and whether it is consistent with the firm's primary goal of providing excellent quality information systems.

**Based on the information provided above, would you implement Project Y now or delay its implementation? Circle ONE NUMBER on the scale below to indicate the relative strength of your choice.**

I would definitely <b>Delay</b> implementation.	1	2	3	4	5	6	7	8	I would definitely <b>Implement</b> now.
		Delay				Implement			

**DO NOT PROCEED TO THE NEXT PAGE UNTIL YOU HAVE MADE A DECISION!**

**Decision Case 2 (No-Moral-Hazard / High-Accountability-Pressure)**

You are a project manager in a large consulting firm. The primary goal of your firm is to provide its clients with excellent quality information systems that result in high user satisfaction. Your firm is highly decentralized and senior managers are often unaware of a project's current status. Terry Petersen, who is Vice President for Project Management, is your supervisor. Currently, you manage Project Y, which involves the total re-engineering of the inventory order procedures of an important client. The client is pressing you to implement Project Y now, as scheduled, so that it will be operational prior to the client's peak order season. You know, however, that Project Y has some unresolved quality problems. If Project Y is implemented now, these quality problems will result in low user satisfaction. If you delay implementation to correct these quality problems, you must delay for three months until after the client's peak order season. This delay means Project Y will fall substantially behind schedule and will be seriously over-budget. Thus, the only way to stay on-schedule and within-budget is to implement Project Y now and correct the quality problems later, although this will cause the client to find the quality of the system less than satisfactory when operated.

You are paid a flat monthly salary without bonuses, so a decision to either implement Project Y now or delay implementing Project Y will not affect your personal compensation. A formal review of Project Y is currently being conducted by Terry Petersen's staff. You expect that the quality problems will soon be discovered by the review staff. Therefore, if you implement Project Y now, as scheduled, Terry Petersen will immediately know that you implemented a project with unresolved quality problems that will result in low user satisfaction.

As a project manager, you are accountable for your management decisions to Terry Petersen. He has emphasized that your important decisions should reflect the firm's primary goal of providing its clients with excellent quality information systems that result in high user satisfaction. After you have reached important decisions in the past, Terry has often required you to justify your decisions by describing the decision process you used. Accordingly, you expect that shortly after you reach your current decision, Terry will ask you to explain how you have reached that decision and whether it is consistent with the firm's primary goal of providing excellent quality information systems.

**Based on the information provided above, would you implement Project Y now or delay its implementation? Circle ONE NUMBER on the scale below to indicate the relative strength of your choice.**

I would definitely <b>Delay</b> implementation.	Delay	Implement	I would definitely <b>Implement</b> now.
1	2   3   4	5   6   7   8	

**DO NOT PROCEED TO THE NEXT PAGE UNTIL YOU HAVE MADE A DECISION!**

**Decision Case 3 (Yes-Moral-Hazard / Low-Accountability-Pressure)**

You are a project manager in a large consulting firm. The primary goal of your firm is to provide its clients with excellent quality information systems that result in high user satisfaction. Your firm is highly decentralized and senior managers are often unaware of a project's current status. Terry Petersen, who is Vice President for Project Management, is your supervisor. Currently, you manage Project Y, which involves the total re-engineering of the inventory order procedures of an important client. The client is pressing you to implement Project Y now, as scheduled, so that it will be operational prior to the client's peak order season. You know, however, that Project Y has some unresolved quality problems. If Project Y is implemented now, these quality problems will result in low user satisfaction. If you delay implementation to correct these quality problems, you must delay for three months until after the client's peak order season. This delay means Project Y will fall substantially behind schedule and will be seriously over-budget. Thus, the only way to stay on-schedule and within-budget is to implement Project Y now and correct the quality problems later, although this will cause the client to find the quality of the system less than satisfactory when operated.

You will receive a substantial bonus if you implement Project Y on-schedule and within-budget. This means you will lose a significant portion of your usual compensation if you delay implementation to correct Project Y's quality problems. Project Y is not scheduled for a formal review by Terry Petersen's staff for several months. You expect that the quality problems can be overcome before Project Y's next formal review. Therefore, if you implement Project Y now, as scheduled, Terry Petersen will never know that Project Y had unresolved quality problems when it was implemented.

As a project manager, you have a high level of management autonomy and you are expected to reach independent decisions. Terry Peterson uses a highly decentralized approach and is often unaware of a project's current status. In the past, Terry has never discussed with you either the firm's goals or the process you should use to reach important decisions. Further, Terry has never asked you to explain your decisions as long as you were authorized to make the decisions. Accordingly, you expect that Terry will not ask you to explain your current decision, no matter what decision you are making.

**Based on the information provided above, would you implement Project Y now or delay its implementation? Circle ONE NUMBER on the scale below to indicate the relative strength of your choice.**

I would definitely <b>Delay</b> implementation.	Delay	Implement	I would definitely <b>Implement</b> now.
1	2   3   4	5   6   7   8	

**DO NOT PROCEED TO THE NEXT PAGE UNTIL YOU HAVE MADE A DECISION!**

**Decision Case 4 (No-Moral-Hazard / Low-Accountability-Pressure)**

You are a project manager in a large consulting firm. The primary goal of your firm is to provide its clients with excellent quality information systems that result in high user satisfaction. Your firm is highly decentralized and senior managers are often unaware of a project's current status. Terry Petersen, who is Vice President for Project Management, is your supervisor. Currently, you manage Project Y, which involves the total re-engineering of the inventory order procedures of an important client. The client is pressing you to implement Project Y now, as scheduled, so that it will be operational prior to the client's peak order season. You know, however, that Project Y has some unresolved quality problems. If Project Y is implemented now, these quality problems will result in low user satisfaction. If you delay implementation to correct these quality problems, you must delay for three months until after the client's peak order season. This delay means Project Y will fall substantially behind schedule and will be seriously over-budget. Thus, the only way to stay on-schedule and within-budget is to implement Project Y now and correct the quality problems later, although this will cause the client to find the quality of the system less than satisfactory when operated.

You are paid a flat monthly salary without bonuses, so a decision to either implement Project Y now or delay implementing Project Y will not affect your personal compensation. A formal review of Project Y is currently being conducted by Terry Petersen's staff. You expect that the quality problems will soon be discovered by the review staff. Therefore, if you implement Project Y now, as scheduled, Terry Petersen will immediately know that you implemented a project with unresolved quality problems that will result in low user satisfaction.

As a project manager, you have a high level of management autonomy and you are expected to reach independent decisions. Terry Peterson uses a highly decentralized approach and is often unaware of a project's current status. In the past, Terry has never discussed with you either the firm's goals or the process you should use to reach important decisions. Further, Terry has never asked you to explain your decisions as long as you were authorized to make the decisions. Accordingly, you expect that Terry will not ask you to explain your current decision, no matter what decision you are making.

**Based on the information provided above, would you implement Project Y now or delay its implementation? Circle ONE NUMBER on the scale below to indicate the relative strength of your choice.**

I would definitely <b>Delay</b> implementation.	Delay	Implement	I would definitely <b>Implement</b> now.
1	2   3   4	5   6   7   8	

**DO NOT PROCEED TO THE NEXT PAGE UNTIL YOU HAVE MADE A DECISION!**

**Manipulation Check Questions**

**DO NOT TURN BACK TO THE PRIOR PAGE  
WHEN ANSWERING THE FOLLOWING QUESTIONS.**

**Please identify which one of the two paragraphs below best describes the decision circumstances on the prior page. Read both paragraphs and then choose either “a” or “b” (but not both) to indicate your choice.**

- a. If you implement Project Y now, as scheduled, you will receive a substantial bonus for on-schedule and within-budget implementation. In addition, Terry Petersen will never know that Project Y had unresolved quality problems when it was implemented.
- b. You are paid a flat monthly salary without bonuses, so a decision to either implement project Y now or delay implementing Project Y will not affect your personal compensation. If you implement Project Y now, however, Terry Petersen will immediately know that you implemented a project with unresolved quality problems that will result in low user satisfaction.

S B  
\*\*\*\*\*

**Again, identify which one of the two paragraphs below best describes the decision circumstances on the prior page. Read both paragraphs and then choose either “a” or “b” (but not both) to indicate your choice.**

- a. Shortly after you reach your decision to either implement Project Y now or delay its implementation, Terry Petersen will ask you to explain your decision in terms of how your decision process emphasized the firm’s primary goal of providing excellent quality information systems that will result in high user satisfaction.
- b. Terry Petersen will not ask you to explain the decision you reach, regardless of whether you decide to implement Project Y now or delay its implementation.

**Mach IV Scale**

**INSTRUCTION:** At this point, think about to what extent each of the following statements accurately describes you. Please indicate the degree to which you personally agree or disagree with each of the following statements by choosing a number on the scale below that reflects your opinion.

	<i><b>Strongly Disagree</b></i>					<i><b>Strongly Agree</b></i>	
1. The best way to handle people is to tell them what they want to hear.	1	2	3	4	5	6	7
2. When you ask someone to do something for you, it is best to give the real reasons for wanting it, rather than giving reasons which might carry more weight.	1	2	3	4	5	6	7
3. Anyone who completely trusts anyone else is asking for trouble.	1	2	3	4	5	6	7
4. It is hard to get ahead without cutting corners here and there.	1	2	3	4	5	6	7
5. Honesty is the best policy in all cases.	1	2	3	4	5	6	7
6. It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.	1	2	3	4	5	6	7
7. Never tell anyone the real reason you did something unless it is useful to do so.	1	2	3	4	5	6	7
8. One should take action only when sure it is morally right.	1	2	3	4	5	6	7
9. It is wise to flatter important people.	1	2	3	4	5	6	7
10. All in all, it is better to be humble and honest than important and dishonest.	1	2	3	4	5	6	7
11. Barnum was very wrong when he said there's a sucker born every minute.	1	2	3	4	5	6	7
12. People suffering from incurable diseases should have the choice of being put painlessly to death.	1	2	3	4	5	6	7
13. It is possible to be good in all respects.	1	2	3	4	5	6	7
14. Most people are basically good and kind.	1	2	3	4	5	6	7
15. There is no excuse for lying to someone else.	1	2	3	4	5	6	7
16. Most people forget more easily the death of their father than the loss of their property.	1	2	3	4	5	6	7
17. Most people who get ahead in the world lead clean, moral lives.	1	2	3	4	5	6	7
18. Generally speaking, people won't work hard unless they're forced to do so.	1	2	3	4	5	6	7
19. The biggest difference between most criminals and other people is that criminals are stupid enough to get caught.	1	2	3	4	5	6	7
20. Most people are brave.	1	2	3	4	5	6	7

**Demographic Information**

**Please respond to the following questions.**

1. Gender: Male [ ] Female [ ]

2. Age: \_\_\_\_\_

3. Major field of undergraduate study \_\_\_\_\_

4. How many years of work experience do you have if any? \_\_\_\_\_

5. How many years of management experience do you have if any? \_\_\_\_\_

J B  
S B