Machiavellians and Incomplete Contracts

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ABSTRACT:

We use an experiment to examine the behavior of Machiavellians operating under incomplete contracts. We create a setting in which the participant selects a project with a given net present value, manipulating whether that project also positively impacts a non-contracted and uncompensated objective. Drawing on justice and stewardship theories, we predict and find that having a positive impact on the organization interacts with Machiavellianism to affect subsequent honesty on an unrelated budgeting task; impact causes higher (lower) Machiavellians to become less (more) honest. Our results contribute to burgeoning literatures investigating incomplete contracts as well as the effects of personality types in accounting settings. Given the over-representation of higher Machiavellians in upper levels of organizations, our findings have implications for the design of contracts as well as performance measurement and communication system design.

Key Words: Organizational Initiatives; Machiavellianism; Stewardship; Opportunism; Budget Slack
1. Introduction

An individual’s level of Machiavellianism is an important topic of study within accounting settings, including misreporting and rationalization of unethical behavior (e.g. Majors 2016; Hartmann and Maas 2010). In this study, we extend this stream of investigation by examining the behavior of Machiavellians when operating in an incomplete contracting setting. Specifically, we examine how Machiavellianism interacts with performance on non-contracted metrics to affect an individual’s honesty on a subsequent unrelated budgeting task.

This is an important research question due to the prevalence of incomplete contracts in practice and the uneven distribution of Machiavellians in most organizations (e.g. Christ, Sedatole, and Towry 2012; Shellenbarger 2014). While firm managers often incorporate important objectives into formal performance contracts, such as metrics in a balanced scorecard or “pay for performance” compensation schemes, this is not always feasible or cost effective (MacLeod and Parent 1999; Akerlof 1982; Lazear 1986). In these situations, actions supporting firm objectives are encouraged but not compensated, leaving the contract incomplete (e.g., Christ et al 2012; Brown, Martin, Moser, and Weber 2015). Employees are likely to learn of such objectives via communications from upper management, conversations between supervisors and subordinates, or even simply knowledge of company culture (e.g., Huber 1991; Flores et al 2010). As such, both the degree of contract completeness and level of Machiavellian personality trait vary in practice. This makes understanding how these factors interact important, especially if there are circumstances in which the effects are detrimental to the organizational.

To examine our research question, we design an experiment in which participants from Amazon’s Mechanical Turk assume the role of a manager in an organization that has a general organizational initiative to improve how quickly customers are moved through each store
(customer turnaround). Participants are informed about this initiative, but fulfilling it does not influence their compensation. The participant is first tasked with selecting a project to be implemented and is compensated based on the value (i.e. NPV) of the selected project. The NPVs of the available projects are held constant between conditions, and one project is clearly dominant in terms of value to the firm and to the participant. Our primary, between-participants manipulation is whether the dominant project also includes a substantive impact on the initiative to improve customer turnaround, thus creating two conditions: 1) No Impact and 2) Impact. This design holds constant both participant compensation and the total economic benefit the participant provides to the firm, while creating a scenario in which half the participants have impacted the organizational objective and half have not.

After participants select their project, we next examine the effect of Impact on opportunism. While in the same manager role, participants are asked to submit a budget for an unrelated project. We employ a modified version of the instrument developed by Evans, Hannan, Krishnan, and Moser (2001), in which the participant is free to overstate the cost of the project and keep the misappropriated funds (i.e., the budget slack). The degree to which the participant over-reports when submitting the budget serves as our measure of opportunistic behavior. Once this decision has been made, we measure participants’ Machiavellianism using the Mach IV scale, developed by Christie and Geis (1970).

Justice and stewardship theories offer competing predictions for opportunism in this setting. Justice theory suggests that providing value to the firm without being rewarded will be perceived as unfair, leading employees to take actions to make themselves whole (e.g. Beugre and Baron 2001). This deservingness would manifest as greater slack in the budgeting task in the Impact condition, compared to the No Impact condition. Stewardship theory offers a framework
leading to the opposite prediction (Hernandez 2012). This theory suggests providing an employee the means and opportunity to achieve an important objective can promote a sense of collective responsibility for corporate outcomes, even when performance is not linked to compensation. Contrary to the justice-based prediction, this sense of responsibility and ownership would manifest as less slack in the budgeting task in the *Impact* condition, compared to the *No Impact* condition.

Drawing from psychological theory, we expect that the level of Machiavellianism (Mach) personality type will determine whether justice or stewardship theory determines opportunistic behavior. Machiavellianism can broadly be described as advocating manipulative tactics in interpersonal interactions, prioritizing personal goals over pro-social goals, and disavowal of conventional standards of morality (e.g., Christie 1970; Fehr, Samsom, and Paulhus 1992). Given that high Machs prioritize agentic values such as competence and unmitigated achievement over communal values (e.g., Musser and Orke 1992; Jones and Paulhus 2009), we expect their behavior to be consistent with justice theory. That is, providing an impact on a firm’s initiative will lead high Machs to feel they deserve compensation for that contribution and so exhibit greater opportunism, effectively paying themselves for their performance on the firm’s initiative. Conversely, individuals lower on the Machiavellian scale are not simply less Machiavellian; instead, they may be considered anti-Machiavellian. These individuals are relatively more attuned to communal values and morality, while less concerned with personal advancement (Musser and Orke 1992; Jones and Paulhus 2009). Given these characteristics, we expect stewardship theory to determine their behavior. Providing an impact on a firm’s initiative will lead low Machs to feel more connected to, and more ownership of, the firm. This will lead low Machs to exhibit less opportunism.
To summarize, we predict an \textit{Impact \times Machiavellianism} interaction, such that \textit{Impact} increases opportunism among high Machs and decreases opportunism among low Machs. Our results are consistent with our predictions. Our findings document that the behavior predicted by stewardship theory is applicable to low Machs, as providing an impact on the initiative reduces subsequent opportunism. In contrast, high Machs behave in a manner consistent with justice theory, as providing an impact on the initiative prompts high Machs to feel that they have exhibited their values of competence and achievement and are therefore entitled to take firm resources for their own personal benefit.

Our study adds to the burgeoning body of research investigating how the personality characteristics of managers shape behavior within accounting settings. Previous research has examined how traits like empathy (Hobson, Mellon, and Stevens 2011), narcissism (Hales, Hobson, and Resutek 2012), and self-monitoring (Seybert 2010) influence ethical behavior within report and budgeting contexts. In particular, our paper extends a growing body of research examining how Machiavellian individuals make ethical decisions (Hartmann and Maas 2010; Murphy 2012; Brown, Rennekamp, Seybert, and Zhu 2013; Majors 2016). Our results show that the effect of success on a non-contracted element of an incomplete contract depends upon the level of Machiavellianism an individual possesses. This result is particularly important given the fact that individuals with higher levels of Machiavellianism often find success in corporate settings, especially when their employment allows for opportunistic behavior (Shultz 1993; Gable and Dangello 1994; Aziz, May, and Crotts 2002; Shellenbarger 2014). It is also likely that these individuals higher in the organization operate with less complete contracts and so more frequently perceive they have created non-compensated value for the firm, facilitating opportunism.
Our study also introduces stewardship theory as an important framework within accounting contexts. While the processes described by stewardship theory are promising for managerial control system design, our findings document an important boundary condition for the model. While the base proposition of less opportunism holds among low Machs in our data, the relation *reverses* among high Machs. As such, we respond to Hernandez’ observation that “relatively little attention has been paid to how organizational-level factors create the distinct psychological processes that lead to stewardship behavior” (2012, 173). That is, we document an interaction between organizational initiatives and personality type that can lead to *increases* in opportunistic behavior, illustrating a boundary condition for this theory and providing a framework for additional research that may examine the implications of this theory within managerial accounting.

Finally, this study has important implications for how firm managers communicate important objectives. It may not be feasible or cost effective to determine whether and to what degree achievement of these objectives should be explicitly included in a given employee’s performance evaluation system. As such, firm managers often communicate these objectives broadly, reaching employees who are unable to act toward these objectives as well as those who are able. For example, Starbucks has an initiative to sell “take home” products in an effort to expand into the consumer products industry and an initiative to increase the number of drive-through stores with the goal of increasing convenience for customers (Novinson 2013). It is inevitable that some employees (e.g., those who work at airport stores) will not be able to act on this initiative, even though they are aware of it. Our findings suggest that these broad communications could have significant undocumented incremental benefits among some subsets
of employees (e.g. greater honesty among low Machiavellians who are positioned to act on those communications), but introduce costs as well (for high Machiavellians who can act).

The remainder of this paper is organized as follows. Section II develops theory and our hypothesis. Section III discusses the experimental methods we use to test our hypothesis. Section IV discusses the results of the experiment, while Section V concludes the paper.

2. Theory and Hypothesis Development

Incomplete Contracts and Organizational Initiatives

Most managers attempt to incorporate important objectives into performance evaluation systems, and use systems like the balanced scorecard or “pay for performance” compensation systems to encourage employees to focus on them (Kaplan and Norton 1992). Sometimes these important objectives cannot be included in formal contracts, due to cost constraints or difficulty in measuring behavior. Researchers have devoted considerable time and attention to understanding this type of scenario, termed an “incomplete contract”, where an employee’s actions are not directly related to their overall compensation (MacLeod and Parent 1999; Akerlof 1982; Lazear 1986). Despite the limits of incomplete contracts, existing research has documented that employees will, for various reasons, exert effort on tasks that firm management deems important but that are not directly compensated (e.g., Bonner and Sprinkle 2002; Christ et al. 2012; Hannan, Kagel, and Moser 2002; Hecht, Taškov, and Towry 2012; Kachelmeier, Thornock, and Williamson 2013). The majority of the incomplete contracting literature focuses on a scenario in which employees could choose to engage in behaviors that are not included in their compensation that the organization values, if they choose to do so. In this study, we examine how engaging in important activities that are not included in the employee’s formal contract influences future opportunistic behavior.
**Machiavellianism**

We propose that an individual’s personality traits have a significant effect on how acting on an uncompensated but valued organizational initiative influences their future behavior. Since our study measures employee opportunism (in the form of creating budget slack), personality traits related to ethical behavior should be most important. With this in mind, we focus on the personality trait of Machiavellianism. Understanding how individuals with different levels of the Machiavellian personality trait behave is important, because research has shown that high Machiavellians are often over-represented in management and leadership positions, and often obtain careers in business where they can control and manipulate others and have access to widespread resources (Fehr et al. 1992; Corzine 1997; Judge et al. 2009).

Overall, Machiavellianism describes an individual who exhibits a manipulative personality and uses people for personal gain (Paulhus and Williams 2002). According to the original definition of the construct, Machiavellianism is defined by the presence of four specific characteristics (Christie and Geis 1970):

1) A relative lack of affect in interpersonal relationships (lack of empathy for others);
2) A lack of concern with conventional morality (utilitarian rather than moral view);
3) A lack of gross psychopathology (instrumentalist rather than rational view of others);
4) Low ideological commitment (focus on task completion rather than long-range ideological goals).

Research examining high Machiavellians (hereafter, “high Machs”) indicates that they prioritize personal goals, such as power or money, over pro-social goals, such as helping or reciprocity (Leary, Knight, and Barnes 1986; McHoskey 1999; Stewart and Stewart 2006; Jones and Paulhus 2009). Overall, Machiavellianism is associated with exploiting opportunities for gain whenever possible, regardless of moral concerns (Spitzer, Fischbacker, Herrnberger, Gron, and Fehr 2007; Majors 2016). Studies in accounting exploring Machiavellianism generally reach
similar conclusions – that high Machs take opportunistic actions when such actions are likely to be profitable (e.g., by being unobservable or unable to be punished) when reporting a tax liability (Ghosh and Crain 1996), when making performance disclosures (Majors 2016), when developing a budget (Hartmann and Mass 2010) or when reporting earned income (Murphy 2012).

We now turn to developing expectations of how individuals with different levels of Machiavellianism (low Machs and high Machs) will act. In our experiment, we examine an incomplete contract setting in which some individuals are unable to affect a valuable organizational objectives.

**Low Machs and Stewardship Theory**

Recall our focus is on whether the ability to act on a non-contracted and uncompensated objective influences future ethical behavior. Given the nature of the Machiavellianism personality trait, we draw upon different theories to predict the behavior of low (vs. high) Machs in this setting. To develop our expectations for how low Machs will react when acting on an organizational initiative, we draw from literature in management on stewardship theory (see Hernandez 2012 for an overview). Previous research has documented how a variety of non-monetary factors, such as participation in goal setting (Kenis 1979), emphasizing cooperation (Fehr and Schmidt 1999), and goal realism (Webb 2004) can influence employee performance. Stewardship theory attempts to link many of these results together into an overarching psychological theory of employee engagement (Hernandez 2012), explaining why and under what circumstances employees act in the best interest of their firm.

Stewardship theory predicts that employees have an inherent motivation to work in the best interest of the organization and to be a good steward of corporate assets when they feel a sense of psychological ownership (i.e., a sense of having ownership even when there is no legal
basis; Pierce, Kostova, and Dirks 2001). Such ownership can be felt for the organization itself, as well as for issues and projects within the organization (Brown, Crossley and Robinson 2014; Pratt and Dutton 2000), and it can be derived from employee investment of time or energy (Brown et al. 2014). Existing research has validated the importance of psychological ownership for pro-organizational behavior (Van De Walle, Van Dyne, and Kostova 1995; Van Dyne and Pierce 2004; Sieger, Zellweger, and Aquino 2013). We propose that this type of psychological ownership is more likely to apply to low Machs (as opposed to high Machs), as these individuals are more likely to prioritize pro-social goals like helping their organization (Leary, Knight, and Barnes 1986).

Stewardship theory builds on this literature by describing the circumstances when psychological ownership, and hence, pro-organizational behavior, is most likely to occur. According to the theory, stewardship can be encouraged through specific features of a workplace that promote employee engagement, referred to as “structural factors” (Hernandez 2012). Some of these factors relate to organizational practices, such as shared leadership or common goals. Hernandez (2012) argues that these structural factors foster psychological ownership and, in turn, pro-organizational behavior. We focus on one particular structural factor, collective responsibility, which takes the form of management expressing a general desired organizational outcome and allowing employees to fulfill that outcome in our setting. Consistent with this theory, we expect that giving low Mach employees the opportunity to fulfill important organizational objectives by acting on corporate initiatives will foster stewardship, demonstrated via less opportunistic behavior (i.e., less misappropriation of assets via budget slack). In hypothesis form:
HYPOTHESIS 1: Low Mach employees who take a valuable but uncompensated action under an incomplete contract will engage in less opportunism than low Mach employees who do not take the action.

High Machs and Justice Theory

Although the management literature has widely applied stewardship theory when describing how organizations operate, we suggest that its applicability will vary based on the personality traits of the employee. More specifically, we propose that high Machs will not behave in accordance with stewardship theory. High Mach individuals generally disavow conventional standards of morality (e.g., Christie 1970; Fehr et al. 1992). Instead, high Machs prioritize agentic values, such as competence and unmitigated achievement, over values of a more communal nature (e.g., Musser and Orke 1992; Jones and Paulhus 2009). When examining behavior within experimental trust games, previous research has shown that high Machs are less likely to reciprocate trust than low Machs (Gunnthorsdottir et al. 2002), and that high Machs show a more pronounced increase than low Machs in brain activity (Bereczkei et al. 2013). The difference in neurological activity is focused in areas of the brain associated with seeking rewards and identifying risky circumstances, motivating their conclusion that high Machs are able to exploit others and anticipate outcomes in risky environments due to their systematic, unique neural patterns. In our setting, such a prioritization of agentic values and lower propensity to trust could cause the high Mach, after acting on the organization’s valued initiative, to feel that they have exhibited their values of competence and achievement. To develop predictions for the behavior of high Machs given these findings, we instead turn to justice theory.

Justice theory is a broad program of research within organizational psychology that captures how employees perceive their organization (see Colquitt et al. (2001) for a review). The theory links corporate behaviors to perceptions of fairness, and examines how these perceptions
might change employee attitudes or behaviors. The theory identifies three key components of organizational justice, but our focus is on one portion of the theory: distributive justice, which examines how employees perceive and react to outcomes. The theory of distributive justice predicts that employees will be sensitive to relative outcomes, assessing outcomes as fair if the outcome they experience is comparable to those of other employees (Adams 1965). We note that these perceptions are based on some fundamental ideals, one of which is the idea that work should be rewarded (Adams 1965). Perceptions of distributive justice within an organization are related to important outcomes like pay and job satisfaction (McFarlin and Sweeny 1992), work performance (Cohen-Charash and Spector 2001) and reporting of unethical behavior (Seifert et al 2010; Victor, Trevino and Shapiro 1993). We examine how perceptions of distributive justice will influence employee opportunism.

We propose that high Machs will respond to organizational initiatives based on the predictions of justice theory. When high Machs have a chance to act on an organizational initiative, they are creating value for their firm. But in the setting we examine, this value is not a part of their compensation contract – in essence, they are creating value for their organization but receiving nothing in return. This likely gives them the moral license (e.g., Sachdeva, Illiev, and Medin 2009) to take more firm resources for their own personal benefit (i.e., “pay themselves” for their work), relative to when they are unable to act on the initiative. While low Machs perceive this circumstance as creating a sense of ownership over the firm, high Mach will perceive it as unfair, a violation of distributive justice that gives high Machs license to engage in opportunistic behavior. In this way, allowing high Mach employees to act on organizational incentives will encourage unethical behavior. In hypothesis form:
HYPOTHESIS 2: High Mach employees who take a valuable but uncompensated action under an incomplete contract will engage in more opportunism than high Mach employees who do not take the action.

3. Method and Design

Participants

We recruit 121 participants from Amazon’s Mechanical Turk to participate in an experiment built using Qualtrics technology. Mechanical Turk is an online labor market and provides an ideal location to test our hypothesis. We are interested in employee judgment, and Mechanical Turk has repeatedly been found to be at least as representative of the U.S population as other potential participant pools (Berinsky, Huber, and Lenz 2012; Horton, Rand, and Zeckhauser 2011; Paolacci, Chandler, and Ipeirotis 2010, Farrell, Grenier and Leiby 2015). We specify that all participants must be in the United States and have an overall approval rating of greater than 90 percent on prior Turk tasks. Mean participant age is 35.9 years (standard deviation = 14.24), mean participant work experience is 15.97 years (standard deviation = 12.78), and 51 percent of our participants are male (n = 62).

Experimental Setting and General Sequence of Events

For the entirety of the experimental session, all participants are asked to assume that they are a manager of a production facility at “Sweet and Steep,” a fictional store that sells pastries, teas, and other hot beverages. Participants are told that they will be compensated in an experimental currency called “Lira,” and the Lira that they earn will be converted to dollars at a rate of $.01 for every 1,000 Lira and delivered to them via the Mechanical Turk system at the completion of the experiment. The next screen shows an email from the participant’s supervisor, which communicates that a VP of Sweet and Steep has mentioned that “we should always be looking for ways to innovate and improve the speed with which customers get in and get out of
our stores.” We use the supervisor’s email as a way to saliently communicate information to participants, as reflected in the following quote from the email:

*I am sending this note to re-emphasize VP Stone’s message that an important area of focus for us here at Sweet and Steep is customer turnaround. I encourage you to pursue future projects that include customer turnaround initiatives as this would be great for both our area and the company as a whole.*

Actions related to customer turnaround are valued by the firm, but not included as a part of the employee’s compensation in our experiment. We call this an organizational initiative, a company-wide goals designed to achieve some desired end. Organizational initiatives are often utilized by firms. For example, Starbucks maintains an initiative to increase sales of “take home” products from its stores, in an attempt to broaden its overall business and produce new and diversified revenue streams (Novinson 2013). These initiatives are communicated through broad internal channels (e.g., mass emails or all hands meeting) and external means (e.g., conference calls and press releases) to ensure that all employees are aware of them and to emphasize their importance to the firm. However, we note that there will likely be natural variation in employees’ ability to have an impact on these initiatives. That is, some employees might not have the opportunity to act on these initiatives even though they are motivated to do so. Referring back to the earlier example of Starbucks, consider a Starbucks employee working at an airport store. Even if the employee is aware of the initiative to sell take home products, busy travelers are not an ideal consumer base for these types of products. We believe that this is an interesting example of an incomplete contract that has not been examined within the accounting literature, and is an appropriate way to test our theory.

After viewing the email, participants are instructed to select the optimal project for their division at Sweet and Steep. We reinforce that participants’ compensation will be tied to the project selection and that their project selection will impact the NPV for Sweet and Steep. A
table is displayed that lists four projects (A, B, C, and D) for the participants to select among. The profit to the participant from the project, the NPV, and the customer turnaround benefit are listed beside each project. The profit to the participant is calculated as one percent of the NPV for Sweet and Steep (e.g., 30,000 Lira to the participant for a project returning three million Lira to the firm), such that participants’ incentives are aligned with those of the organization. We structure the projects such that Project A is the dominant project in both experimental conditions because it yields a significantly greater NPV and participant compensation, relative to all other projects.¹ As such, the dominant project to select should be clear to participants.² After participants select a project, they are asked to assume that months have passed, and the project that they selected was implemented. They then receive an email from their supervisor (1) stating that the anticipated benefits of the project they selected have materialized and (2) praising them for selecting a project that actually exceeded the anticipated benefits for the company. We next ask participants to complete an unrelated budget forecasting task, which serves as our primary dependent measure of employee opportunism.

**Budget Forecasting Task – Primary Dependent Variable**

After reading this email, participants are asked to make a decision about the amount of funds that they are going to request from Sweet and Steep management to implement an unrelated future project (adapted from Evans et al. 2001). They are told that this decision will affect both their compensation and the benefit of the project for Sweet and Steep, but they will also receive a flat, baseline wage of 30,000 Lira for this decision. This extra Lira is directly

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¹ For the *Impact* condition, Project A also provides a significant customer turnaround benefit (40 percent reduction in wait time) that aligns with the corporation’s initiative. As this relates to the budget manipulations, we delay discussion of this design feature until the Manipulations subsection. However, participants face no sense of tradeoff, as in both the no impact and impact conditions, the dominant project is clear.

² Selection of the dominant project serves as a check of the participants’ attentiveness to the experiment. We report responses to this check in Section IV’s analysis of results.
linked to the payment they receive at the end of the experiment, linking their behavior to their final compensation. Participants are asked to assume that they have developed a private forecasting system that reliably determines in advance what the project costs will be, and because they alone are responsible for submitting their budget requests, they can choose whether to submit a budget request that is equal to or more than the actual cost.

Participants are also told that Sweet and Steep headquarters will never be able to determine whether the budget request equaled the actual costs, meaning that headquarters will never know how much of the budget request was spent on the project versus any amount that participants keep for themselves. Importantly this feature of the experiment makes any opportunism unobservable. In all conditions, participants are informed that their private forecasting system shows with complete certainty that the project costs will be 30,000 Lira, and based on historical production costs, headquarters will provide funding for a budget request up to 60,000 Lira. As such, any amount above the 30,000 Lira will be participants’ to keep, and the clear wealth-maximizing choice is to request 60,000 Lira.

A table that displays possible budget requests (between 30,000 Lira and 60,000 Lira, in increments of 5,000 Lira) and amounts they would keep for each request (e.g., the requested amount, minus the actual project cost of 30,000) is provided to enhance participant comprehension. This table is displayed in the Appendix. We then administer three comprehension checks to ensure that participants understand this relationship, with participants only able to click to the budget submission screen once they have successfully answered these three questions. The amount of the budget requested by each participant serves as our primary dependent variable. This dependent variable captures our construct of opportunism, as it measures the extent to which employees create slack in the budget request to increase their
personal welfare, at the expense of the organization. After making this decision, participants are asked to answer a series of post-experimental questions (including our measure of Machiavellianism), are thanked for their participation in the experiment, and are asked to enter a unique code to ensure payment through the Amazon Mechanical Turk system.

**Independent Variables**

We utilize a $2 \times 2$ mixed design, in which we manipulate whether participants are provided the opportunity to have an impact on the organization’s communicated initiative (in our case, customer turnaround) and measure participants’ Machiavellianism using the Christie and Geis (1970) scale. See the Appendix for our specific manipulations.

**Impact Manipulation**

Participants in all conditions are informed of the organization’s initiative of customer turnaround, but in one condition, participants are given the opportunity to act on that initiative, while in the other condition, acting on the initiative is impossible. We operationalize Impact (No Impact) on the firm’s initiative by varying whether the dominant NPV project does (does not) also yield a customer turnaround benefit. Because the dominant project is clearly the superior choice in the Impact condition, from both an NPV perspective and an organizational initiative perspective, participants in the Impact condition always positively affect the firm’s initiative without facing a costly trade-off. In the No Impact condition, the dominant project is still clearly the superior choice because it maximizes NPV. However, because none of the projects include a customer turnaround benefit, the participant has no positive effect on the initiative. Note that, as stated earlier, managers are provided a follow-up email from their supervisor that they are told to assume arrives several months later. This email provides feedback that praises them for exceeding the projected NPV (in all conditions) and the projected customer turnaround benefit.
(in the *Impact* condition). No mention of the organizational initiative occurs in the email in the *No Impact* condition.

**Measuring Machiavellianism**

We measure participants’ Machiavellianism using the Mach IV scale, developed by Christie and Geis (1970) (see Appendix). The scale asks participants to indicate the extent to which they agree or disagree with twenty statements, on a scale from 1 – 5 with 1 being “strongly disagree”, 3 being “neutral,” and 5 being “strongly agree.” After reversing the appropriate questions (some items are “reverse scored”), the total serves as our measurement of the participants’ association with Machiavellianism.

**4. Results**

**Attention Check**

One measure of our participants’ attention to the task is whether they initially select the dominant project. Results indicate that 111 out of 121 (91.7 percent) of our participants select the dominant project in the experiment. We include all 121 participants in the subsequent analysis, but the statistical conclusions we describe in the following subsections are not altered by excluding those 10 participants who did not select the dominant project.

**Primary Results**

Figure 1 displays our primary findings, and Table 1 provides descriptive statistics. As indicated by the pattern of results in Figure 1, there is a distinctive difference between how low Machs and high Machs respond to impacting a non-contracted and uncompensated organization initiative. The pattern of results among low Machs supports the premise motivated by stewardship theory, that employees will exhibit less opportunism after positively affecting a valued organizational initiative. The results for high Machs are consistent with justice theory;
namely, that these employees will exhibit more opportunism after positively affecting a valued organizational initiative. To test the statistical significance of this interaction, we conduct an analysis of variance (ANOVA), with the amount the participant over-reported on the budget task (i.e., budget slack) as the dependent variable (a higher value indicates greater opportunism), a dichotomous variable indicating whether the participant was in the Impact condition as one independent variable, and a dichotomous variable indicating whether the participant is above the median of the Machiavellianism scale (Mach). Table 2 presents our results.

As shown in Panel A of Table 2, consistent with our hypotheses, there is a statistically significant Impact × Mach interaction (F = 6.30; two-tailed p = 0.01). Tests of simple effects presented in Panel C of Table 2 corroborate that there is a significant effect of Impact for low Mach (t = 1.76; one-tailed p = 0.04), consistent with our prediction that low Machiavellians will engage in less opportunistic behavior when given the opportunity to affect an organization’s valued initiative. The pattern of results in Figure 1 suggests that high Machiavellians are also affected, but in the opposite direction of low Machs. As shown in Table 1 and Figure 1, high Machs exhibit more opportunistic behavior in response to Impact on the firm’s stated initiative, which is consistent with our prediction. To corroborate this pattern statistically, we conduct another test of simple effects, which reveals a significant effect of Impact for high Machs (t = 1.78; one-tailed p = 0.04). Taken together, these results are consistent with our prediction that individuals with different levels of the Machiavellian personality trait will sometimes act to the detriment of the firm subsequent to positively affecting a valued objective that is not explicitly contracted upon.
Supplemental Analysis

In this section we rule out a potential alternate explanation for our results: differences in perceived probabilities of over-reporting being detected in organizations in which Impact is possible.\(^3\) That is, rather than low Machiavellians exhibiting less opportunism due to feeling the need to reciprocate and an increased sense of collective responsibility, they perceive that an organization that provides such opportunities is also monitoring behavior more closely. Correspondingly, perhaps high Machs have a more rational view, inferring that if over-reporting is stated to be undetectable, it indeed will be. If so, our interaction might be driven by the more “economics-based” argument that low Machs decrease opportunism not due to stewardship theory, but instead in an effort to avoid economic penalties that low Machs perceive could being more prone to detection (while high Machs have more “rational” beliefs).

To explore this alternative explanation for our results, we elicit from participants (after they have submitted their decisions regarding what budget to report) their estimate of the probability that any over-reporting would be detected. Specifically, we ask participants “in the previous scenario, what do you believe are the chances that inaccurate budget requests (that is, requests that were different from actual costs) would be detected by more senior managers (0 = no chance, 100 = absolutely certain)?” Participants are provided a “sliding scale” with which to indicate where they lie on this continuum, thereby allowing us to elicit a continuous measure of participants’ perceived likelihood of detection of over-reporting. We then test this alternative explanation of our results by conducting an ANOVA with the same independent variables as our primary analysis, but with this probability of detection measure as the dependent variable. Results of this analysis (untabulated) do not support the premise that our results are driven by

\(^3\) Note that we inform all participants that there is no chance that misstatements will be detected and punished. However, it is always possible that participants will make different inferences.
different perceived probabilities of detection of over-reporting, as the \textit{Impact \times Machiavellianism} interaction is insignificant (F = 0.07; two-tailed p > .50).\footnote{We also note that there is no significant main effect of \textit{Impact} (F = 0.13; two-tailed p = .72) or \textit{Mach} (F = 1.62; two-tailed p = .21). Our primary results are unchanged if we include this variable as a control within our primary ANOVA model.} We conclude that our results are unlikely to be driven by changes in low Machs’ perceived probabilities of over-reporting being detected, but rather our hypothesized mechanism of low Machs experiencing increased collective responsibility and the need to reciprocate when following through on organizational initiatives.

5. Conclusion

This study examines how employee opportunism changes when employees are given an opportunity to impact a valued organizational initiatives. We examine how individuals with different levels of Machiavellianism make ethical decisions within this novel setting, using stewardship theory (Hernandez 2012) to predict the behavior of more pro-social low Machs and justice theory to predict the behavior of less pro-social high Machs. More specifically, we predict that low Machs impacting these initiatives will experience a sense of collective responsibility for their organization, motivating the need to reciprocate via engaging in less opportunism. In contrast, high Machs following through on these initiatives will believe that they have created uncompensated value for their organization, and will be likely to engage in more opportunism. Experimental evidence supports our interactive \textit{Impact \times Machiavellianism} prediction. This result is independent of assessed probability of detection, providing additional support for the theory.

Our result provides interesting implications for understanding how personality traits might influence employee behavior. As our study shows, low and high Machs have \textit{opposite} reactions when given achieving on elements of an incomplete contract. This result highlights the importance of understanding how personality traits might change reactions to a variety of control
systems when studying managerial accounting. In addition, future research could continue to examine the behavior of high Mach individuals in this setting and other, different settings to obtain a deeper understanding of how the agentic values of high Machs influence their decisions.

Our study is also one of the first to examine how stewardship theory operates in an accounting setting. This theory can be applied to a number of different domains to help explain how people’s judgments and decisions react to a variety of organizational stimuli. As just a few examples, future research could examine how collaborative goal setting creates psychological ownership, or how different control systems encourage or inhibit opportunism via the mechanisms hypothesized to influence stewardship. Overall, we believe that stewardship theory could be used to predict a wide variety of pro (or anti) organizational behaviors, and is an important factor to consider in future accounting research.

Our experiment holds total compensation opportunities constant, only manipulating the existence of an impact opportunity without changing the profitability of the underlying project. Other research (Kachelmeier et al. 2013) shows that employees trade off profitability to meet valued firm goals. Future research could examine how employees make the impact vs. profitability trade off, and how that tension influences future stewardship behavior.

We note that our study is subject to some limitations. We use a very simple stylized setting without much organizational richness, providing simple project information in a one-shot experiment. However, we note that a lack of information about the organization should bias against finding results, since richer information should make forming a sense of psychological ownership and collective responsibility more likely. In addition, our experiment uses participants with varying levels of experience. We note, however, that in our analysis, experience is not a significant covariate. In addition, we believe that all employees will be subject to stewardship
theory regardless of their experience – the ability to form a connection with a firm should not vary with experience. We hope that this research serves as a springboard for additional work examining the antecedents and consequences of stewardship in accounting settings.
References


FIGURE 1

Impact × Machiavellianism Effect on Employee Opportunism

a *Opportunism* is our primary dependent variable and captures the level of budget over-reporting. *Opportunism* is coded on a scale from one to seven, such that higher values represent greater opportunism (i.e., greater over-reporting on the budgeting task). *Impact* is our between participants manipulation. When the participant chooses a project to implement, Impact does (does not) occur when the highest NPV project includes (does not include) a significant customer turnaround benefit. *Machiavellianism* is a median split on responses to the Machiavellian scale (see Appendix); participants at the median are excluded.
TABLE 1
Opportunism: Mean (Standard Deviation)a

<table>
<thead>
<tr>
<th>Machiavellianismc</th>
<th>Impact Conditionb</th>
<th>Not Possible</th>
<th>Possible</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td></td>
<td>3.48 (2.73)</td>
<td>2.23 (2.76)</td>
<td>2.98 (2.79)</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>33</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>High</td>
<td></td>
<td>3.19 (2.53)</td>
<td>4.36 (2.38)</td>
<td>3.83 (2.49)</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>27</td>
<td>36</td>
<td>63</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3.35 (2.62)</td>
<td>3.55 (2.72)</td>
<td>3.55 (2.72)</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>60</td>
<td>58</td>
<td></td>
</tr>
</tbody>
</table>

a *Opportunism* is our primary dependent variable and captures the level of misreporting. *Opportunism* is coded on a scale from one to seven, such that higher values represent greater opportunism behavior (i.e., greater misreporting).

b *Impact* is our between participants manipulation. When the participant chooses a project to implement, Impact does (does not) occur when the highest NPV project includes (does not include) a significant customer turnaround benefit.

c *Machiavellianism* is a median split on responses to the Machiavellian scale (see Appendix); participants at the median are excluded.
TABLE 2
Test of Hypothesis

Panel A: ANOVA: Interaction of Machiavellianism and Impact on Opportunism

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Squares</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact</td>
<td>0.05</td>
<td>1</td>
<td>0.05</td>
<td>0.01</td>
<td>0.93</td>
</tr>
<tr>
<td>Mach</td>
<td>23.93</td>
<td>1</td>
<td>23.93</td>
<td>3.58</td>
<td>0.06</td>
</tr>
<tr>
<td>Impact × Mach</td>
<td>42.13</td>
<td>1</td>
<td>42.13</td>
<td>6.30</td>
<td>0.01</td>
</tr>
<tr>
<td>Error</td>
<td>762.49</td>
<td>114</td>
<td>6.69</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Contrast Coding for Opportunism DV

<table>
<thead>
<tr>
<th>No No Impact v. Impact</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Mach / Impact vs. all other cells</td>
<td>5.609</td>
<td>0.02*</td>
</tr>
</tbody>
</table>

Panel C: Simple Effects on Opportunism DV

<table>
<thead>
<tr>
<th>No Impact v. Impact</th>
<th>t</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Mach</td>
<td>1.76</td>
<td>0.04*</td>
</tr>
<tr>
<td>High Mach</td>
<td>1.78</td>
<td>0.07</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Low Mach v. High Mach</th>
<th>t</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Impact</td>
<td>0.45</td>
<td>0.66</td>
</tr>
<tr>
<td>Impact</td>
<td>3.05</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

a *Opportunism* is our primary dependent variable and captures the level of misreporting. *Opportunism* is coded on a scale from one to seven, such that higher values represent greater stewardship behavior (i.e., less misreporting).

b *Impact* is our between participants manipulation. When the participant chooses a project to implement, Impact does (does not) occur when the highest NPV project includes (does not include) a significant customer throughput effect.

c *Machiavellianism* is a median split on responses to the Machiavellian scale (Appendix); participants at the median are excluded.

* One-tailed p-value for directional prediction.
APPENDIX

Experiment materials

Machiavellian Measure
Items from the Mach IV scale (Christie and Geis 1970). Each response is elicited on a scale from 1 to 5, anchored by “strongly disagree” and “strongly agree” and “neutral at the midpoint.

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

Manipulation of Impact
The table below summarizes our manipulation of impact. The only difference across conditions is the described effect on wait times associated with the most valuable project.

<table>
<thead>
<tr>
<th>Project</th>
<th>Profit to You</th>
<th>NPV</th>
<th>Customer Turnaround Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>30,000 Lira</td>
<td>3,000,000 Lira</td>
<td>“Negligible” versus “Significant (40% reduction in wait time)”</td>
</tr>
<tr>
<td>B</td>
<td>5,000 Lira</td>
<td>500,000 Lira</td>
<td>None</td>
</tr>
<tr>
<td>C</td>
<td>2,000 Lira</td>
<td>200,000 Lira</td>
<td>Negligible</td>
</tr>
<tr>
<td>D</td>
<td>1,000 Lira</td>
<td>100,000 Lira</td>
<td>None</td>
</tr>
</tbody>
</table>
Description of Participant Pay as a Function of Budget Choice

Building from the instrument developed by Evans et al. (2001), all participants are asked to submit a budget request. The budget is submitted with absolute certainty of the future actual budget as well as absolute certainty that any budget slack will never be detected. As such, the economically optimal choice is to maximize compensation by selecting a budget of 60,000 Lira and increasing compensation by 30,000 Lira. The chosen budget level serves as our primary dependent variable of opportunism, and the following table was presented to all participants to make clear the budget and compensation link.

<table>
<thead>
<tr>
<th>Budget</th>
<th>Amount you Keep</th>
</tr>
</thead>
<tbody>
<tr>
<td>30,000</td>
<td>0</td>
</tr>
<tr>
<td>35,000</td>
<td>5,000</td>
</tr>
<tr>
<td>40,000</td>
<td>10,000</td>
</tr>
<tr>
<td>45,000</td>
<td>15,000</td>
</tr>
<tr>
<td>50,000</td>
<td>20,000</td>
</tr>
<tr>
<td>55,000</td>
<td>25,000</td>
</tr>
<tr>
<td>60,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>