MACRO UNDER THE MICROSCOPE: THE INFLUENCE OF CEO PERSONALITY AND
FEEDBACK ON STRATEGIC DECISION MAKING

by

TIMOTHY D. HUBBARD

(Under the Direction of Scott Graffin)

ABSTRACT

Chief Executive Officers (CEOs) have an increasing effect on firm performance and research continues to show that their personalities are an important determinant of firm strategy. In particular, a CEO's core self-evaluation—that is, his or her enduring 'self-concept'—may be uniquely influential. This self-evaluation may influence a CEO's initial strategies and how much they change their strategy in response to multiple sources of feedback. The goal of this dissertation is to help answer the following question: across multiple sequential decisions, how do individuals—in light of their specific characteristics—interpret multiple types of varying feedback to make resource allocation decisions? This study uses a new experimental business simulation software to explore the relationship between core self-evaluation and executives' strategic decisions over time. This dissertation improves our ability to test new theories by reviewing and demonstrating best practices for strategic management experiments. Further, it demonstrates how experiments can be used to develop new theories and better educate students. In total, this dissertation moves the field closer to breaking into the black box of strategic management by offering new insight into the way executives make decisions in various contexts.

INDEX WORDS: Strategic Management, Core Self-Evaluation, Experiment, Upper Echelons Theory.

MACRO UNDER THE MICROSCOPE: THE INFLUENCE OF CEO PERSONALITY AND

FEEDBACK ON STRATEGIC DECISION MAKING

by

TIMOTHY D. HUBBARD

B.S., University of Illinois, Urbana-Champaign, 2005

M.B.A., Thunderbird School of Global Management, 2010

A Dissertation Submitted to the Graduate Faculty of the University of Georgia in Partial

Fulfillment of the Requirements for the Degree

DOCTOR OF PHILOSOPHY

ATHENS, GEORGIA

2017

MACRO UNDER THE MICROSCOPE: THE INFLUENCE OF CEO PERSONALITY AND

FEEDBACK ON STRATEGIC DECISION MAKING

by

TIMOTHY DAVID HUBBARD

Major Professor: Scott D. Graffin

Committee: Michael D. Pfarrer
    Timothy J. Quigley

ACKNOWLEDGEMENTS

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1: INTRODUCTION

Upper Echelons Theory (Hambrick, 2007; Hambrick & Mason, 1984) and a continually growing body of empirical evidence (for a recent review see Bromiley & Rau, 2016) show that executives make decisions based on their personal interpretations of their situations, and that their biases—their own values, traits, and experiences—influence those interpretations. Theories and empirical evidence surrounding how executive characteristics influence decision-making continue to draw considerable attention in strategic management literature—constructs such as narcissism (Chatterjee & Hambrick, 2007; 2011), overconfidence (Malemendier & Tate, 2003; Simon & Houghton, 2003), and hubris (Hayward & Hambrick, 1997) pervade the literature. This attention is warranted as Chief Executive Officers (CEOs) account for a large portion of the variance in firm performance (Quigley & Graffin, forthcoming; Quigley & Hambrick, 2014; 2015), and their individual characteristics are important for providing further explanation of their decisions and performance (Hambrick & Mason, 1984; Hambrick, 2007; Finkelstein, Hambrick & Cannella, 2009).

Core self-evaluation—a trait based on how one evaluates themselves and their relationship with the environment, comprised of self-esteem, self-efficacy, locus of control, and emotional stability—is an important construct for executives and their decision making (Finkelstein, Hambrick & Cannella, 2009; Hiller & Hambrick, 2005). Core self-evaluation (CSE) is an enduring and fundamental evaluation of oneself as an individual, sometimes considered a person's "self-concept" (Judge, Thoresen, Pucik, & Welbourne, 1999). Core self-evaluation has been shown to be positively related to positive perceptions of work characteristics (Judge, Locke,

Durham, & Kluger, 1998b), task motivation, goal level, and goal commitment (Erez & Judge, 2001). Further, CSE is positively related to both job satisfaction, job performance (Bono & Judge, 2003; Judge & Bono, 2001)—and even life satisfaction (Judge, Erez, Bono, & Thoresen, 2003). These positive outcomes are particularly important for top executives: one might expect executives with high CSE to feel positive about their work, be highly motivated, and be successful. Two early empirical studies have shown that CEO core self-evaluation is positively related to firm entrepreneurial orientation (Simsek, Heavey & Veiga, 2010) and transformational leadership (Resick, Whitman, Weingarden & Hiller, 2009). Given Hiller and Hambrick's (2005) early theory on core self-evaluation and these empirical findings, it is surprising that there is little research on executive core self-evaluation.

Upper Echelons Theory proposes that an executive's personal characteristics—such as core self-evaluation—can influence how they interpret their situation, and subsequently make strategic decisions (Hambrick, 2007; Hambrick & Mason, 1984). The stimuli executives receive and their personal characteristics influence strategic decisions. One decision that is critical to strategic management is strategic change, a firm's departure from existing resource patterns (Finkelstein & Hambrick, 1990). CEOs use strategic change to align the strategy of their organizations with the environment (Kraatz & Zajac, 2001). Research suggests that media coverage (Bednar, 2012) and organizational performance (Greve, 1998) serve as important stimuli to executives, leading to strategic change. While the impact of each has been considered in isolation (e.g. Chatterjee & Hambrick, 2011), full consideration of how media coverage, organizational performance, and core self-evaluation work together in the decision processes and outcomes is needed in the field. This need arises because each factor does not exist in isolation, CEOs are continually subjected to varying—and sometimes disagreeing—feedback and their

2

personalities can help explain how they react and behave given these varying conditions. Further, theorizing how all these parts work together represents a comprehensive, integrated refinement of Upper Echelons Theory.

This study advances our knowledge of Upper Echelons Theory by explaining how CSE, media coverage, and organizational performance influence decision processes, natural strategic tendencies, and strategic change. Decision processes are how executives go about making decisions. Natural strategic tendencies are how executives would make decisions without organizational constraints. Strategic change represents a change in resource allocation pattern—a change in strategy. I also consider the relative strength of media coverage and organizational performance on strategic change. Furthermore, I consider how these strategic decisions, considering core self-evaluation and feedback, transpire over a number of sequential, resource allocating decisions.

This study, therefore, makes three contributions to the field. First, the theory put forward integrates different parts of Upper Echelons Theory which have typically been theorized about separately (e.g. Bednar, 2012; Chatterjee & Hambrick, 2007; 2011; Greve, 1998). It does this by considering the stimuli, executive characteristics that color those stimuli, and the decisions made based on their personal construal of their situation. Second, I extend Upper Echelons Theory by considering the joint effect of multiple feedback mechanisms and explain how they are interpreted based on executives' personal characteristics. This moves the literature beyond theorizing about the independent effects of different stimuli to a perspective that incorporates many simultaneously. Third, the study tests both portions of the initial theory on executive core self-evaluation as outlined by Hiller and Hambrick (2005) and the new theory I develop.

3

Testing this nuanced theory is challenging. Typical strategic management studies continue to be rooted in archival methods, which are often hindered by poor construct validity (Boyd, Bergh, Ireland, & Ketchen, 2013; Hitt, Boyd, & Li, 2004), endogeneity concerns (Semadeni, Withers, & Certo, 2014), and even more fundamental elements, such as the direction of causality, have been questioned (Finkelstein, Hambrick, & Cannella, 2009). Calls to truly open the black box of strategic management—that is, directly measuring the social and psychological factors and processes that influence strategic decision making—have not been adequately answered by the field. We, thus, need new tools and techniques to build and more directly test strategic management theories. I suggest that well-executed strategic management experiments can be just such a method. In this dissertation, I employ a technique proposed by Hambrick (2007) using a business simulation game. I paired with a software development firm to implement a research software platform to conduct these experiments. This platform allows for precise measurement of psychometric properties of individuals, randomized and controlled manipulation of independent variables, and the ability to observe real-world, generalizable strategic decisions over time. The random assignment of the independent variables allows for a high level of internal validity while the strategic decisions made in the business simulation provide generalizability. Thus, I provide a fourth contribution to the field: the ability to quickly and accurately test strategic management theories at the individual-level.

To test these theories and build this experimental capability, this dissertation presents three experimental studies that build on each other. First, following a general framework for the proposed relationships, I ran a verbal protocol analysis. This study tested the software and provided early evidence of specific decision processes related to a participant's initial strategy and how they change that strategy over time. Second, after improving the software and building

4

on the inductive work in the first study, another study was done with the intention of improving the technology as well as assessing the strength of manipulations. Finally, an experiment was conducted on a larger scale with over 500 participants across three samples: undergraduates, professionals, and Masters of Business Administration (MBA) students.

Given the rarity of randomized controlled experiments in strategic management, I also provide a chapter on the current state of experiments in the field. I review the studies that use experiments in the leading journals in strategic management. The quantity of strategic management experiments is low: only 31 true experiments have been published in our top journals. To contribute to the field, I conclude this chapter with a set of best practices that are currently being used to publish high-quality strategic management experiments. This is intended to help enable the field to incorporate this critical methodology into mainstream strategy and organizational theory research.

Most experiments are used to test very fine-grained mechanisms with the intention of showing causal relationships. We do not, however, use them often to develop new, grounded theory. Thus, there is a chapter of the dissertation that provides a method and example of using the process of experimentation to test the efficacy of the current experiment while also developing new theory. This method incorporates the multiple case study methodology (Eisenhardt, 1989), Gioia methodology (Gioia, Corley, & Hamilton, 2013), verbal protocol analyses, and data analyses to develop propositions. This chapter provides researchers with a tool to extend theory while testing existing theory. Finally, there is a chapter that discusses the role strategic management experiments may play in the classroom. I discuss key principles for their integration, outline steps to do so, and discuss several extensions that may be worth considering.

CHAPTER 2: LITERATURE REVIEW

In this chapter, I review the literature on Upper Echelons Theory, core self-evaluation, organizational feedback, and strategic change. These reviews provide the basis for the theory development in Chapter 4.

Upper Echelons Theory

Upper Echelons Theory (UET) describes the strategic choices made by executives (Hambrick, 2007; Hambrick & Mason, 1984). It seeks to explain how the biases and dispositions of executives influence organizational strategies and outcomes (Hambrick & Mason, 1984). Hambrick (2007: 334) summarized Upper Echelons Theory thusly:

The central idea in our original paper, and the core of upper echelons theory, has two interconnected parts: (1) executives act on the basis of their personalized interpretations of the strategic situations they face, and (2) these personalized construals are a function of the executives' experiences, values, and personalities.

The theory is founded on the principle of bounded rationality. The strategic situations executives face are too large and complex for one to fully comprehend, thus precluding 'perfect' decisions. Complex decisions are, therefore, determined more by psychological factors than calculated factors based on optimization of an option set (Cyert & March, 1963; March & Simon, 1958). The theory explains that executives' orientations—that is, their psychological factors and experiences—trigger certain filtering processes (Hambrick & Mason, 1984). In UET, executive orientation plays a key role in explaining the strategic choices that executives make.

Thus, typical upper echelons studies focus on the observable experiences and psychological factors of executives to explain strategic decisions.

Observable Characteristics. Demographics—such as age, sex, educational level, and tenure—can be used to represent executive cognitive frames, even though they are "incomplete and imprecise" (Hambrick, 2007: 335). Bromiley and Rau (2016) categorize CEO observable characteristics as CEO experience, tenure, origin, age, and gender. CEO experiences such as their career variety (Crossland, Zyung, Hiller, & Hambrick, 2014; Fern, Cardinal, & O'Neill, 2012; Herrmann & Datta, 2006; Mackey, 2008) influence strategic outcomes such as greater "strategic novelty" (Crossland et al., 2014). Executive professional experience leads to greater variance in performance (Mackey, 2008).

While there are many characteristics to consider, executive tenure is particularly important to this study given the role of time in the proposed theory and subsequent methods. Indeed, executive tenure has received significant attention in the literature (see Bromiley & Rau, 2016). Long-tenured executives make fewer significant changes to their organizations (Finkelstein et al., 2009). Early studies of executive tenure revealed different "seasons" of a CEO's tenure (Hambrick & Fukutomi, 1991) corresponding to varying levels of organizational changes (Gabarro, 1987). Actions that occur early in an executive's tenure are more in line with their mandate and their natural tendencies, as determined by their background and personal characteristics. After their initial response to the mandate given to them upon being hired, they proceed through a period of experimentation characterized by high strategic change. Finally, after about 3–5 years, CEOs go through a period of convergence in which there is less change (Hambrick & Fukutomi, 1991). This final phase is characterized by diminishing task interest, which continues throughout a CEO's tenure.

More recent literature has shown that there are a number of contextual factors that help explain the effect of tenure. Henderson, Miller, and Hambrick (2006) showed that the stability of the industry is important in explaining firm performance: stable industries see performance improve with tenure, while dynamic industries see performance improve early in a CEO's tenure and decline afterwards. New CEOs in stable environments are also more likely to divest poorly performing acquired units than those with greater tenure (Hayward & Shimizu, 2006), reflecting the executive's early season of selection of an enduring theme (Hambrick & Fukutomi, 1991).

While much can be learned about executives and their choices from observable characteristics, the use of Upper Echelons Theory with observable characteristics can only go so far before more detailed, psychometric analyses are called for. Hambrick (2005: 111) concludes, "Confronted with the practical difficulties of obtaining psychometric data from large samples of executives, scholars might profitably rely on demographic data as a fall back". More detailed psychological profiles, could they be gathered, may prove more valuable than demographic data.

Psychological Characteristics. Research continues to show that CEO executive cognitive and psychological characteristics influence strategic decisions (Chatterjee & Hambrick, 2007; Herrmann & Nadkarni, 2014; Nadkarni & Herrmann, 2010; Peterson, Smith, Martorana, & Owens, 2003). The five factors of personality—extraversion, openness, agreeableness, neuroticism, and conscientiousness—influence the strategic flexibility of the firm (Nadkarni & Herrmann, 2010). Using a survey of top managers in Ecuador, Herrmann and Nadkarni (2014) showed that emotional stability, extraversion, and openness to experience are all positively related to strategic change. Emotionally stable CEOs, after they have chosen to undertake strategic change, display better performance. Extraverted CEOs are more dominant, and CEOs with high openness to experience are divergent thinkers—both of which lead to higher strategic

change, but do not interact with strategic change to predict performance. Herrmann and Nadkarni (2014) also showed that conscientiousness and agreeableness both decreased strategic change. Conscientious CEOs are "cautious, deliberate, and intolerant of ambiguity" (Herrmann & Nadkarni, 2014: 1322) and, while they enact fewer strategic changes, when they do apply strategic change, the results prove more effective than those changed enacted by less conscientious CEOs. Agreeable CEOs are more passive, and as a result have lower performance when they initiate change strategies.

Narcissism is another characteristic that has received considerable attention in the literature. It is defined as "an exaggerated, yet fragile self-concept of one's importance and influence" (Wales, Patel, & Lumpkin, 2013: 1041). Narcissistic individuals have higher variability in their positive mood, greater mood intensity, and an instability in their self-esteem (Rhodewalt, Madrian, & Cheney, 1998). When managers are narcissistic, they hurt morale and performance, and may even drive away talented employees (Lubit, 2002). They take credit for successes and blame others more often for setbacks and failures (Gladwell, 2002). Narcissistic managers display more grandiose leadership styles and belief systems, while also being more charismatic and offering grander visions for organizations (Rosenthal & Pittinsky, 2006). They also produce bolder and more innovative ideas (Maccoby, 2000, 2004).

Narcissistic CEOs also behave differently. These CEOs tend to engage with audiences; for example, they are more likely to make strategic changes when audiences are engaged (Gerstner, König, Enders, & Hambrick, 2013). Narcissism has been shown to have both positive and negative effects on outcomes. Narcissism is positively related to entrepreneurial orientation of firms, which is positively related to performance (Wales et al., 2013). Narcissism also has a positive effect on corporate social responsibility (Petrenko, Aime, Ridge, & Hill, 2016). While

such outcomes are beneficial, the underlying purpose is self-serving: narcissistic CEOs must gratify their need for attention.

Alternatively, narcissism has been characterized as a "dark-side characteristic" (Resick, Whitman, Weingarden, & Hiller, 2009: 1365). Narcissistic CEOs undertake bold actions to obtain admiration and confirmation of their influence (Chatterjee & Hambrick, 2007). Narcissistic CEOs play precariously with a company's financials, as demonstrated by a positive relationship between CEO narcissism and corporate fraud (Rijsenbilt & Commandeur, 2013). Narcissistic CEOs also display ineffective leadership skills—they tend to have less contingent reward leadership and a neutral relationship with transformational leadership practices (Resick et al., 2009).[1] These downward leadership skills are matched by their management upwards. Narcissistic CEOs try to limit board members' influence over strategy (Zhu & Chen, 2014).

Core Self-Evaluation

While narcissism has been deemed a dark-side characteristic, core self-evaluation—a trait codified in the late 1990s (Judge, Locke, & Durham, 1997)—has been deemed a light-side characteristic (Resick et al., 2009). Hiller and Hambrick (2005) describe core self-evaluation as the following:

> *A core self-evaluation (CSE) is a deeply sourced dispositional trait that defines how we evaluate ourselves and our relationship with the environment (Judge, Erez, Bono, & Thoresen, 2002). Thus, CSE is a relatively enduring and fundamental evaluation of oneself as an individual, essentially akin to 'self-concept' (Judge et al., 1999). At a basic*

---

[1] Contingent rewards "reinforce follower behavior through the allocation of recognition and rewards (e.g., pay, promotion) when objectives are met" and transformational leadership instead "focuses on leader behaviors that appeal intrinsically to followers" (Resick et al., 2009: 1366).

level, the high-CSE person is characterized by self-confidence, self-worth, self-potency,

and freedom from anxiety. (299)

Managers who have high core self-evaluation "see themselves positively across a variety of situations, and approach the world in a confident, self-assured manner" (Judge & Kammeyer-Mueller, 2011: 332). Such managers feel that they are in control (high internal locus of control), level-headed (high emotional stability), worthy of respect (high self-esteem), and capable (high self-efficacy) (Judge et al., 2002; Judge & Kammeyer-Mueller, 2011; Judge et al., 1998b). Core self-evaluation is characterized as being broad in scope, fundamental to a person, and evaluation-focused (Johnson, Rosen, & Levy, 2008).

Four factors form the basis for the development of metaconstruct of core self-evaluation: self-esteem, emotional stability, generalized self-efficacy, and locus of control (Judge et al., 2003). Self-esteem is a person's assessment of their self-worth. Hiller and Hambrick (2005) posit that self-esteem is the central component of CSE. Emotional stability is characterized as being free from anxiety. Generalized self-efficacy is one's belief in their ability to succeed at tasks. Locus of control reflects a person's belief that they are able to control the events around them. Empirically, there is evidence (Judge et al., 2002) that these four factors are highly correlated (*r* = 0.64), they load on one factor (Judge & Bono, 2001; Judge et al., 2002), and are more predictive as a composite than as individual components (see Erez & Judge, 2001). Furthermore, they have similar effects on key dependent variables in organizational behavior, job satisfaction and job performance (Judge & Bono, 2001). Overall, CSE measurements are also somewhat stable; indeed, while there are variations day-to-day, one study showed that CSE remained correlated (r = 0.46) between childhood and early adulthood (Judge, Bono, & Locke, 2000).

Core Self-Evaluation and Related Constructs. Core self-evaluation is related to, but distinct from, several constructs including narcissism, hubris, and overconfidence. While all three of these constructs are related, CSE is understood as a distinct characteristic. Table 1 highlights the terms' definitions and some findings in the literature regarding each construct, both in organizational behavior and strategic management.

Relative to narcissism, core self-evaluation does not include the "continuous need for applause and adulation that characterizes narcissism" (Chatterjee & Hambrick, 2007: 365). Thus, while narcissism is considered a negative trait, CSE is considered to be positive (Resick et al., 2009).

Hubris is "exaggerated self-confidence" (Hayward & Hambrick, 1997: 103). Self-confidence is closely aligned with core self-evaluation—specifically the generalized self-efficacy dimension (Judge et al., 2002). While hubris shares the characteristics of self-confidence with CSE, it is typically also associated with pride. When people are motivated by hubris, their assessments of themselves are likely skewed. They believe that they are better than they actually are. In these cases, they might try to compensate for this imbalance, an activity which reduces how much others like them and how much they are paid (Anderson, Ames, & Gosling, 2008). When CEOs are hubristic, that trait may lead to dramatic effects on firm outcomes.

Table 1: Core Self-Evaluation in the Nomological Network

Construct	Definition	Key Differences from CSE	Strategy Findings	Micro Findings
CSE	"A deeply sourced dispositional trait that defines how we evaluate ourselves and our relationship with the environment" (Hiller & Hambrick, 2005: 299)	n/a	Higher levels of transformational leadership (Resick et al., 2009)	Higher CSE choose more complex tasks (Srivastava, Locke, Judge, & Adams, 2010) Higher CSE have higher salaries (Judge, 2009) CSE is positively related to job complexity (Judge et al., 2000) CSE is positively related to job satisfaction (Judge et al., 2000; Judge, Erez, & Bono, 1998a) CSE is relatively stable between childhood and early adulthood (30-38) (Judge et al., 2000) CSE is negatively related to perceptions of organizational constraints and negatively related to burnout (Best, Stapleton, & Downey, 2005) Individuals high in CSE are more committed to goals when they have differing views of their performance than others (Bono & Colbert, 2005) They are also more persistent and put forth greater effort in their work (Erez & Judge, 2001)
Hubris	"Exaggerated self-confidence or pride" (Hiller & Hambrick, 2005: 306)	Hubris has a core component of self-confidence in common with CSE, but it is typically associated with pride.	Acquisition overpayment (Hayward & Hambrick, 1997) Firm innovation (Tang, Li, &	Those with inaccurate status assessment are liked and paid less (Anderson et al., 2008)

			Yang, 2015a)	
			Corporate Social Irresponsibility (Tang, Qian, Chen, & Shen, 2015b)	
Overconfidence	"An overestimation of certainty about being correct or producing a certain outcome" (Hiller & Hambrick, 2005: 302)	While there might be a link between CSE and overestimation of certainty, CSE does not have a factor that is associated with belief about an individual's ability to predict.	Overinvest with internal funds, curtail investment with external funds (Malmendier & Tate, 2005) Risky product launches (Simon & Houghton, 2003) Less responsive to corrective feedback (Chen, Crossland, & Luo, 2015) Individuals overinvest when based on their own abilities (Camerer & Lovallo, 1999)	Systematic bias towards overconfidence, which increases based on one's base confidence (Dunning, Griffin, Milojkovic, & Ross, 1990; Klayman, Soll, González-Vallejo, & Barlas, 1999) People overestimate actual performance on difficult tasks, but believe they are worse than others and vice versa (Moore & Healy, 2008)
Narcissism	"A personality trait encompassing grandiosity, arrogance, self-absorption, entitlement, fragile self-esteems, and hostility" (Rosenthal & Pittinsky, 2006: 617)	CSE aligns with a healthy amount of narcissism because of its alignment with self-esteem. The negative components of narcissism and unhealthy levels do not align.	Increases strategic dynamism, number and size of acquisitions, and extreme performance (Chatterjee & Hambrick, 2007) Increases number of strategic initiatives, especially when an audience is engaged (Gerstner et al., 2013) Positively related to fraud (Rijsenbilt & Commandeur, 2013) Higher entrepreneurial orientation and performance variance (Wales et al., 2013) Lower contingent rewards (Resick et al., 2009)	Narcissistic managers have grandiose leadership styles and belief systems, charisma and grand vision (Rosenthal & Pittinsky, 2006) Greater variability in their positive mood, higher mood intensity, and instability in self-esteem (Rhodewalt et al., 1998) Narcissistic managers hurt morale and performance and drive away talented employees (Lubit, 2002) Narcissistic managers take credit for success and blame others for failures (Gladwell, 2002)

			CEO narcissism limits director influence (Zhu & Chen, 2014) Higher CSR and philanthropy (Petrenko et al., 2016) Powerful CEOs select directors with similar narcissism (Zhu & Chen, 2015)	Produce bold and innovative ideas (Maccoby, 2000, 2004)

Hubristic CEOs tend to overpay for acquisitions—a relationship that is stronger under a weak board of directors (Hayward & Hambrick, 1997). This finding may be explained by the tendency of hubristic CEOs to overestimate their abilities to complete a successful merger or acquisition. They are also able to push their price choice through the board approval process when the board of directors is relatively weak in comparison to the CEO. Hubristic CEOs also engage in more socially irresponsible activities and fewer socially responsible activities (Tang et al., 2015b). This relationship is proposed to exist because hubristic CEOs don't feel they need the insurance-like benefits associated with CSR investments (Godfrey, Merrill, & Hansen, 2009). These CEOs also believe that the success of their firm is more dependent on them than their stakeholders. Such a relationship with CSR was weaker when firms were more dependent on stakeholder groups. In both cases—acquisition premiums and corporate irresponsibility—outside groups, such as boards and stakeholders, can temper the effects of the CEO's characteristics. On a more positive note, hubristic CEOs also take on more innovative projects (Tang et al., 2015a) because they are more confident in their abilities to handle these challenging and risky initiatives. This result points to an underlying confidence that aligns with CSE.

Overconfidence is an overestimation of one's ability to produce a certain outcome (Russo & Schoemaker, 1992). People, generally, have a systematic bias towards overconfidence (Dunning et al., 1990; Klayman et al., 1999). This trend is even higher when one's base level of confidence is higher (Dunning et al., 1990; Klayman et al., 1999). When tasks are difficult, people overestimate their actual performance, but at the same time, they believe their performance will be worse than others (Moore & Healy, 2008). This relationship is reversed for easy tasks: people underestimate their performance overall, but believe that they will do better than others. When results are based on an individual's own abilities, people tend to overinvest

(Camerer & Lovallo, 1999). Overconfident CEOs approach investments differently than other CEOs. They overinvest in initiatives using internal funds and curtail their investments with external funds (Malmendier & Tate, 2005). They take part in riskier product launches (Simon & Houghton, 2003) because they overestimate their ability to deliver success. Also, as they receive feedback, they are less likely to correct their forecasts (Chen et al., 2015). Overconfident CEOs invest less in forecast accuracy over time.

   Micro-Level Effects of Core Self-Evaluation. Core self-evaluation has a longer history in the organizational behavior literature than in strategic management literature. Several key relationships that are applicable to this study have been identified. Core self-evaluation is positively related job satisfaction (Judge et al., 2000; Judge et al., 1998b). Emotional generalization is one mechanism leading to this relationship—one's positive feelings about themselves carry over to the workplace (Judge et al., 1998a). Another mechanism explaining the relationship to job satisfaction is CSE's effect on perceptions of organizational constraints and burnout, to which CSE is negatively related (Best et al., 2005). Core self-evaluation is also positively related to job complexity; Judge et al. (2000) propose that this relationship exists because 1) individuals with high CSE look for more complex jobs because of the potential for high intrinsic rewards, 2) goal-setting and involvement increase the effort given by high CSE individuals, and 3) their coping skills help them perform better.

   The role that core self-evaluation plays on feedback has also been studied in a micro-context (Bono & Colbert, 2005). In general, CSE is not related to one's satisfaction with feedback. Individuals high in CSE are more committed to goals when they have differing views of their performance than others. They are also more persistent and put forth greater effort in their work (Erez & Judge, 2001). The individual dimensions of CSE have been linked to job

performance (Judge et al., 1998a), the combined measure's link to performance being confirmed by Erez and Judge (2001) and Judge (2009) and meta-analytically by Chang, Ferris, Johnson, Rosen, and Tan (2012).

Macro-Level Effects of Core Self-Evaluation. The study of core self-evaluation in strategic management is still nascent; I agree with Resick et al. (2009: 1374), who write that the "CSE construct appears to be moving into the evolution and augmentation phase, where early research and critical reviews attempt to clarify the construct and its usefulness, and conflicting results appear and are addressed." CSE influences several factors important for career success and firm outcomes, yet it is not well understood in the strategic management domain. Indeed, there is still discussion on whether there is enough variance in CSE in the upper echelons to lead to meaningful theory. Management researchers have considered that CSE in executives may be at an inherently higher level than the general population—almost a hyper-CSE (Hiller & Hambrick, 2005) because of the tournaments that executives must pass through on their way to the top of the organization (Lazear & Rosen, 1981). Nevertheless, evidence of variability in the construct warrants further research. For example, not all CEOs confront tournaments on their rise to power; those such as company founders and family members whom inherit businesses are susceptible to potentially lower levels of core self-evaluation. There is also empirical evidence of variance in the construct; both Resick et al. (2009) and Simsek, Heavey, and Veiga (2010) showed variance in the measure in their studies of the upper echelons. Furthermore, executives seem to have tendencies that could indicate variability in CSE. For example, executive job anxiety has been shown to be a material concern for executives (Mannor, Wowak, Bartkus, & Gomez-Mejia, 2016). Mannor et al. (2016) refer to Coutu (2004: 70), who wrote, "executives tend to be an anxious bunch. At any given time, there are many things going on that the

executives feel they have little control over." Given all this, I conclude that there is enough variance in CEO CSE to warrant study of the construct in the upper echelons.

Several studies have begun to pioneer CSE research in the upper echelons. In a theory paper, Hiller and Hambrick (2005) laid out a series of propositions on the different expectations of high-CSE CEOs. Resick et al. (2009) showed that CSE was associated with higher levels of transformational leadership. They proposed this relationship based on the specific components of CSE and how each one supports the overall relationship. Confidence and perceptions of control can help lead to compelling visions of the future and successful changes, while determination and emotional stability are needed to challenge the status quo. These basic relationships demonstrate how the overall construct can be used to theorize reinforcing relationships where the sum of the four parts is collectively supportive of a theorized relationship. CSE has also been linked to stronger firm entrepreneurial orientation (Simsek et al., 2010). CEOs with higher levels of CSE perceive that they can change their environment and lead firms to positive outcomes through the application of their strong abilities. Furthermore, they are more persistent and might be better at seeing the upside potential of situations (Simsek et al., 2010). These traits can lead to a greater entrepreneurial orientation.

Understanding the Variance in CSE Levels. There are three important considerations for the study of CSE in a sample of CEOs: whether CSE varies between CEOs, whether CSE varies within-person over time, and whether CSE fluctuates based on situation. It is tempting to assume that all CEOs are the same and *core* self-evaluation is permanently fixed within a person; I will, however, provide a rationale for why this tempting assumption is most likely not valid.

First, I consider whether personality traits, and specifically CSE, vary between Chief Executive Officers. Again, it is tempting to consider that all CEOs generally have the same CSE

level. Most executives go through a series of promotions—each one could be considered a tournament (Lazear & Rosen, 1981)—which only allow the best of the group to advance. This process, over a CEO's career, could lead to similar CEOs across companies. Upper Echelons research, however, is predicated on the assumption that executives do vary, and the variation leads to different outcomes for organizations (Hambrick & Mason, 1984). Indeed, as cited above, numerous studies of CEO personality reveal a relationship between CEO variance and differential organizational outcomes (Chatterjee & Hambrick, 2007; Herrmann & Nadkarni, 2014; Nadkarni & Herrmann, 2010; Peterson et al., 2003). Hiller and Hambrick (2005) expect meaningful variance in CSE in the upper echelons of organizations. Considering the tournament theory perspective, however, not all CEOs undergo the tournament process Lazear & Rosen (1981) proposed; some executives work for small or family firms, or they might be the CEO of a startup they founded. There may, however, be range restriction in key personality variables, including CSE. For example, Hiller and Hambrick (2005) propose that executives will be prone to hyper-CSE because one would not expect truly low CSE executives to have made it to the top of their organizations. Even given this potential range restriction, studies have shown meaningful variance in CSE in the strategic management domain. Both Simsek et al. (2010) sample of Irish executives and Resick et al. (2009) sample of baseball executives show meaningful variance which was predictive in their contexts. Thus, I contend that CSE has enough between-CEO variance to warrant study.

It is also important to consider the stability and malleability of core self-evaluation within an individual over time. As mentioned before, one study showed that CSE remained correlated (r = 0.46) between childhood and early adulthood (Judge et al., 2000). Even given this relationship, there is still enough potential that the construct varies with time. Studies have shown other

personality traits—such as neuroticism (Roberts, Walton, & Viechtbauer, 2006) and self-esteem (Orth, Trzesniewski, & Robins, 2010)—do vary over time. The stability of personality traits— even within short periods of time—has been questioned for decades; in the late 1960s, Mischel (1968) found cross-situational consistency coefficients rarely surpass a ceiling of 0.30. This opened the door to serious consideration that personality traits do vary within shorter periods of time.

Studies of personality states—"defined in this approach as a dimension with the same content and scale as a personality trait but that assesses how the person is at the moment rather than how he or she is in general" (Fleeson, 2007: 826)—seek to explain the variance in behaviors by examining the moment-by-moment variance of a personality dimension to "identify patterns of behavior within a given individual" (Conner, Tennen, Fleeson, & Barrett, 2009: 1). Studies that only consider personality dimensions as unvarying traits typically characterize within-person variance as error; research, however, has shown that there is meaningful and predictive information in this "error" (Conner et al., 2009; Fleeson, 2007; Fournier, Moskowitz, & Zuroff, 2008). For example, Fleeson (2007) showed that, among other personality traits, emotional stability did meaningfully change during the course of a day. He defined *state* emotional stability as "the extent to which *secure*, *nonsensitive*, and *self-confident* describe how the individual is at the moment" (Fleeson, 2007: 851).[2] Surveying people many times per day for weeks, his study shows that within-person state emotional stability is influenced by the situations that people face throughout their day.

Furthermore, research has been able to manipulate traits that were previously considered stable traits. Fast, Gruenfeld, Sivanathan, and Galinsky (2009) manipulated power, a construct

---

[2] Italics in the quotation, from original. Emotional stability was assessed in his study with three adjectives: self-confident, sensitive (reversed), and insecure (reversed).

that is arguably considered stable within-person, in a series of laboratory experiments. Thus, while Fleeson (2007) showed that situations can lead to moment-by-moment changes in personality states, Fast et al. (2009) showed that changes in personality states—power, in their case—can lead to variance in behavior in a controlled setting. Therefore, I contend that if studies of personality do show within-person variance within the day and there is evidence that they can be manipulated in a controlled laboratory setting, there is the potential that core self-evaluation may be subject to the same fluctuations and may be more malleable than the "core" portion of the construct's name suggests.

In sum, research on core self-evaluation, across the micro- and macro-behavior divide, shows that high CSE individuals choose more complex tasks, perceive fewer organizational constraints, are more committed to goals, are more persistent, put in greater effort, burn out less, have higher job satisfaction, and perform better. These characteristics are positive indicators of success for both CEOs and top managers. There is also sufficient evidence to suggest that CSE may vary between-CEO and within-person, warranting further exploration.

Strategic Change

Strategic change represents a firm's departure from its existing resource pattern (Finkelstein & Hambrick, 1990; Haynes & Hillman, 2010). CEOs are responsible for setting the strategy of the firm (Chandler, 1962) and strategic change is used by CEOs to help align their organization with the environment (Kraatz & Zajac, 2001). Numerous influences on strategic change have already been studied, such as CEO charisma (Wowak, Mannor, Arrfelt, & McNamara, 2016), CEO pay (Carpenter, 2000), TMT characteristics such as tenure (Finkelstein & Hambrick, 1990), and board characteristics such as board capital (Haynes & Hillman, 2010). Research on the relationship between strategic change and firm performance have found positive

(Herrmann & Nadkarni, 2014), negative (Zajac, Kraatz, & Bresser, 2000), and inverted-U shape (Zhang & Rajagopalan, 2010) relationships. Given these inconsistent findings, the effect of strategic change is difficult for executives to assess, making the decision to undertake strategic change uncertain.

Strategic change has, indeed, been found to be both adaptive and disruptive. Change is needed to adapt to developments in the environment and remain competitive (Zajac et al., 2000), but it can disrupt internal, stable activities (Herrmann & Nadkarni, 2014). These adaptations and strategy shifts don't have to be radical; small adaptations, such as minor acquisitions, can be effective (Vermeulen & Barkema, 2001). Changing resource allocation patterns reflect these changes in strategy and can potentially help drive not only the competitive advantage of the firm, but also the overall firm's survival (Brown & Eisenhardt, 1998; Carpenter, 2000; Peters, 1988).

While there are benefits to strategic change, literature also suggests that strategic change can be disruptive (Laamanen & Keil, 2008; Naranjo-Gil, Hartmann, & Maas, 2008; Zajac et al., 2000). Inconsistent rate of acquisitions can hurt firm performance because firms don't have enough time to develop the systems and knowledge needed to be successful later (Laamanen & Keil, 2008). Also, high variability in the types of acquisitions reduces the predictability of capabilities needed for success and, thus, hurt performance (Laamanen & Keil, 2008). The factors that surround strategic change, such as changing roles and routines, can also lead to declines in performance (Naranjo-Gil et al., 2008). Beyond people, existing resource bases that are difficult to change can be strong barriers to strategic shifts (Zajac et al., 2000).

These positive and negative aspects provide unclear guidance for CEOs evaluating whether and when to enact changes. As a result, CEOs prefer to maintain the status quo, especially when they have had longer tenures (Hambrick, Geletkanycz, & Fredrickson, 1993).

Executives follow the behavior patterns employed during prior successes as they match current activities to the logic that has worked for them in the past (Prahalad & Bettis, 1986). There are, however, mechanisms that push executives to step out of their past actions and logics. These feedback mechanisms can help drive changes in organizations.

Feedback Mechanisms

There are a number of different feedback mechanisms that can influence a CEO's decisions; these include, for example, media coverage, performance indicators, top management team feedback, board of directors discussions, analyst ratings, and shareholder activism. Executives use feedback mechanisms to make sense of organizations and the environment in which they exist (Gioia & Chittipeddi, 1991). These feedback mechanisms can drive strategic change both early and later in a new CEO's tenure (Greiner & Bhambri, 1989). While numerous mechanisms exist, two that are particularly salient are organizational performance and media coverage. Both feedback sources are visible outside of the firm and can potentially exert pressures for CEOs to change behavior. Indeed, performance and media coverage have been shown to have a significant effect on the level of strategic change that executives choose to undergo (Bednar, Boivie, & Prince, 2013; Greve, 1998). As such, they serve as important feedback mechanisms for executives.[3]

Organizational Performance. Positive prior organizational performance can lead to satisfaction of executives with their current strategy and lower strategic change (Greve, 1998). Boeker (1997)'s study of 67 semiconductor producers over a 14-year period showed that high

---

[3] External core evaluations are those that "are similar to core self-evaluations in that both are fundamental in nature and global in scope. However, the difference between the two is that whereas core self-evaluations are self-appraisals, external core evaluations are the appraisals individuals make of their environment. Judge et al. (1997) argued that external core evaluations pertain to other people (trust vs. cynicism) and the world (belief in a benevolent world, belief in a just world)."

past performance made strategic changes less likely. Consistent with this relationship, in a study of the radio broadcasting industry, Greve (1998) showed that as an organization's performance increased, the probability of change decreased. Prior performance sends a powerful signal to executives—either positive or negative (Bednar et al., 2013). As the duration of success increases, firms become less and less likely to make changes to their strategies (Nelson & Winter, 2002). Further, firm financial performance is the single most salient predictor of CEO dismissal (Finkelstein et al., 2009). Ignoring firm performance can be detrimental for a CEO's career.

Media Coverage. Media coverage can serve a number of different functions, such as reporting facts about a firm, disseminating the reactions of external stakeholders, and uncovering new information (Bednar et al., 2013). In all of these cases, the tenor of the media is an important signal about the firm. When media coverage is positive, it serves as justification of a firm's current strategy and situation. That is, it can serve as a signal to management to persist with the current strategy. On the other hand, if the media coverage is negative, it can serve as a signal that action is required (Bednar et al., 2013). Negative media coverage of CEOs can increase the likelihood of dismissal (Bednar, 2012). If the media coverage is about the CEO, specifically when the coverage is positive, CEOs are apt to believe those accounts (Hayward, Rindova, & Pollock, 2004). They can internalize this media coverage and perceive that they have greater control over the firm then they do and become overconfident and overcommitted to their decisions (Hayward et al., 2004).

Conclusion

This literature review serves as the basis for the theory in next chapter. It outlined the core tenants of Upper Echelons Theory and stepped through various observable and

psychological characteristics that have been explored in the domain. Subsequently, I discussed the construct of core self-evaluation in both the micro- and macro-context. I described how the construct differs from similar constructs such as hubris and narcissism. I also provided some key findings and known relationships with the CSE construct. I concluded the section on CSE by discussing the between-CEO, within-person, and moment-by-moment variation in CSE. Afterwards, I provided a discussion of strategic change and how different personality traits influence the level at which CEOs alter their firm's strategies. Finally, I discussed two important feedback mechanisms: organizational performance and media coverage. This discussion intended to show how these mechanisms influence strategic change. In sum, these literature review sections should provide a level of familiarity with key constructs and existing relationships, as well as an overview of the theory to come.

CHAPTER 3: THEORY AND HYPOTHESES

In this section I lay out the core tenants of my theory which I test in subsequent chapters. The theory centers around how core self-evaluation affects decision processes, natural strategic tendencies, and subsequent strategic change. Each of these three consequences of different levels of core self-evaluation is distinct. For example, decision processes center around how CSE influences the way that executives make decisions. Whereas the theory of how CSE influences natural strategic tendencies show how the strategies that executives would employ if they were not constrained by existing strategies are influenced by their core self-evaluation. Finally, the latter portions of the theory explain how CSE may influence whether and how much an executive may change their strategy based on the feedback—organizational performance and media coverage—they receive about their organization and how this feedback is influenced by their core self-evaluation. Throughout this section, I develop testable hypotheses as I step through each of these different theoretical areas.

Core Self-Evaluation and Decision Processes

Core self-evaluation has important implications for the way that executives make decisions. Specifically, research suggests two important measurements of decision processes: decision speed and decision comprehensiveness.

Emotional stability and generalized self-efficacy—two of the four components of CSE—are particularly relevant to decision speed. As emotional stability increases, executives should feel less anxiety. As anxiety decreases, an executive frets less over a choice, decreasing the time it takes to make a decision. Generalized self-efficacy, the feeling that one succeeds at tasks,

generates confidence that current decisions will be successful, much as they have in the past. This confidence reduces the time spent on making a decision because executives will arrive at a conclusion faster than those with lower confidence in their ability.

Hypothesis 1: Core self-evaluation will be positively related to decision speed.

Core self-evaluation should also influence the comprehensiveness—the effort and length of time spent conducting diagnosis, alternative generation, alternative evaluation, and integration of decisions (Fredrickson, 1984). A high core self-evaluation increases an executive's perception that they are well suited to make a decision and that they have the ability to correct course if that decision does not pay off. Thus, as CSE increases, executives feel that they need to exert less effort up front on making sure each piece of information has been carefully examined and every alternative considered. As CSE increases, so does the comfort with spending less time on decisions. That is, CSE can imbue an individual with the perception that they'll put the organization on the right course, regardless of the time spent on their decisions.

Hypothesis 2: Core self-evaluation is negatively related to decision comprehensiveness.

The Effect of Core Self-Evaluation on Natural Strategic Tendencies

Typically, when an executive comes into a firm they are constrained by the decisions of their predecessor and must work within the trajectory, or path dependence, of the firm's current realities (Hannan & Freeman, 1977; Hannan & Freeman, 1984). For that reason, assessing the quality of a CEO early in their tenure is difficult (Graffin, Boivie, & Carpenter, 2013). The natural strategic tendencies of executives are the strategic choices that executives would make if they were unencumbered by the current realities of their firms. These are even more difficult to assess because of the many constraints that executives face; they are, however, important for understanding executive preferences. These natural tendencies can influence a number of

strategic decisions. Two that are important are the riskiness of resource allocations and size of outlays. Core self-evaluation has a number of implications for the natural strategic tendencies of executives.

Executives with low core self-evaluation are plagued by their negative self-regard. Executives with low CSE have high anxiety, feel that they fail at tasks, feel unworthy, and perceive events to be outside their control. When making strategic decisions, these executives would perceive that they are more likely to fail, have less control over the implementation of their decisions, and would worry about the risks they may have taken. As such, they would take fewer risks and fewer big bets. These executives want to pursue more balanced, incremental decisions that can be easily reversed (Quinn, 1980). As core self-evaluation increases, however, executives become more certain that they will be able to reap the rewards of risky decisions (Roll, 1986). High CSE executives thus perceive less risk and believe their decisions to be superior to others. Furthermore, CSE increases the belief that one can manage the idiosyncrasies that arise during implementation. Therefore, I propose that CSE will be positively related to risky resource allocation—risky investments and large outlays.

Hypothesis 3a & 3b: Core self-evaluation will be positively related to risky strategic decisions in initial strategy (H3a: risky allocations and H3b: large outlays).

Core Self-Evaluation's Influence on Strategic Change

Hiller and Hambrick (2005) propose that three primary mechanisms will lead those with high core self-evaluation to persist with their current strategy. First, core self-evaluation increases an executive's confidence in their decisions. Confidence, in turn, reduces the executive's perception that a change is needed. Second, they believe that they are well suited to implement the decisions that they've made. As an executive's perceptions of suitability increase,

they are less inclined to second-guess themselves and are, thus, more inclined to maintain current strategies. Third, they believe that they are capable of overcoming obstacles that will arise. This encourages them to be patient and allow their initial strategies to play out a little more before making changes that are necessary. They are not hindered by feelings of time pressure when considering strategy changes. These three factors all provide support for the proposition that CSE reduces strategic change, or more formally:

> *Hypothesis 4: Core self-evaluation will be negatively related to initial strategic change. That is, after setting an initial strategic outlay, those individuals with high CSE will be less likely to deviate from this initial strategy.*

The Relative Strength of Feedback

While firm performance and media coverage are each important feedback sources. Their effects can differ from one another and, furthermore, they not always congruent—media coverage and performance might conflict with one another. Examples of conflicting signals are plentiful. For instance, Apple is consistently berated by the media, despite consistent strong performance. The Wall Street Journal, for example, reported of "a nagging worry of the company being visited by the ghost of Christmas past"—that "with Apple's stock up more than 40% in the past 12 months, there is little room for error now" (Gallagher, 2015: C6). The opposite also occurs. For instance, in discussing Facebook the Wall Street Journal reported *"quelle horreur"* that an analyst lowered a forecasted share price, while in the same article praising Facebook saying their "user base and advertising inroads continue to impress" (Jakab, 2015: C1). This demonstrates an example of the conflicting horror of a downgrade, while simultaneously praising the firm. While we see these examples frequently, management theory

explaining when and how CEOs adjust their firm's strategy following conflicting signals is underexplored.

The influence of firm performance and media coverage is each derived from different sources and, therefore, may influence executives differently. Firm performance is an objective metric. It is a single number[4] that has profound implications for executives—including their termination (Hubbard, Christensen, & Graffin, 2017; Shen & Cannella, 2002).[5] As such, firm performance should have a strong effect. While media coverage shares similar influences, the feedback is more ambiguous. Executives do not necessarily internalize all media coverage about them or their firm (Hayward et al., 2004). Further, the effect of negative media coverage on dismissal has seen evidence in the literature (e.g. Bednar, 2012), performance has been consistently shown to be the strongest predictor of CEO dismissal (Finkelstein et al., 2009). Thus, the ambiguity of media coverage—both in the coverage and the internalization of that coverage—and its inconsistent effect on critical outcomes for executives leads it to be a weaker signal for executives than, the less ambiguous firm performance signal. I expect that these signals will influence the level of strategic change that executives will undergo: performance will have a stronger influence on the need to change than media coverage. Or, more formally,

> *Hypothesis 5: Firm performance will have a stronger negative effect on initial strategic*
>
> *change than media tenor.*

---

[4] I have substantially simplified this point. There are multiple measures of performance—some more objective, others less objective. Amason (2011: 43) points out that "while the thought of a single measure of performance that transcends context and setting is appealing, it may not always be practical or even possible." In this study, though, I intentionally keep it basic to allow for the theory to generalize across contexts where one performance measure might be more important than in another. When I get to the empirics I focus on the firm's stock price since that is the metric by which participants are compensated; thus, it should be the most salient in my research design. The theory, however, can generalize beyond these empirical choices.

[5] Even though financial performance only accounts for 10 to 20 percent of the variance in CEO dismissal (Finkelstein, Hambrick & Cannella, 2009), it is still the best predictor available today.

Core Self-Evaluation and Strategic Change

As an important characteristic of executives, their core self-evaluation should also influence how executives perceive their environment and, subsequently, make strategic decisions (Hambrick, 2007; Hambrick & Mason, 1984; Hiller & Hambrick, 2005). From an Upper Echelons perspective, executive characteristics influence how information is processed. Core self-evaluation, specifically, imbues confidence. This confidence helps executives discount external evaluations of themselves. As Chatterjee and Hambrick (2011: 203) discuss, capability cues—those "contextual signals that decision makers might reasonably interpret as indicators of their (or their organization's) current level of overall ability"—will influence confidence. One's core self-evaluation, though, represents "fundamental, subconscious conclusion individuals reach about themselves" (Judge et al., 1998b: 18). CSE is relatively stable between childhood and early adulthood (Judge et al., 2000). At low levels, one has a poor self-concept and could be more strongly influenced by external evaluations, such as capability cues. In these cases, external evaluations—both media coverage and performance—have a strong effect on their decisions. On the other hand, as core self-evaluation increases, the positive and enduring self-concept will reduce the effect of capability cues. Core self-evaluation increases goal commitment following feedback (Bono & Colbert, 2005). Discounting feedback and higher commitment to goals in turn decrease the influence of feedback on strategic change. Thus, I propose that core self-evaluation will dampen the effect of capability cues on strategic change.

Hypothesis 6a & 6b: Core self-evaluation will decrease the effect of performance (H6a)

and media tenor (H6b) on initial strategic change.

Considering Time: Sequential Decisions

The vast majority of empirical and theoretical strategy research focuses on single decisions in isolation. Unfortunately, this is not how executive decisions are made. The majority of CEO decisions are iterative and undertaken in light of multiple sources of feedback, including how they perceived the influence of their prior decisions. Over time, executives will be bombarded with feedback, so CSE is especially important in understanding how they will react. At low levels of CSE, executives have lower self-concepts (Judge et al., 1997), are less persistent, and put forth less effort (Erez & Judge, 2001). When these factors are combined with negative capability cues, they further decrease the likelihood that they will engage in making complex decisions; that is, they will persist with their current strategies because they do not put the effort in to make changes.

> *Hypothesis 7: At low levels of core self-evaluation, the effect of negative feedback on strategic change will increase over time.[6]*

Negative performance is expected to dominate an executive's decision frame, superseding media coverage. Under the condition of negative performance over a few strategic decisions, core self-evaluation will have a unique influence on the negative relationship between media tenor and strategic change. After initial strategies have appeared to fail, executives will work towards adjusting their strategies to turn their performance around. After further failures, low CSE executives will view negative media coverage as indicative of poor strategies. These perceptions would then push low CSE executives to pursue further changes to their strategies. On the other hand, under the same conditions of further failures, low CSE executives will view positive media coverage as a validation of their current strategies—maintaining the negative relationship between media coverage and strategic change. As CSE increases, though,

---

[6] The test of this hypothesis will be only in the low CSE condition; see the methods section.

executives, who normally have a penchant for consistency, will seek cues about how much to change. Media coverage, as a capability cue (Chatterjee & Hambrick, 2011), can provide an external validation to executives. This validation will increase the level of strategic change at high levels of positive media coverage. Thus, positive media coverage can help high CSE executives overcome their natural tendency to keep their strategies constant. Or, more formally:

Hypothesis 8: Under conditions of negative performance, CSE will weaken the negative effect of media tenor on strategic change such that at high CSE, the relationship will be less negative than at low CSE.

Sustained negative performance across an executive's tenure may lead to paralysis. As CEOs move through their tenure, two things occur. First, capability cues become more diagnostic. Early in an executive's tenure, evaluating their performance is extremely difficult (Graffin et al., 2013). Over time, however, the performance of the firm is more attributable to the effectiveness of the CEO. Thus, capability cues are more salient and have a stronger influence on the psyche of executives. Low CSE executives are likely to give up and stop adjusting their strategies as they 'ride out' their tenure. This is analogous to learned helplessness, a construct already established in the literature (Judge et al., 1998a). Stable negative events can lead people to be convinced that they do not have control over events; they may thus stop putting effort into tasks (Abramson, Seligman, & Teasdale, 1978). As CSE increases, though, locus of control increases, providing a measure of balance to the learned helplessness. Second, strategic change decreases after CEOs have undertaken the actions they think are appropriate. After enough time, and at low levels of CSE, executives will not be as confident in their ability to change their performance. As CSE increases, though, executives will still try to make changes as they believe that they will be successful where others may fail. Further, CSE is negatively related to burnout

(Best et al., 2005), potentially leading high CSE executives to continue to work towards success. Therefore, when performance has been poor for extremely long periods of time, CSE increases the level of strategic change executives undertake.

> *Hypothesis 9: Under the condition of sustained low performance, core self-evaluation will be positively related to strategic change.*

CHAPTER 4: METHODOLOGICAL ROADMAP

This study's research question lends itself to a method that can directly manipulate both executive characteristics and feedback, and precisely measure decision processes and strategic choices over time. Experiments are appropriate.

Shadish, Cook, and Campbell (2002: 1) define an experiment as "a test under controlled conditions that is made to demonstrate a known truth, examine the validity of a hypothesis, or determine the efficacy of something previously untried." A randomized experiment, more specifically, is one "in which units are assigned to receive the treatment or an alternative condition by a random process such as the toss of a coin or a table of random numbers" (12). Randomized controlled experiments have the advantage of high internal validity (Cook & Campbell, 1979; Shadish et al., 2002). Such experiments allow the direct manipulation of independent variables without endogeneity concerns or confounding variables. Antonakis, Bendahan, Jacquart, and Lalive (2010: 1086) noted that the "failsafe way to generate causal evidence is to use randomized experiments."

Laboratory experiments have been criticized for lacking generalizability (Colquitt, 2008), a concern that is particularly salient in strategic management research. Simulating the environment of top managers is a difficult task. Their jobs are highly unstructured, entail substantive decision-making responsibilities, and are highly social (Finkelstein et al., 2009). This lack of generalization, however, is not enough of a barrier to prohibit their use. Instead, while it is very difficult to directly open the black box of decision making in the upper echelons through

other methods—such as CEO surveys (Cycyota & Harrison, 2006)—experiments can be used to take a critical look inside in a controlled environment.

Business simulation games[7] allow for the creation and evolution of a strategy—"not necessarily a single decision or a primal action, but a collection of related, reinforcing, resource-allocating decisions and implementing actions" (Rumelt, Schendel, & Teece, 1991: 7). The goal of such simulations is that of strategic management in general: superior organizational performance (Finkelstein et al., 2009; Nag, Hambrick, & Chen, 2007). Simulations have been used in prior management research (e.g. Audia, Locke, & Smith, 2000; Srivastava et al., 2010) and allow for direct and detailed observation. A combination of strengths—engrossing manipulations and tasks, real stakes, precise measurement of psychological constructs, ability to manipulate independent variables, natural controls for confounds and endogeneity, and precise measurement of dependent variables—make business simulations an appealing methodology for testing strategic management theories. All three studies in this dissertation employ a business simulation game licensed from Rampant Strategy. This business simulation puts participants in charge of a fictional company where they make strategic decisions and compete to have the highest stock price amongst their group. Every factor, though, is controlled: their performance is randomly assigned and there are no competing participants. Each study is described below, followed in subsequent chapters by explanations of the specific procedures and results, as well as discussion of each study.

Study 1: Verbal Protocol Analysis. The focus of this study was to assess the efficacy of the software and learn more about the decision-making processes of participants. These types of

---

[7] I use the term simulation and game interchangeably. This should not be confused with a mathematical or Monte Carlo simulation. I use the terms to refer to a business simulation game whereby participants manage and make decisions for a simulated business.

studies are termed verbal protocol analyses (Barber & Wesson, 1998). While the general frameworks were in place, the methods became more refined as a result of this study. This study had 20 participants come into the lab and participate in the business simulation game while being tape recorded. The transcripts and the recorded data were used to improve the software and provide a base for an inductive study of their decision making, addressed in Chapter 9.

Study 2: Refined Protocol Analysis. Following the first study, a second study was completed with a larger sample—144 undergraduate business students—and a more complete experiment. Its purpose was to test the effectiveness of the full study design on a scale that allowed for assessment and changes to be made. For example, this study was intended to provide a baseline assessment of the efficacy of the experimental manipulations, beyond what was learned in Study 1. This study also introduced the manipulation of core self-evaluation.

Study 3: Full Study. Finally, once the protocol was validated, the full study was completed with a large sample of participants—over 500 students and professionals participated—with varying levels of experience and education.

In the next chapter, I review the current state of strategic management experiments that will form the foundation for the methods employed throughout this dissertation.

CHAPTER 5: STRATEGIC MANAGEMENT EXPERIMENTS

While relatively rare, experiments in the field of strategic management are gaining popularity in the top management journals (see Figure 1 for the distribution of studies over time). The lack of experimentation in the field of strategic management raises questions about the direction of causality between executive and organizational covariates (Finkelstein et al., 2009). Finkelstein et al. (2009) note that "to date, relatively few upper-echelons studies have been designed in a way as to allow convincing conclusions about causality. This must be a high priority going forward, and it can be accomplished through careful research designs and data analysis" (115). Croson, Anand, and Agarwal (2007) recommend that laboratory experiments are integral to strategic management research due to their clean measurement, reduction of confounds, control of conditions, causal assessment, and replicability.
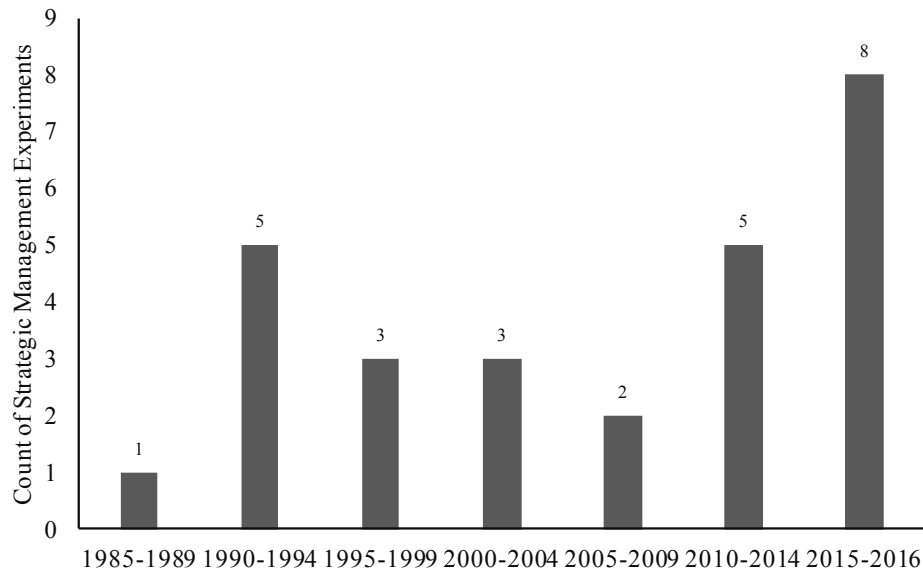
Figure 1: Count of Strategic Management Experiments in Top Management Journals

Literature Review Criteria

I conducted a literature review of the four top empirical journals in strategic management from 1980 to 2016: *Strategic Management Journal*, *Administrative Science Quarterly*, *Academy of Management Journal*, and *Organization Science*.[8] I searched abstracts and topics for each journal with the search terms "laboratory" and/or "experiment." This overall search produced 215 studies. Each abstract was then read and coded. Then non-experiments—such as archival studies, natural experiments, surveys, meta analyses, editorials, mathematical models, and quasi-experiments—and non-strategic management articles were removed. For example, Brockner, Grover, O'Malley, Reed, and Glynn (1993) conducted a study that dealt with layoffs, a strategic management topic, but it focused on individual-level outcomes of the event, or threat of a layoff event. Studies like theirs were removed. To be included, articles had to involve strategic decisions; general psychology or decision-making studies were excluded except when those dealt specifically with, and were framed as, strategic management experiments. After such exclusions, there were only 31 strategic management randomized controlled experiments in top journals. Table 2 provides a summary of these studies, each line representing an individual experiment within each study.

Why Experiments in Strategic Management?

Based on my review of this literature, there are four primary drivers of strategic management experiments: 1) overcoming endogeneity with random assignment, 2) manipulation of independent variables, 3) the ability to measure complex constructs, and 4) the potential link between the lab and real management practices.

---

[8] This search was done at the beginning of 2016.

Table 2: Summary of Strategic Management Experiments in Top Journals

Short Cite	Topic	Paired?	Sample Composition	Conds.	Sample	Process	IVs (psych/cognitive?)	DV
Moore, Oesch, and Zietsma (2007)	Entrep.	No	96 undergrads	4	96 (24)	Multiround Market Entry Decision	Quiz difficulty (simple/difficult); Market capacity (three/four)	Market entry; Estimate of other entrants
Chen, Yao, and Kotha (2009)	Entrep.	Yes	MBAs & eMBAs	4	126 (32)	Business Plan Presentations	Passion (high or low passion); Quality (high- or medium-quality business plan)	Investment Decision
Gregoire and Shepherd (2012)	Entrep.	No	98 (1st) professionals 51(2nd) professionals	4	149 (37)	Scenario Evaluations	Structural similarity (high/low); Superficial similarity (low/high)	Opportunity beliefs
Artinger and Powell (2015)	Entrep.	No	Unclear	10	112 (560 decisions)	Multiround Market Entry Decision	Market capacity (5 levels); Market volatility (known/unknown)	Number of entrants into market
Cain, Moore, and Haran (2015)	Entrep.	Yes	160 (individuals)	2	160 (80)	Market Entry Choice	Market difficulty (easy/hard)	Overestimation; Over placement; Correct market entry
Cain et al. (2015)	Entrep.	Yes	160 (individuals)	2	160 (80)	Market Entry Choice		Overestimation; Over placement; Correct market entry
Gielnik, Spitzmuller, Schmitt, Klemann, and Frese (2015)	Entrep.	Yes	136 undergrads	8	136 (17)	Build Business Plan and Receive Feedback	Entrepreneurial effort (2 levels); New venture progress (2 levels); Free choice (2 levels)	Entrepreneurial Passion
Huang and Pearce (2015)	Entrep.	Yes	135 professionals	4	135 (34)	Scenario Decisions	Business plan viability (strong/weak); Perceptions of founding entrepreneur (positive/negative)	Propensity to invest; Investment amount
Elfenbein, Knott, and Croson (2016)	Entrep.	No	133 (half grad students)	2	133 (67)	Manipulate Payoff and Watch for Exit (multiround)	Adviser vs Entrepreneur	In high profit group?; Exit delay
Sapienza and Korsgaard (1996)	International	Yes	44 MBAs	4	44 (11)	Investment decision game	Influence (low/high); Feedback (low/high)	Procedural justice; Trust in entrepreneur; Decision commitment; Frequency of monitoring
Crilly, Ni, and Jiang (2016)	CSR	Yes	129 (NGO reps)	4	129 (32)	Manipulate Company and Ask To Rate	CSR type (do-no-harm/do-good); Firm foreignness (domestic/foreign)	Company impressions; Causal attribution
Kistruck, Sutter, Lount, and Smith (2013)	Marketing	Yes	32 professionals	2	32 (16)	Product evaluation	Ownership experience (yes/no)	Ownership identity
Jones Christensen, Siemsen, and Balasubramanian (2015)	Marketing	N/A	1815 (households)	3	1815 (605)	Sell Product and Watch Usage	Price (free/deep discount/moderate discount)	Obtaining product; Product usage
Parks and Conlon (1995)	Agency Theory	No	41 undergrads and 41 MBAs	4	82 (21)	Multiple round dyad decision making	1) Monitoring and environmental munificence 2) Monitoring and environmental scarcity 3) No monitoring and munificence 4) No monitoring and scarcity.	Contingent compensation; Share
Pillutla and Murnighan (1995)	Bargaining	No	66 undergrads	8	66 (8)	Bargaining game	Source (self/independent); Information (partial/complete); Label	Mean offer & percent to be divided

41

								(fairness label/no label)	
Pillutla and Murnighan (1995)	Bargaining	No	82 undergrads	12	82 (7)		Bargaining game	Information (partial/complete), Offer size (large/small); Fairness labels (offeror labels, third-party fair labels, and third party unfair labels)	Accepting offer
Malhotra and Gino (2011)	Bargaining	No	176 individuals	2	176 (88)		Negotiation	Outside option (costly/free)	Opportunism; Aspirations; Entitlement
Phadnis, Caplice, Sheffi, and Singh (2015)	Investment Evaluation	N/A	XX Professionals	0			Scenarios	N/A	Confidence level; Changed judgement
Flynn and Staw (2004)	Leadership & Investment	Yes	150 undergrads	8	150 (19)		Scenario Decisions	Charismatic leadership (appeal/no appeal); Turnaround information (positive/negative); Endowment (stock/no stock)	Investment in company
Melone (1994)	Mergers & Acquisitions	No	8 (CEO/VPs)	4	8 (2)		Scenario Decisions	Financial information (meets minimum threshold; exceeds threshold of desirability); Strategic business information (meets minimum threshold; exceeds threshold)	Occurrence and frequency of specific business issues and and lines of reasoning
Schoemaker (1993)	Scenario Planning	No	327 MBAs; 63 (friends or colleagues)	Many			Scenario Evaluations		Varies
Krause, Whitler, and Semadeni (2014)	Shareholder Proposals	No	93 MBAs	4	93 (23)		Shareholder CEO pay package decision	Shareholder return (surplus/deficit); CEO pay (increase/decrease)	Probability of approving pay package; Agency-normative assessment (mediator)
Krause et al. (2014)	Shareholder Proposals	No	88 MBAs	4	88 (22)		Shareholder CEO pay package decision	Shareholder return (surplus/deficit); CEO pay (high/low)	Probability of approving pay package; Agency-normative assessment (mediator)
Marr and Thau (2014)	Status	Yes	77 undergrads	4	77 (19)		Group manipulation followed by individual task	Initial status position (high\low); Status loss (yes/no)	Task performance quality
Marr and Thau (2014)	Status	Yes	86 undergrads	4	86 (21)		Faked group manipulation followed by individual task	Initial status position (high\low); Self-affirmation (yes/no)	Task performance quality
Agarwal, Croson, and Mahoney (2010)	Strategic Alliances	No	45 undergrads; 300 MBAs; 60 eMBAs	5	405 (81)		Multiround Group Bargaining	Common benefits (low/high/mixed); Communications (yes/no)	Alliance success; Transfer of resources; Resources in alliance
Audia et al. (2000)	Strategic Change	Yes	168 undergrads	3	168 (56)		Business Simulation	Task knowledge (low/med/high)	Strategic Persistence; Performance
Bateman and Zeithaml (1989a)	Strategic Decisions	No	193 undergrads	8	193 (24)		Scenario Decisions	Decision feedback (positive/negative); Perceived organizational slack(high/low); Decision frame (positive/negative)	Reinvestment
Bateman and Zeithaml (1989a)	Strategic Decisions	No	48 professionals	4	48 (12)		Scenario Decisions	Decision feedback/slack (failure&low/success/high); Decision frame (positive/negative)	Reinvestment
Bateman and Zeithaml (1989b)	Strategic Decisions	No					Follow-up to prior lab study		

Harrison and Harrell (1993)	Strategic Decisions	No	78 MBAs	2	78 (39)	Analysis to Consider Continued Investment	Incentive for adverse selection (yes/no)	Continuation of Investment
Tosi, Katz, and Gomez-Mejia (1997)	Strategic Decisions	No	228 undergrads	8	228 (29)	Scenario Decisions	Incentive alignment (high/low); Monitoring (high/low); Term as CEO (long/short)	Level of investment in new business unit; Investment in previously poor choice
Song, Calantone, and Di Benedetto (2002)	Strategic Decisions	No	775 professionals	16	775 (48)	Scenario Evaluations	Buyer power (high/low); Substitution threat (high/low); Entry threat (high/low); Intensity of rivalry (high/low)	Recommendation of specific strategies (cost leadership strategy; differentiation strategy; focus strategy)
Kunc and Morecroft (2010)	Strategic Decisions	No	MBAs & eMBAs	0		Scenario Decisions	N/A	Firm performance; Industry performance
Malhotra and Gino (2011)	Strategic Decisions	No	~74 undergrads; ~74 MBAs; 60 professionals	3	207 (69)	Scenario Decisions	Outside option (high-cost/low-cost/free)	Opportunism; Aspirations; Entitlement
Malhotra and Gino (2011)	Strategic Decisions	No	102 undergrads; 41 MBAs; 7 professionals	3	150 (50)	Scenario Decisions	Outside option (high-cost/low-cost/free)	Amount of money sent; Amount of money returned; Option exercised
Shapira and Shaver (2014)	Strategic Decisions	No	218 MBAs	2	218 (109)	Scenario Evaluations	Performance data presented (averages/totals)	Investment Decision
Shapira and Shaver (2014)	Strategic Decisions	No	218 MBAs	8	218 (27)	Scenario Evaluations	Performance data presented (averages/totals); Investment prospects (high/low); Magnitude (equal/different)	Investment Decisions
Conlon and Garland (1993)	Strategic Decisions (sunk costs)	No	582 undergrads	32	582 (18)	Analysis to Consider Continued Investment	Sunk cost (4 levels); Project completion (4 levels); Competitor Information (2 levels)	Resource allocation; Competitive threat
Conlon and Garland (1993)	Strategic Decisions (sunk costs)	No	226 undergrads	16	226 (14)	Analysis to Consider Continued Investment	Sunk cost (2 levels); Project completion (2 levels); Budget knowledge (known/unknown); Responsibility for initial investment (yes/no)	Resource allocation; Competitive threat

First, endogeneity—the presence of a correlation between an independent variable and the error term in a regression—is a major concern in strategic management literature (Bascle, 2008; Hamilton & Nickerson, 2003; Semadeni et al., 2014; Shaver, 1998). The field of management is "predicated on the idea that management's decisions are endogenous to their expected outcomes" (Hamilton & Nickerson, 2003: 51). That is, managers do not make decisions based on random assignment; instead, they make decisions based on their past results, current situation, and their expectations of the outcome. And while a number of methods exist to correct for endogeneity, they all face limitations. Random assignment is, on the other hand, "the great ceteris paribus" of causal testing (Cook & Campbell, 1979: 5). Random assignment removes the effect of all the unobserved variables. It is nearly impossible, though, to randomly assign strategies and decisions to actual companies. Thus, creating environments in which decisions can be manipulated and effects of those manipulations can be observed is one way to approach true causal inferences in strategic management. These environments—specifically, experiments—have high internal validity because other variables are systematically eliminated from influence (Shadish et al., 2002).

The second method for ensuring high internal validity is the manipulation of independent variables (Cook & Campbell, 1979). Typical strategic management studies separate independent from dependent variables in time, but they lack control over the actual change in level of the independent variable. A much stronger causal test manipulates the independent variable and observes the resulting change in the dependent variable, something strategic management experiments can achieve. This also ensures the temporal ordering of the tested relationships.

Third, laboratory studies can measure a number of constructs that are difficult to capture without direct measurement. For example, core self-evaluation is an important construct in

strategic management (Finkelstein et al., 2009; Hiller & Hambrick, 2005), yet it is not directly observable. Surveys of top executives are enticing, but with average response rates around 30% and at high expense, they are difficult to justify (Cycyota & Harrison, 2006). Laboratory studies have two advantages: constructs can be accurately measured and manipulated.

Finally, the laboratory may be able to produce similar behaviors to those real executives exhibit in the field. Colquitt (2008) notes that there is a natural tendency to criticize laboratory experiments for being unrealistic and disconnected from real organizations. He points out, however, that meta analyses testing the relationships between laboratory and field studies show high correlations between the two ($\rho = 0.73$; Anderson, Lindsay, and Bushman, 1999). While this type of result has yet to be replicated in the few extant strategic management experiments, higher numbers of experiments in the future may lead to equally robust conclusions.

The key weakness of lab experiments in strategic management is poor generalizability of results. It is hard to say that the specific relationships that appear causal in a laboratory echo across the myriad of decisions and influencers that real managers face while running companies. The issue of generalizability, however, only goes so far; the consistent scenarios in used in laboratory—which some might argue limit generalizability—might even be better than real world situations which can vary widely and suffer from many endogenous factors. I contend that laboratory studies have an important place in the strategic management literature as a way to isolate specific mechanisms. Any concerns for generalizability are overshadowed by the benefits.

Literature Review Results

Types of Studies. The literature review showed that there were two reasons that researchers employ strategic management experiments: either to support existing empirical results or to test relationships that are hard to uncover in an archival study.

For example, Crilly et al. (2016) used an experiment to help provide additional evidence to a finding from an archival study. Their baseline relationship was that the type of CSR that foreign and domestic firms employ influences stakeholder perceptions of firms. They followed up their archival study with a simple experiment in which they manipulated those two dimensions. They had participants evaluate firms that were either domestic or foreign and planned to participate in either "do-no-harm CSR" or "do-good CSR." Their manipulations and evaluations allowed them to test effects at the individual stakeholder level. These results supported their prior findings and enriched their study.

Krause et al. (2014), on the other hand, conducted an experiment to test a relationship that would have been impossible to uncover in an archival study at the time. They assessed the potential effects that say-on-pay shareholder votes would have on corporate governance. Specifically, they wanted to understand how a CEO's current pay and firm performance would affect the likelihood that a shareholder would vote to approve the CEO's pay package. At the time the study was conducted, the law that would later require say-on-pay shareholder votes had not yet passed, so an archival study would have been impossible. They were, instead, able to examine the effects of a legal change before the change occurred.

Empirical Considerations. As stated above, a typical criticism of strategic management experiments is their lack of generalizability (Chatterji, Findley, Jensen, Meier, & Nielson, 2016). There is an underlying criticism that strategic management experiments are invalid without a more general archival (or field) study to verify the results found in the laboratory. Thus, I expected every study to be paired with another to test the generalizability. In my review, however, I found only eleven experimental studies that were paired with another non-laboratory study, such as a field survey (e.g. Sapienza & Korsgaard, 1996). This could reflect that strategic

management experiments play a more prominent role in testing theories that cannot be tested archivally (Krause et al., 2014) than in testing relationships that can be observed and inferred remotely.

The average sample size was 215 participants with a median of 4 conditions per experiment and 44 participants per experimental condition. Studies ranged from two conditions—for example, Harrison and Harrell (1993) manipulated the incentive for adverse selection—to as many as 32 conditions—Conlon and Garland (1993) manipulated four levels of sunk cost, four levels of project completion, and two levels of competitor information. Sample sizes also varied widely. Melone (1994) included only 8 participants (all CEOs or Vice Presidents), evaluating four scenarios each. On the other end of the spectrum, Conlon and Garland (1993) needed a sample of almost 600 for their study with 32 experimental conditions.

Another typical concern with strategic management experiments is the use of students in the place of top managers (see Colquitt, 2008). Cosier and Rechner (1985) noted differences in decision-making between experienced managers and undergraduates—they found that more experienced managers made more conservative and profitable decisions than undergraduates. In my review, however, I found that 24 of the 39 individual strategic management experiments in the studies (62%) used student populations. Some were paired with other experiments of non-student populations.

Recommendations and Best Practices

Based on the studies I reviewed, I distilled a list of best practices that may help researchers plan, conduct, and report strategic management experiments. These are provided in Table 3.

Obtain Institutional Review Board Approval for All Studies. In my review, not all studies obtained Institutional Review Board (IRB) approval for their pilot and supporting studies. Agarwal et al. (2010: 421) noted that

> *Subsequent to the alliance experiments conducted for research, there were additional experimental simulations conducted for pedagogical purposes in an executive education setting (not included in the data to be compliant with Institutional Review Board guidelines). The outcomes in these experiments were consistent with the results reported in the empirical section.*

If they had chosen to obtain IRB approval, their comment could have been matched with published data which would improve generalizability beyond their student sample. Thus, a basic recommendation is to obtain approval from IRB for every trial, pilot, or tangential study. Results should not be published without IRB approval.

Conduct Pilot Studies. While it is easy to assume that researchers are piloting their studies, surprisingly, many do not report on the process or results of their pilot studies. Shapira and Shaver (2014) provide a great example of piloting an experiment before implementing it. They conducted four waves of refinement to ensure finely-tuned manipulation. Their first three experiments included full-time MBA students, while the last was conducted with eMBA students. Pilot studies can be used to test manipulations, measurements, and threats to internal validities. Three threats to internal validity that are particularly salient to strategic management studies are maturation, history, and differential attrition (Colquitt, 2013; Shadish et al., 2002). Maturation reflects a change in a dependent variable not due to the manipulation, but some unknown evolution in participants.

Table 3: Recommendations for Strategic Management Experiments

Recommendation	Examples
Obtain IRB Approval for All Phases Need to be able to report results from all phases to support prior conclusions, manipulations, and tangential findings.	This study
Conduct Pilot Studies Have a specific purpose, evaluate over multiple waves, and report results in manuscript. Consider tests of manipulations, measurements, and threats to internal validity.	Shapira and Shaver (2014)
Use verbal and written protocol analyses These provide feedback from participants without recall biases.	Moore et al. (2007)
Test differences across samples. Overall, we need to build a better base showing when, where, and how samples begin to diverge in strategic management contexts.	Agarwal et al. (2010)
Recognize limitations upfront The limitations section on the first submission should address the limitations of strategic management experiments and why the research design choice is the best.	Agarwal et al. (2010)
Automate as Much as Possible Sample sizes for strategic management experiments are high, the more that can be automated, the more time that can be spent recruiting participants. It also reduces errors and ensures IRB compliance.	Changes from Study 1 to 2
Psychological Realism As best as possible, use real situations, engrossing manipulations and tasks, and real stakes.	Colquitt (2008)
Verify Manipulations While a change in a dependent variable can indicate that a manipulation caused it, there are still several influences that can't be observed—especially in strategic management experiments where the procedures are more complex. Thus, verifying that the manipulations worked can add increased confidence in the causal relationships.	Krause et al. (2014)
Use Instructional Videos and Quizzes to Train Participants It's important to train participants and ensure an understanding of the procedure when conducting complicated strategic management experiments.	Study 2 & 3
Align Participant Benefits to Stage-gates With complicated strategic management experiments, it is important that participants complete the entire experiment. Aligning the benefits of participation (e.g. course credit or monetary compensation) to stages of the experiment so that they receive more the longer they participate will help decrease attrition.	Study 3

Strong strategic management experimental designs are longitudinal; the dependent variable is measured at several points in time. This design raises the possibility that something other than the manipulations may be driving the results, such as fatigue or disinterest among participants. Pilot studies can help identify these problems and possibly suggest solutions to reduce maturation effects. History can also produce a change in a dependent variable that is not due to manipulation, but some unknown event. In a complicated experiment being conducted online, this could be an interruption to the experiment, such as a phone call or text message. Strategic management experiments are inherently complex and taxing on participants. As such, these events should be minimized as much as possible by, for example, asking participants to turn off their phones and complete the study in a quiet place. Finally, differential attrition occurs when changes in the dependent variable are seen because of a systematic dropping out of participants. If participants with certain characteristics consistently drop out of the experiment, utilizing the resultant dataset with only the final group could introduce bias. Pilot studies can help identify which participants are likely to drop and may prompt researchers to find ways to reduce attrition.

Test Differences Across Samples. The assertion that managers make decisions differently than undergraduate students is face valid and some studies have shown this to be accurate (e.g. Cosier & Rechner, 1985). However, there are reasons business students are appealing participants: they have knowledge of business, they are relatively homogenous, and they are easily accessed. In my review, I did not see comparisons across samples, leading to the question: what are the specific ways that more experienced managers differ from undergraduate or MBA students? We can begin to answer that question when more studies consider theory testing across samples and statistically testing for differences. Thus, the basic recommendation is

that researchers do test and report results across samples so that conclusions can be drawn on the generalizability of strategic management experiments.

Recognize Limitations Up-front. There is still a strong bias against randomized controlled experiments in strategic management for reasons discussed above. This will be an enduring limitation until researchers can show strong convergence between laboratory and field results. As such, I recommend that researchers acknowledge up-front the limitations in either their introductions or, at least, in their discussion sections. Here is a basic template that was recently used and can form a base going forward.

> *Our laboratory setting and use of experimental methodology allowed us to disentangle the relative and interaction effects of the causal mechanisms underlying decision making in strategic alliances, but at some cost of realism incurred by our need to abstract away from the confounding issues that are clearly relevant in actual strategic alliances undertaken by corporations in the real world.* (Agarwal et al., 2010: 430)

Automate as Much as Possible. The effect size in strategic management experiments may be lower than that observed in typical psychology laboratory experiments. Sample size is therefore critical. Thus, the more that can be automated, the more standardized it becomes and the more researchers can focus on getting participants into the lab and shepherding them through the process. Also, consistency in the study is vital—participants should all receive emails at certain times, surveys at certain times, etc. Automating such details can help increase consistency and internal validity as well as maintaining IRB compliance.

Psychological realism. Colquitt (2008: 618) notes that the psychological realism— capturing the "intended essence" of the constructs of interest—of an experimental investigation is critical for organizational researchers, especially those wishing to publish in the field's top

journals. He points to three factors that can increase psychological realism: using real situations, engrossing manipulations and tasks, and real stakes. These are difficult hurdles to overcome in strategic management. Given the variability and ambiguity of information and decisions executives make (Finkelstein et al., 2009), replicating real situations executives face can be daunting. Based on the literature review, I recommend that researchers focus on decisions that mirror actual strategic implementations. For example, Wally and Baum (1994) asked participants to make investment decisions following various scenarios. Creating engrossing manipulations and tasks is an area in which strategic management experimenters can excel. In the practice of strategic management, the types of decisions executives make and the information they use can be exciting and challenging. Audia et al. (2000), for example, created a business simulation that allowed participants to manage a simulated company. Finally, the recommendation to use real stakes can be achieved by having the benefits associated with participation contingent on performance in the experiment. Moore et al. (2007) had participants make entry decisions with different potential monetary payouts. Overall, while psychological realism will always be a challenge in strategic management experiments, best practices can be used to overcome or mitigate some of these challenges.

Business Strategy Games

Simulation games, specifically war games, have been played for almost 4,000 years (Wilson, 1968). Business simulation games, though, began to appear in the 1950s (Keys & Wolfe, 1990). In 1990, Keys and Wolfe started the section of their manuscript titled "Management Games as Research Laboratories" with a statement from Bass (1964). Now, 26 years after Keys and Wolfe—and over 50 years after Bass—that quotation bears repeating:

The typical game is not the tool with which to test specific individual cognitive processes, one-by-one, any more than a pilot plant is usually necessary to test a specific chemical reaction, or a wind tunnel is necessary to test the tensile strength of a particular alloy. It is when we no longer trust the test tube findings of several interrelated processes or the simple stress tests of the alloy, that we build the pilot plant or we put the alloy into a specific wing structure to try a "property-rich" simulation. Thus, we argue that the game becomes the recommended experimental procedure when we want to examine questions about the organizational mix, particularly of real men, processes and materials as they interact. When no simple experiment with all-but-one variable held constant will provide the answers we seek, it will be profitable to simulate the organization. (Bass, 1964: 547–547)

Even as we consider the manipulations in strategic management games to be simple, the overall process of completing one is not. The number of decisions that are needed from round-to-round and their interconnectedness make the experiment complex. Also, the manipulations may be subtle or overt—either way, using the recommendations above, researchers may be able to make the complex business simulation game relevant to their research.

CHAPTER 6: STUDY 1, VERBAL PROTOCOL ANALYSIS

The first study completed was a verbal protocol analysis (Barber & Wesson, 1998) of the

software developed by Rampant Strategy and inductive exploration of decision making. The

purpose of this test was to 1) identify software bugs and allow the developer to fix technical

issues, 2) assess the efficacy of distinct manipulations, and 3) identify trends in participant

decision making through the simulation.[9]

Sample

Twenty undergraduate business students at the University of Georgia participated in the

verbal protocol analysis.

Simulation Design

The simulation is an online portal through which participants make strategic decisions

over several rounds. Participants played for six rounds and were allowed ten minutes to complete

each round. In each round, participants allocated resources among six categories: new product

research and development, existing product research and development, property plant and

equipment, human resources, sales programs, and mergers and acquisitions. They were given

100 points to be allocated among the categories in each round. All points had to be allocated;

none were held over from round to round.

This was an individual simulation in which I led participants to believe that they were

competing against other students at other comparable universities. This allowed me to build in

---

[9] In a later chapter, this study highlights how strategic management experiments—with their
consistency in situations—can be used to develop new, grounded theory. In the current chapter,
however, I describe the overall design and results of the verbal protocol analysis.

perceived competition and increase the simulation's realism. I also led participants to believe that their decisions influenced their firm's performance and media coverage, but I randomly assigned participants into particular conditions. Specifically, a 3 (poor, average, and strong performance) x 3 (negative, neutral, and positive media tenor) set of conditions was used.

There are five screens in the simulation: a dashboard, company financials, media coverage, decision, and surveys. Figure 2 shows a screenshot of the simulation's dashboard. It provides a snapshot of the performance of all companies, the headlines of the media, links to the financial statements, and buttons to make and submit decisions for the current round.
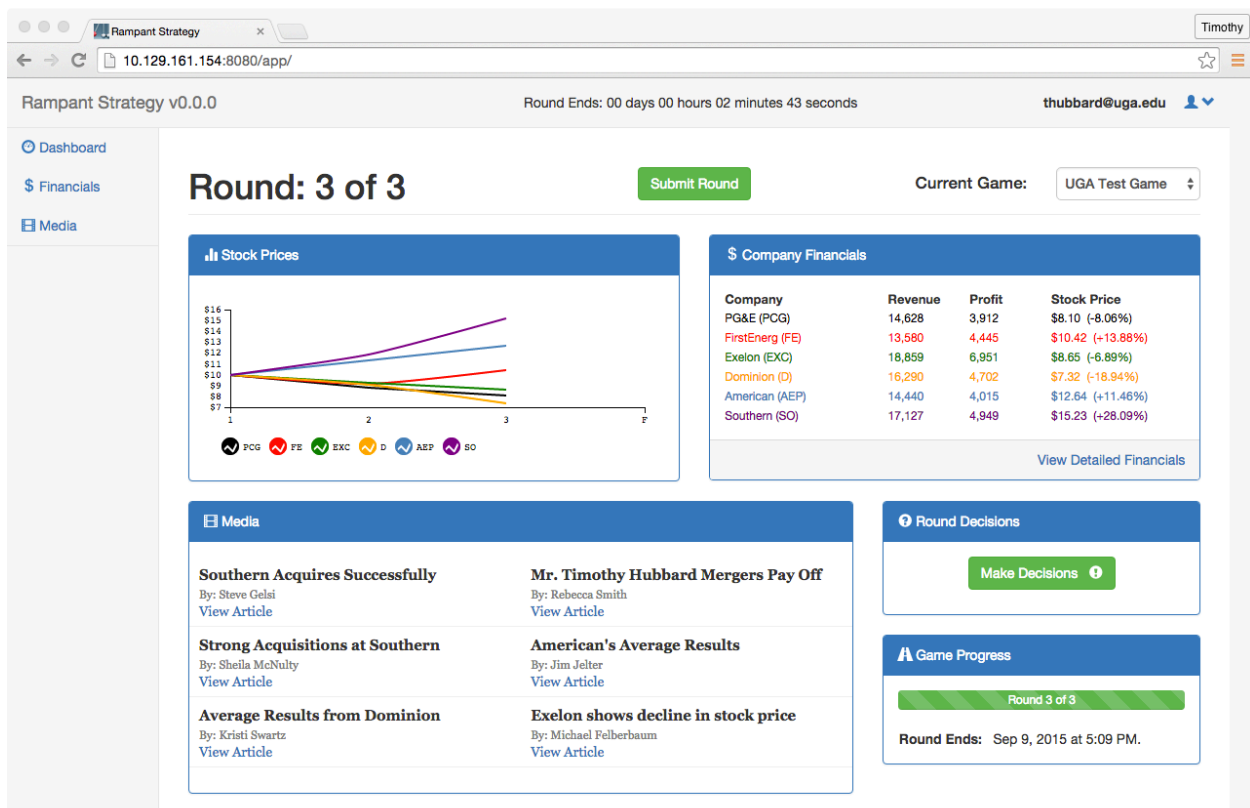
Figure 2: Screenshot of Simulation Dashboard

Procedure

Subjects participated in the laboratory experiment behind a two-way mirror so they could be observed as they progressed through the simulation. They were outfitted with a lapel microphone and had their voice recorded throughout. Participants were asked to comment out loud about how the simulation software was working and what they were thinking as they processed information and made decisions as they played. This allowed us to assess the simulation software without concern for recall bias (March & Sutton, 1997). Audio files were transcribed and used for both software development and inductive theory development purposes, as will be discussed in Chapter 9.

Manipulations

Two randomized manipulations were used in the simulation: 1) media coverage tenor and 2) firm performance. Each had three levels, creating a 3x3 experimental design.

The media articles provide positive, neutral, or negative tenor without containing other information that might influence the participants. For example, if there was positive media coverage about a particular decision—say investment in research and development—there were equal numbers of positive articles about other decisions—such as human resources. Thus, subjects were not able to draw a correlation between a specific decision and performance. Further, I inserted the participant's real name and school to increase the realism and credibility of the media coverage. Participants were led to believe that all the participants saw the media coverage—thus, everyone would see their positive, neutral, or negative media coverage.

In the first round, participants were provided six media articles, which portrayed expectations that they were going to do well in the game. Here is an example of the first round media:[10]

Article Title: High Expectations for Frank Ruffalo

Article Body: There are very high expectations for each team going into the first round. There are a number of different strategies that teams can use. We are excited to see what Frank Ruffalo chooses to do at the University of Georgia.

After the initial round, eight articles were provided in each round. Three articles were about the participant, while the other five were about other teams. Table 4 provides examples of each tenor of media coverage.

Table 4: Example Media Coverage from Study 1

Media Tenor	Example Media	
Positive	Title:	University of Georgia Has Highest Stock Price, Frank Ruffalo Commended
	Body:	Frank Ruffalo made bold decisions this round to propel University of Georgia to new levels of performance. Investors and directors alike heralded Frank Ruffalo, the CEO of University of Georgia.
Neutral	Title:	Frank Ruffalo Maintains Performance at University of Georgia.
	Body:	University of Georgia delivers consistent stock performance in the first round of competition. Frank Ruffalo is personally credited for their strategic decisions. The board of directors of University of Georgia is ambivalent about the performance.
Negative	Title:	University of Georgia's Performance Continues To Be Poor, Frank Ruffalo Rejected
	Body:	Again, Frank Ruffalo delivered poor results for University of Georgia. Their revenues, profits, and stock price all sank last year, missing expectations of both investors and directors.

Note: University of Georgia and Frank Ruffalo are examples of how a participant's name and school are piped into the media to increase realism and social pressure.

A random name generator produced the names for fictional authors of the articles in order to increase realism.

---

[10] The participant's real name and school were piped into the article. Frank Ruffalo is a fictious name at the University of Georgia is used in this example.

Firm performance was the next manipulation. By manipulating firm performance, I could observe the participant's actual response to performance. This differs from a number of other simulations where performance is observed, rather than randomly assigned (e.g. Audia et al., 2000). The random assignment in this simulation allows for observation of the exogenous effect over time. Figure 3 shows the three financial conditions assigned to participants.
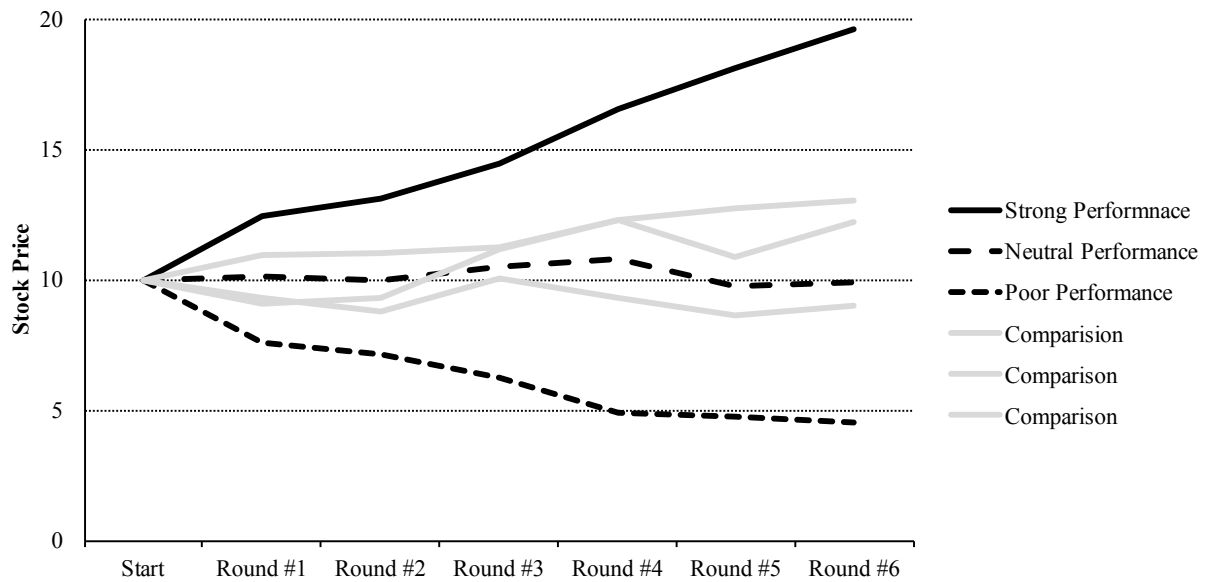
Figure 3: Firm Performance Conditions

Financial statements were based on ratios that were benchmarked from the company stock price. That is, each line of the financial statement was a specific multiple of the stock price. This removed the ability for participants to "learn" from the financial statements, as all the ratios were held constant. Thus, the design allowed me to observe the true changes in strategy based off randomly controlled feedback rather than another unobserved variable.

Measures

The simulation was constructed such that participants could be surveyed at multiple points of the game, including a baseline survey when they signed up, a short survey after they submitted decisions in a round, and a final survey after completing the simulation.

In this initial study, several measures were selected for two primary purposes: first, scales were selected based on length, to determine how long a survey can be at various points in the next iteration of the game and, second, they were selected to inform the inductive part of the study. The baseline survey measured the Big 5 personality traits as well as cognitive ability, narcissism, pride, and exploration. Identifying information including name, university identification number, and university email address were collected to give participants credit for participation. Participants' expectations about their performance were collected after submitting decisions in each round. Affect was measured after the third round.

Personality was measured using the Big 5 personality factors scale developed by Saucier (1994). This survey measured the participants' extraversion ($\alpha = 0.83$), neuroticism ($\alpha = 0.77$), openness to experience ($\alpha = 0.55$), agreeableness ($\alpha = 0.69$), and conscientiousness ($\alpha = 0.53$).

Cognitive ability was measured as the participants' grade point average, SAT score, and ACT score. These were collected in case further detail on cognitive ability was needed later.

Narcissism was measured using the 13-item NPI-13 scale (Gentile et al., 2013). Sample comparison items for the NPI-13 include: "I find it easy to manipulate people" versus "I don't like it when I find myself manipulating people," "I like having authority over other people" versus "I don't mind following orders," and "I insist upon getting the respect that is due to me" versus "I usually get the respect I deserve." The alpha for this scale in the inductive study was 0.69 (Chronbach, 1951).

Pride was measured using 14 items (Tracy & Robins, 2007) with terms such as "Snobbish," "Accomplished," "Arrogant," and "Confident." This scale had an alpha of 0.89 in my sample.

Exploration was measured using a 17-item measure developed by Green and Campbell (2000) with items such as "If had the time and money, I would like to travel overseas this summer," "I would enjoy being introduced to new people," and "I would like to try bungee jumping, skydiving, or other adventurous activities." This scale had an alpha of 0.87 in my sample.

Affect was measured using 10 items of the PANAS-X scale that are associated with the general dimensions of positive and negative affect (Watson & Clark, 1999). Sample items include "nervous," "attentive," "excited," and "distressed."

Performance expectation asked participants, "Based on your decisions, please rate how you expect your performance to be" after submitting decisions each round.

Bugs Resolved and Technological Improvements Resulting from Study 1

Several technical improvements followed Study 1; I outline three here. First, we added the ability to test a game without being constrained by the round timer. This improvement allows researchers to test each round of the game to ensure that all the parameters and data are set correctly. Second, we added the ability of participants to schedule themselves to play. When they finish the registration survey, they are presented with a list of available times. This removes the need for the investigators to manually schedule times with participants, while maintaining realism. Third, random assignment was automated. Following Study 1, the next studies allow for one unique registration code to be given to each participant. When a code is submitted,

participants are automatically and randomly assigned a specific condition. Again, this feature

reduces manual work by the principal investigator.

CHAPTER 7: STUDY 2, REFINED PROTOCOL ANALYSIS

Following Study 1, Study 2 is an effort to further test and build out the software, assess the manipulations, and begin to hone in on the role of future studies. Several changes were made between Study 1 and Study 2.

Methodological and Content Changes from Study 1

Based on analysis of Study 1, several changes were made to the methodology and content in Study 2. These adjustments responded to the results of Study 1 and the lessons learned from observing the participants.

Introduction and Manipulation of Core Self-Evaluation. The first major change in Study 2 is the manipulation of core self-evaluation. One of the key features of randomized controlled experiments is that non-manipulated independent variables are empirically controlled for (Cook & Campbell, 1979; Shadish et al., 2002). This is typically important for removing potential confounds that are characteristic of the participants. In my case, though, I wished to measure the effect that core self-evaluation—a personal trait—has on outcomes. Thus, one key change between Study 1 and Study 2 is the introduction of a manipulation of core self-evaluation. As discussed in the literature review, I expect that CSE will fluctuate based on situation, similar to other personality traits—such as emotional stability (Fleeson, 2007). I contend that manipulating core self-evaluation was important to increasing the study's internal validity. I was not aware, however, of an established way to manipulate this variable, so I chose to develop a procedure to induce higher or lower levels of core self-evaluation. I modeled my manipulation of CSE off a method used by Fast et al. (2009) to manipulate power. In their study,

they applied the following method to induce high and low levels of power within individuals (Fast et al., 2009: 503):

> *Those in the high-power condition were instructed to recall and write about an incident in which they had power over other people, whereas those in the low-power condition were instructed to write about an incident in which someone had power over them (see Galinsky et al., 2003).*

When compared to power, the manipulation of core self-evaluation is more complicated because core self-evaluation is based on four underlying factors: emotional stability, self-esteem, generalized self-efficacy, and locus of control. Thus, I had to induce high or low levels of each of these four components to try to create a change in the overall variable. So, similar to Fast et al. (2009), I asked participants to write two-minute responses to a set of prompts (specifically: "Recall and write about an incident in which…"). Participants filled out four stories aligning with each dimension of CSE. Table 5 provides the actual prompts used in Study 2. The high core self-evaluation prompts included, for example, "…you were free from anxiety" and "…you succeeded at a task." The low core self-evaluation condition represented their opposites.

Table 5: Manipulation of Core Self-Evaluation

Participants will be asked to: "Recall and write about an incident in which…"

	Low Core Self Evaluation	High Core Self Evaluation
Emotional Stability	…you were very anxious.	…you were free from anxiety.
Self Esteem	…you felt unworthy.	…you felt worthy.
Generalized Self-Efficacy	…you failed at a task.	…you succeeded at a task.
Locus of Control	…life events felt outside your control.	…life events felt inside your control.

CSE was manipulated in the simulation software just before participants started playing. I measured CSE directly after the manipulation to assess the efficacy of the procedure. The

inclusion of this manipulation increases the internal validity of the study and increases the causal connection between core self-evaluation and the other constructs I test in this study.

Changes in Experimental Conditions. Having manipulated core self-evaluation, I grew concerned about the number of experimental conditions and the large number of participants that would be required to complete the experiment in order to provide enough power to detect a result. The first study included 9 conditions: 3 levels of performance and 3 levels of media. After the inclusion of core self-evaluation, instead of 18 conditions (2 CSE, 3 levels of performance, and 3 levels of media), I chose to set the number of conditions to 8 (2 levels of CSE, 2 levels of performance, and 2 levels of media). This was achieved by removing the average performance and neutral media coverage conditions. Future studies could investigate the neutral conditions, but the sample size required to achieve an appropriate level of power make it infeasible in the current study.

Changes to Media Articles. I made several changes to the media articles. First, I aligned the content better between the experimental conditions. In this second study, I had the exact same wording across each of the variations and only changed the tenor words between each of them. This was one benefit that resulted from the reduction of the number of media articles from nine different conditions to four conditions. Second, I removed any discussion of the actual strategic decisions. This made it simpler to ensure that the media articles do not provide any specific information that may lead participants to change their strategies—aside from the tenor. This adjustment was intended to improve the internal validity of the connection between media tenor and the dependent variables.

Methods

  Sample. 144 undergraduate business students were recruited from the University of

Georgia. Errors in initial game setup prevented twelve participants from playing. Of the 132

students that gave consent and completed the registration survey in the system, 24 did not play at

their scheduled time and 14 submitted fewer than four rounds. A logistic regression predicting

the likelihood of playing is shown in Table 6.

Table 6: Logistic Regression Predicting the Likelihood of Participating After Registering

Variables	Model 1
Age	−0.15
	(0.19)
GPA	0.86
	(0.62)
Gender (1 = female)	−1.24*
	(0.60)
Extraversion	−0.32
	(0.27)
Conscientiousness	−0.23
	(0.30)
Agreeableness	0.81**
	(0.27)
Neuroticism	0.11
	(0.29)
Openness	0.15
	(0.26)
Political Ideology	0.08
	(0.33)
Core Self-Evaluation	0.30
	(0.92)
Narcissism	0.11
	(0.09)
Intuition	0.13
	(0.27)
Constant	1.63
	(4.69)
Observations	131

The results show that being female has a negative effect on the likelihood of playing ($\beta = -1.24$, $p < 0.05$) and agreeableness has a positive effect ($\beta = 0.81$, $p < 0.01$). The other factors measured in the registration survey did not have a statistically significant effect.[11] Although all participants were provided the prompts to participate in the core self-evaluation manipulation, nine participants did not write anything, choosing not to participate. This left 85 participants who played four rounds or more and participated at some level in the CSE manipulation. The mean age for the sample was 21.16 years, 29% were female, and the participants had an average of 2.48 years of work experience. Only eight participants disclosed that they had heard about the experiment before participating; after reviewing the descriptions of what they heard, five of those eight referred to my introduction to the study in their class. The other three noted: "it is a fun game vs other student"; "one of my friends took it. He said it was challenging but interesting"; and "nothing too much other than I would be competing against other universities in a stock simulator." I chose to keep those eight in the sample because I did not feel they were compromised. The breakdown of the sample sizes in each condition are shown in Figure 4, which shows that the count of participants in each cell ranged from 5 to 10.

Measures.

Core Self-Evaluation. I measured Core Self-Evaluation (CSE) using the Judge et al. (2003) 12-item CSE scale. This short measure of CSE includes items such as "I am confident 1 get the success I deserve in life" and "I am capable of coping with most of my problems." In my sample, this measure had an α of 0.83.[12]

---

[11] Discussion around the issue of non-participation and attrition is covered in the lessons learned from Study #2, highlighted in Table 3.

[12] Some studies have shown that narcissism and CSE are strongly negatively correlated (e.g. $\rho = -0.51$, $p < 0.01$; Resick et al., 2009). In my sample, I do not find them to be correlated ($\rho = -0.04$, n.s.).
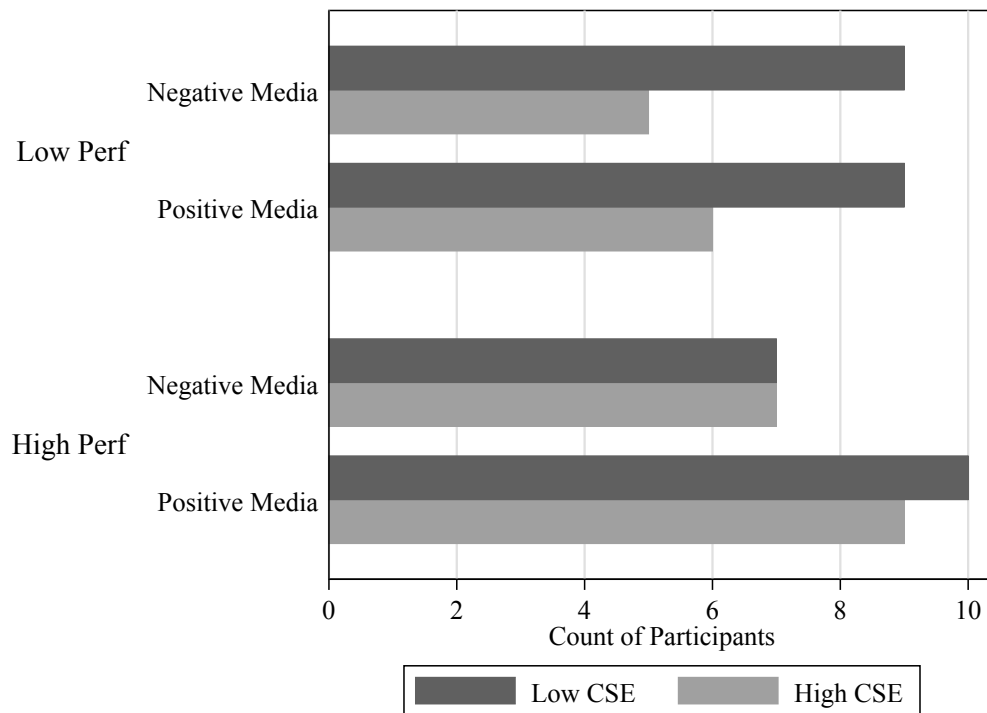
Figure 4: Distribution of Participants Across Experimental Conditions

I also measured each of the four factors that reflect CSE. First, locus of control was measured using the internality sub-scale of the Levenson (1981) scale. This eight item scale included "I can pretty much determine what will happen in my life" and "My life is determined by my own actions." This scale had an α of 0.68 in my sample. Second, generalized self-efficacy was measured using eight items developed by Chen, Gully, and Eden (2001) including items such as "I will be able to successfully overcome many challenges" and "Even when things are tough, I can perform quite well." This scale had an α of 0.92 in my sample. Third, self-esteem was measured using the Rosenberg (1965) 10-item measure which included items such as "I feel that I'm a person of worth, at least on an equal plane with others" and "On the whole, I am

satisfied with myself." This scale had an α of 0.85. Finally, fourth, emotional stability was measured using the neuroticism subscale of the Saucier (1994) Big 5 personality scale. Sample items included rating the following words: envious, temperamental, and jealous. This scale had an α of 0.58 in my sample.

Manipulation Checks. I used three manipulations in the second experiment: the performance of the firm, the media coverage about them, and their core self-evaluation. I used multivariate analysis of variance (MANOVA) to examine whether my media coverage and performance manipulations were effective. Results showed that the main effects of the media and performance manipulations were significant, but not the core self-evaluation manipulation ($p = 0.23$). One-way ANOVAs then tested the individual differences. For the media coverage manipulation, participants were asked to "Please rate how much you agree with the following: The media coverage of my firm was positive" with rating 1 = Strongly Disagree and 5 = Strongly Agree. Those in the positive media condition responded higher to this item ($M = 4.05$) than those in the negative media condition ($M = 1.52$; $F [1, 82] = 113.27$, $p < 0.01$). For the performance manipulation, participants were asked to "Please rate how much you agree with the following: The financial performance of my firm was strong" with rating 1 = Strongly Disagree and 5 = Strongly Agree. Those in the positive performance condition responded higher to this item ($M = 4.65$) than those in the negative media condition ($M = 1.56$; $F [1, 82] = 251.33$, $p < 0.01$). Regarding the manipulation of the participants' core self-evaluation, only one inducement was completed when it was assessed—the writing task. Therefore, t-tests were appropriate. When considering all participants, no material differences were found (difference = 0.051, $p = 0.40$), however there was not a baseline amount of writing required in the manipulation. Indeed, some participants wrote nothing at all. So, I sought to find the appropriate amount of participation in

the manipulation that would 1) include as many participants as possible, while 2) ensuring a successful manipulation. I conducted t-tests with different cutoffs of total characters typed into the writing task starting at 0 characters (all participants) and ending at 1600 characters (only 5 participants). The results of this sliding scale are shown in

Table 7 and are plotted in Figure 5. The figure shows a general trend that the more a participant wrote, the greater the effect of the manipulation. I chose a cutoff of 600 which allowed me to retain 62 participants while seeing a meaningful manipulation. So, even though the mean level difference between the cutoffs appeared large, I continued my analyses with those participants who wrote more than 600 characters in the manipulation and disregarded those that participated less. For comparison, 600 characters is about a half-page of writing.

Table 7: Assessing the Manipulation of CSE Based on Character Count of the Manipulation

Word Count Cutoff	Sample 1	Sample 2	Mean 1	Mean 2	Mean Difference	(p-value)
0	47	38	0.013	-0.038	0.051	0.400
100	47	37	0.013	-0.036	0.049	0.422
200	44	36	0.010	-0.032	0.042	0.509
300	43	35	0.015	-0.026	0.041	0.521
400 (25th percentile)	41	33	0.029	-0.032	0.061	0.359
500	37	31	0.024	-0.038	0.062	0.371
600	35	27	0.034	-0.057	0.090	0.225
700	33	26	0.042	-0.077	0.119	0.115
800 (50th percentile)	31	23	0.045	-0.087	0.132	0.099
900	27	19	0.041	-0.060	0.101	0.239
1000	24	14	0.017	-0.081	0.099	0.320
1100	22	12	-0.009	-0.059	0.050	0.642
1200	18	10	0.002	-0.111	0.113	0.315
1300 (75th percentile)	17	6	-0.004	-0.143	0.138	0.329
1400	11	4	0.074	-0.281	0.355	0.028
1500	5	4	-0.016	-0.281	0.265	0.100
1600	3	2	0.015	-0.447	0.463	0.122
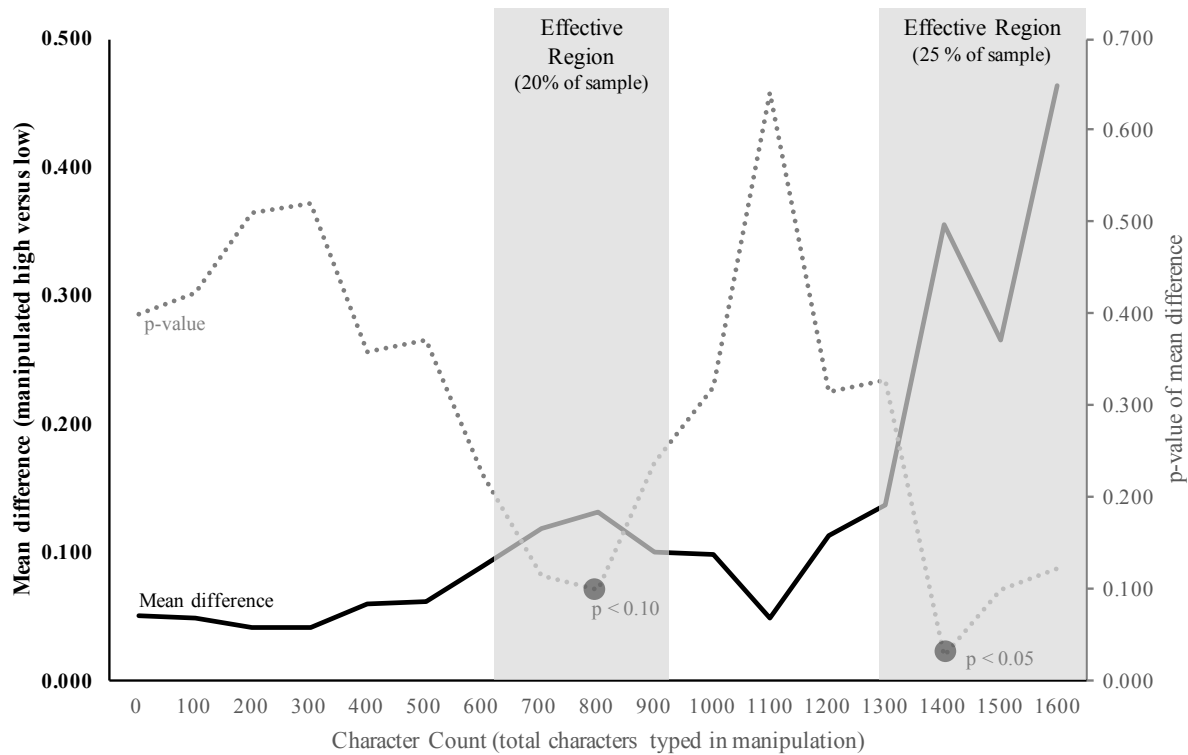
Figure 5: Plot of the Strength and Significance of the Manipulation of CSE

Discussion

Study 2 provided a wealth of information that was used to improve the quality of Study 3. While not used for hypothesis testing, it served an important purpose, namely to increase the efficacy of manipulations, measures, and participant throughput. That is, the results of this study meaningfully informed the design of Study 3, where I formally tested the hypotheses.

CHAPTER 8: STUDY 3, HYPOTHESIS TESTING ACROSS SAMPLES

Study 2 revealed several positive results and lessons learned. There were, however, a number of

changes necessary to improve the procedures and technology being used to test the relationships

that were observed in the inductive study and refined in Study 2. I now review the changes for

Study 3.

Procedure Changes

Adjust the media coverage content. Several changes were made to the media employed

in Study 2 in order to strengthen the manipulation and increase the realism. Specifically, I

changed the content of the media to match prior theory developed by Hayward et al. (2004) on

how CEOs internalize media coverage. First, I tailored the articles to provide "evidence of

distinctive and/or consistent action and successful [or unsuccessful] performance observed by

journalists" (Hayward et al., 2004: 648). Furthermore, these media accounts attributed firm

actions and performance to "CEO volition" (Hayward et al., 2004: 648). Based on their theory,

these changes should have helped participants internalize their media coverage. Actions can be

framed as "distinctive" in two ways: first, they can differ from those exhibited by other firms in

the same industry and, second, they can depart from prior actions by the firm. Regarding

consistency, there is a concern that distinctive actions in isolation may be more attributable to a

specific situation than to the CEO's disposition. When distinctive actions become the norm, they

represent a stable stream of evidence that the actions are attributable to the CEO (Hayward et al.,

2004). This stream of evidence is easier for executives to internalize. One important feature of

the media articles was their focus on the disposition of the executive; dispositional media

accounts are "easier for audiences to understand, appreciate, and internalize" (Hayward et al., 2004: 642).

Specifically, I dynamically created content based on the experimental condition and the actual decisions that were made. Following Study 2, the ability to build in custom code for dynamically creating the media content was added to the research platform to help accommodate these changes. Examples of the different media statements dynamically generated are shown in Table 8.

Table 8: Sample Articles to be Dynamically Generated in Study 3

Dimension	Example Media Statement
Distinctive Actions	Large investment in one category
	Even investment across categories
	Different investment strategy than seen across the firms
	Changing strategy from prior period
Consistent Actions	Consistent strategy for 3 rounds
	Changing strategy over 3 rounds
CEO Disposition	CEO quality is lacking
CEO Volition	CEO choices led to results

Finally, I randomized the order of the media articles in each round in order to better engage the participant in the media coverage by requiring them to read more articles to find those about themselves, as opposed to the procedure in Study 2 in which their media was always presented first.

Strengthen the CSE manipulation. In Study 2, I observed a statistically significant manipulation of CSE in certain participants, primarily based on their engagement with the manipulation. Using the results of the t-test in Study 2, which looked at the differences in mean CSE based on the manipulation (four 2-minute written responses, each focusing on one of the four dimensions of CSE), a power analysis showed that there was inadequate power based on the final sample size ($\beta < 0.80$). Strengthening the CSE manipulation and increasing the engagement

with the task are two ways to increase the success of the manipulation and influence the sample

sizes in Study 3. To determine the minimum sample size needed, I ran a series of power analyses

based on key cutoff points of participant engagement determined in the assessment of the CSE

manipulation (results are shown in Figure 6). The power analyses were conducted with

differences in standardized means using the *power* command in Stata 14 ($\beta = 0.80$, $\alpha = 0.05$,

two-sided). In general, the results show that strengthening the manipulation will have a

significant effect on the sample size needed. I used the length of writing as the primary

mechanism for strengthening the manipulation. At a baseline, if I used the current cutoff of 600

and the mean difference in the manipulation were to remain the same, I would need a sample of

330 participants (165 in each condition). The necessary sample size drops off considerably with

the increase in required character count. At a cutoff of 800, only 158 participants are needed. If,

however, I could get the strength of the manipulation up to the levels seen in Study 1 at a 1,400-

character count, I would need a sample of only 24 to detect the manipulation. Thus, increasing

the strength of the manipulation is important for working with smaller samples.

Estimated total sample size for a two-sample means test

t test assuming $\sigma_1 = \sigma_2 = \sigma$

$H_0: \mu_2 = \mu_1$ versus $H_a: \mu_2 \neq \mu_1$

Parameters: $\alpha = .05$, $1-\beta = .8$, $\mu_1 = 0$, $\sigma = 1$
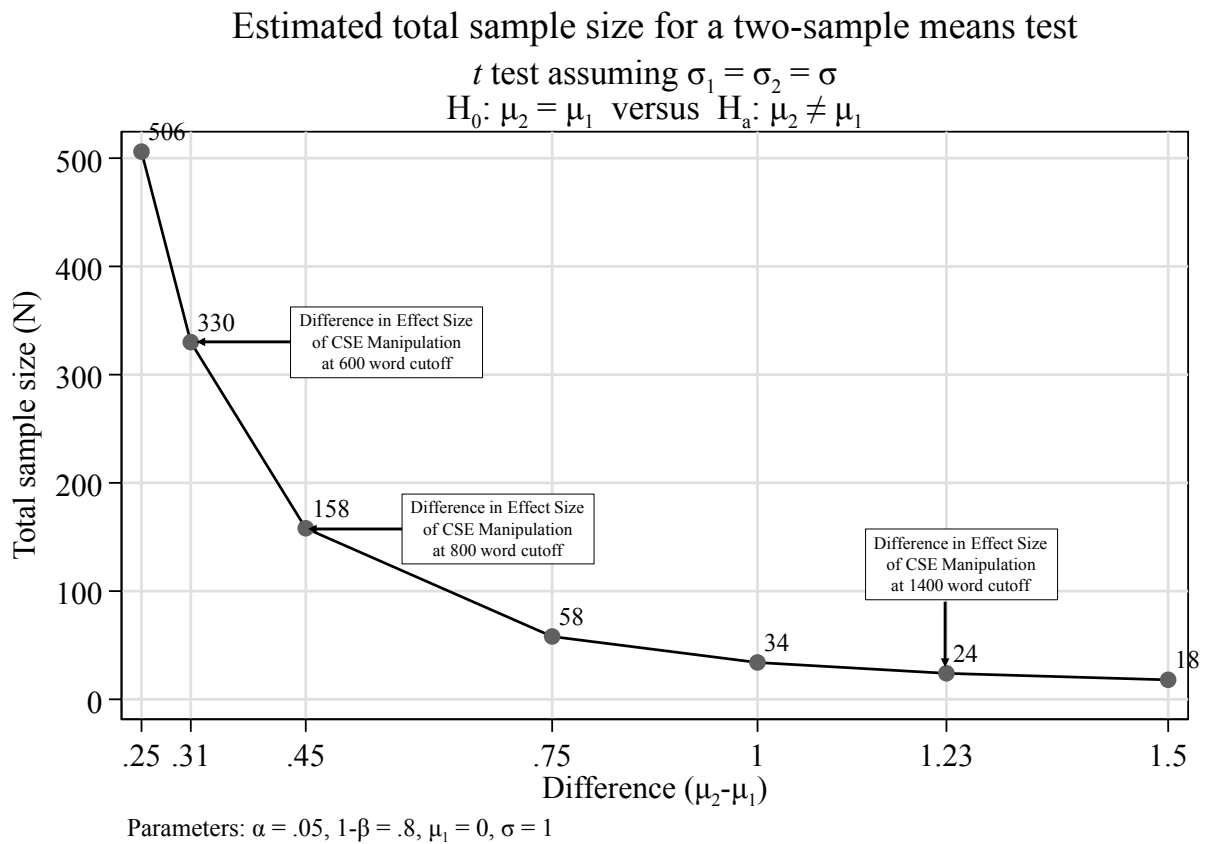
Figure 6: Power Analysis Based on CSE Manipulation Strength

I made three changes to the CSE manipulation to increase its strength. First, I required a character count equal to 800 overall, approximately 150 words. This equates to a participant typing at approximately 20 words per minute. This required a character count at the bottom of the prompt and a signal to participants when they met the required length of response. Second, I changed the prompt to ask participants to ignore punctuation and spelling. That instruction was aimed at maintaining a higher typing speed and allowing for a more free-flowing stream of ideas. Third, I updated the CSE scale measure to make it more proximal. That is, I changed the temporal references in the scale items. For example, "Sometimes I feel depressed" becomes "At this moment, I feel depressed." This change acknowledges that I am priming "state" core self-

evaluation, or the momentary activation of CSE, rather than actually manipulating the trait. Table 9 provides the updated scale with the original for comparison.

Table 9: Updated CSE Scale

	Original CSE Items	Updated CSE Items
1.	I am confident I get the success I deserve in life.	Right now, I am confident I get the success I deserve in life.
2.	Sometimes I feel depressed.	At the moment, I feel depressed.
3.	When I try, I generally succeed.	My current sense is that, when I try, I generally succeed.
4.	Sometimes when I fail I feel worthless.	Here and now, I worry that I feel worthless when I fail.
5.	I complete tasks successfully.	At this point, I believe that I complete tasks successfully.
6.	Sometimes, I do not feel in control of my work.	Currently, I do not feel in control of my work.
7.	Overall, I am satisfied with myself.	Right now, I am satisfied with myself.
8.	I am filled with doubts about my competence.	At the moment, I am filled with doubts about my competence.
9.	I determine what will happen in my life.	My current sense is that I determine what will happen in my life.
10.	I do not feel in control of my success in my career.	Here and now, I do not feel in control of my success.
11.	I am capable of coping with most of my problems.	At this point, I am capable of coping with most of my problems.
12.	There are times when things look pretty bleak and hopeless to me.	Currently, there are times when things look pretty bleak and hopeless to me.

I would like to thank Jason Colquitt for this specific recommendation.

Changes in Sample Composition. Study 2 was completed using undergraduates at the University of Georgia. Undergraduate participants were an appropriate sample for Study 2 considering the goals of the study. In Study 3, however, three samples were used. First, another sample of undergraduates was used to test the overall relationships and manipulations. Second, a sample of professionals was used. This sample was recruited from Amazon's MTurk. Its purpose was to test the relationships on a population of working professionals. Third, a sample of full time, fast track, and executive Masters of Business Administration (MBA) students was used. This group has considerably more overall and management experience. One key benefit of testing across three different samples is that I am able to test for systematic differences in

strategic decisions across them. This will help provide evidence of the appropriateness of using undergraduate, professionals, or MBA students in such experiments. Each sample consisted of a minimum of 160 participants—20 per each of the eight conditions.

Procedure Changes to Increase Engagement. One key issue that came out of Study 2 was the relatively poor level of engagement among participants. I saw my sample size drop from 144 undergraduate students to 62 after removing those who did not participate, didn't participate enough, or didn't meaningfully engage in the CSE manipulation. I made three key changes specifically focused on increasing engagement.

First, I developed a better introduction video. The video moved beyond just showing a walkthrough of the software. It starts with a short high-level video in which I introduce the simulation and discuss its importance. Afterwards, the walk-through was similar, but highlighted certain points[13]: 1) multiple participants are playing at the same time, 2) submitting the rounds on time is required, 3) each round is 8 minutes, and 4) participants must start at on time. Second, beyond the changes in the video, I introduced a quiz to test whether participants have learned the ground rules for the simulation. This five-question quiz allowed participants as many opportunities as needed to answer the questions until they get them all right. Those five questions are shown in Table 10.

Table 10: List of Quiz Questions for Study 3

	Question
1.	I must click the submit button and submit my decisions before the timer runs out each round.
2.	How long is each round?
3.	What happens if you don't submit your decisions on time?
4.	How many people will I play against?
5.	What time are you scheduled to play?

[13] These points were addressed in the introductory video for Study 2, but perhaps not emphasized enough.

Finally, I placed software checks on participation. First, I changed the provision of benefits from the study based on participation. That is, I stage-gated the benefits. Instead of receiving full credit for any participation, participants received credit based on whether they fill out the registration survey and whether they finish the experiment. Second, if participants didn't log in at their assigned time, they were not able to start late. Instead, they went back to an "unscheduled" status. Finally, they were stopped from continuing if they didn't submit a round.

Overall, Study 3 was a refinement in the method to fully test the relationships proposed and examine the differences across samples. Figure 7 provides a visual representation of the timeline of the procedure used in Study 3. The baseline survey is comprised of the scales listed in Table 11.

Sample

Study 3 was conducted to test the hypotheses laid out in the theory chapter above. Three samples were used: a sample of 205 undergraduates from the University of Georgia, a sample of 160 professionals from Amazon's MTurk, and a sample of 174 MBA students from the University of Georgia. This resulted in a total sample of 539 participants having fully completed the experiment in Study 3. The sample characteristics are provided in Table 11. Two characteristics are notable. First, the ages and work history are markedly different. Second, the trait core self-evaluations of professionals were lower than those of business students. There was also more variance in CSE in the professionals (s.d. = 13.93) compared to the students (s.d. for undergraduates = 9.48, s.d. for MBAs = 11.87).
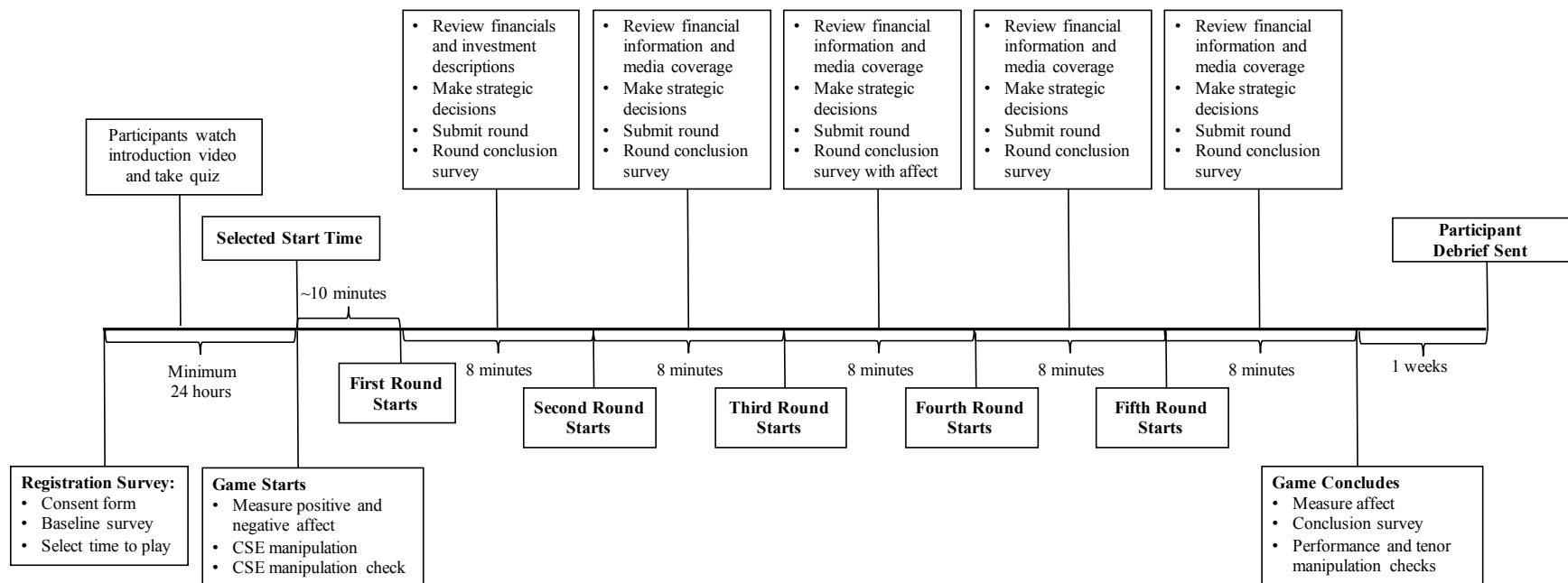
Figure 7: Study 3 Procedure Timeline

Table 11: Mean Sample Characteristics

Variable	Undergraduates	Professionals	MBAs	Combined
N	205	160	174	539
Age (years)	20.4	37.5	30.7	28.8
Female	36.9%	53.1%	38.5%	42.2%
Experience (years)	2.4	16.0	8.0	8.2
Race				
Caucasian	163 (79%)	131 (82%)	105 (60%)	399 (74%)
African American	9 (4%)	12 (8%)	31 (18%)	52 (10%)
Asian/Pac Island	19 (9%)	5 (3%)	20 (11%)	44 (8%)
Hispanic	11 (5%)	10 (6%)	11 (6%)	32 (6%)
Other	3 (1%)	2 (1%)	7 (4%)	12 (2%)
Personality				
Core Self-Evaluation[a]	59.3	56.8	59.6	58.6
Extraversion[b]	37.2	32.0	39.4	36.3
Conscientiousness[b]	44.5	43.4	45.6	44.5
Agreeableness[b]	42.6	45.0	44.1	43.8
Neuroticism[b]	28.1	25.3	27.5	27.1
Openness to Experience[b]	41.3	40.9	41.6	41.3
Narcissism[c]	5.0	2.4	5.0	4.3
Self-Esteem[d]	39.0	36.3	40.3	38.6
Generalized Self-Efficacy[e]	32.6	31.1	34.0	32.6
Locus of Control[e]	28.6	29.9	28.9	29.1
Conservatism (overall)[f]	3.3	2.5	3.0	3.0
Conservatism (social)[f]	2.8	2.3	2.6	2.6
Conservatism (economic)[f]	3.7	2.8	3.4	3.3

Note: For race, "Native American" was also a choice, but nobody identified in that category across all samples.
[a] 12 items, 7 point scale, range 12–84
[b] 8 items, 7 point scale, range 8–56
[c] 13 items, 0 or 1 scale, range 0–13
[d] 10 items, 5 point scale, range 10–50
[e] 8 items, 5 point scale, range 8–40
[f] 5 point scale, 1 = "Extremely Liberal" 5 = "Extremely Conservative"

Manipulation Checks

Next, I assessed the efficacy of the three manipulations: firm performance, media tenor, and core self-evaluation. Table 12 provides the ANOVA tests comparing the high and low values of each manipulation. In each case, the manipulations appear successful. The changes in the CSE manipulation compared to the prior study—imposing a minimum character count and asking

participants to ignore punctuation—combined with refining the manipulation check to make it more proximal[14], seem to have made the influence stronger and the differences detectable.

Table 12: Manipulation Checks

Variable	Undergraduates	Professionals	MBAs	Combined
Mean Negative Performance	1.38	1.65	1.45	1.48
Mean Positive Performance	4.70	4.29	4.74	4.59
Significance of Difference	$F[1,203] =$ 1205**	$F[1,158] =$ 251**	$F[1,172] =$ 1267**	$F[1,537] =$ 2021**
Mean Negative Tenor	1.37	1.65	1.42	1.46
Mean Positive Tenor	4.75	4.62	4.51	4.62
Significance of Difference	$F[1,203] =$ 1147**	$F[1,158] =$ 354**	$F[1,172] =$ 684**	$F[1,537] =$ 2333**
Mean Low CSE	60.98	57.69	60.33	59.80
Mean High CSE	64.17	62.45	64.47	63.75
Significance of Difference	$F[1,203] =$ 519*	$F[1,158] =$ 905*	$F[1,172] =$ 742*	$F[1,537] =$ 2091**

Note: ANOVAs were used to test differences. CSE = Core Self-Evaluation, this was measured using the 'state' core self-evaluation scale.
 [†] $p < 0.10$
 * $p < 0.05$
** $p < 0.01$[15]

Hypothesis Testing

Hypothesis 1 predicts that core self-evaluation is positively related to decision speed. One-way ANOVAs indicate that both the undergraduate and MBA samples were influenced by core self-evaluation ($p < 0.05$ and $p < 0.01$, respectively); the professionals, however, were not influenced by CSE. MBA students make decisions 21 seconds faster at high CSE, while undergraduates make decisions 15 seconds faster. This provides some support for Hypothesis 1. Table 18, toward the end of this chapter, summarizes the findings of all hypothesized relationships for each sample.

---

[14] The alpha for the new scale was 0.90.
[15] Across the dissertation, all statistical tests are reported using two-tailed tests unless otherwise noted.

Hypothesis 2 predicts that CSE will be negatively related to decision comprehensiveness—operationalized as time spent on media coverage and financial statements. One-way ANOVAs show differences in the undergraduate ($p < 0.05$) and MBA samples ($p < 0.10$), but not among the professionals. The MBA sample demonstrates the hypothesized relationship: MBAs with high CSE spent 7.30 seconds less time compared to those with low CSE. The undergraduate sample, however, showed the opposite—undergraduates with high CSE spent 7.78 seconds more time on media coverage and financial statements. This provides inconclusive evidence for Hypothesis 2.

Hypothesis 3 predicts that core self-evaluation will be positively related to risky strategic decisions. Hypothesis 3a predicts it in relation to risky investments—specifically operationalized as the sum of research and development, property, plant and equipment, and mergers and acquisitions. One-way ANOVAs show no influence of CSE on risky investments in any sample. I further investigated this dependent variable by considering the individual investment categories. Individual ANOVAs are not appropriate in this setting because the six dependent variables are linked. I, therefore, conducted a MANOVA analysis for each sample using all investment categories in the first round, with inventory as a holdout to prevent collinearity among the dependent variables. CSE showed no influence on those initial investments in the professional and MBA samples. It did, however, exhibit a significant influence for the undergraduate sample ($F[5, 199] = 2.86, p < 0.05$). Individual ANOVAs then showed that undergraduates with high core self-evaluation invested less in advertising (difference of -2.25, $F[1, 203] = 6.62, p < 0.05$), more in mergers and acquisitions (difference of 1.63, $F[1, 203], p < 0.05$), and more in inventory (difference of 1.18, $F[1, 203] = 3.05, p < 0.10$). These investment categories are shown in Figure 8. Overall, Hypothesis 3a is not supported.
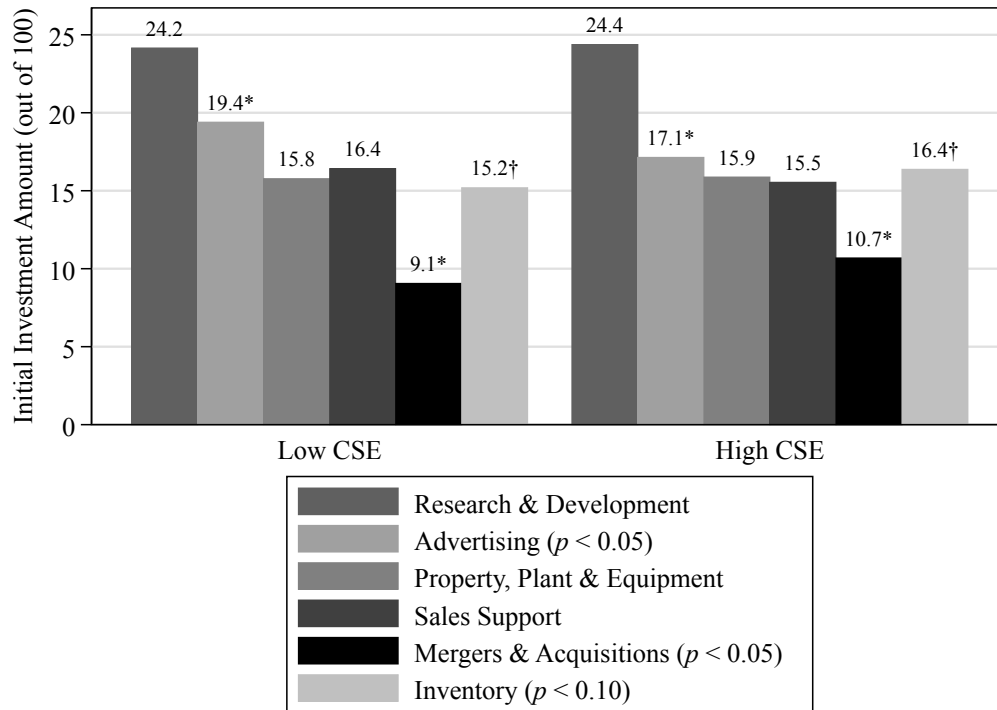
Figure 8: Mean Initial Investment by Categories for High and Low CSE Undergraduate Participants

Hypothesis 3b predicts that CSE will be positively related to large outlays. A one-way ANOVA for the undergraduate sample does not show an influence of CSE on large outlays. The professional sample did show that CSE influenced large outlays ($F[1, 158] = 6.07$, $p < 0.05$); high CSE participants had higher investment amounts in their largest outlays (28.30) than low CSE participants (26.15, difference of 2.15). The MBA sample revealed similar characteristics ($F[1, 172] = 18.64$, $p < 0.01$). High CSE participants had higher investments in their largest outlays (27.95) compared to low CSE participants (24.95, difference of 3.00). This finding provides partial support for Hypothesis 3b.

Hypothesis 4 predicts that core self-evaluation will be negatively related to initial strategic change. Three-way ANOVAs were conducted to assess the effect of the CSE manipulation on strategic change in round 2—that is, the change of the participant's initial

strategic position. For the undergraduate sample, the three-way interaction in the ANOVA was statistically significant ($F[1, 197] = 3.16$, $p < 0.10$). The contrast of the CSE manipulation, however, was not statistically significant. Among professionals, ANOVA revealed a statistically significant interaction between CSE and media coverage ($F[1, 152] = 3.48$, $p < 0.10$). Again, like the undergraduate sample, the contrast for the main effect of CSE was not statistically significant. The ANOVA for the MBA sample showed a statistically significant influence of CSE on initial strategic change ($F[1, 166] = 3.32$, $p < 0.10$). A contrast reveals that core self-evaluation increases strategic change (difference of 0.16, $p < 0.10$). This is counter to my theory that it should decrease strategic change. Figure 9 shows the differences in initial strategic change based on core self-evaluation for each of the three samples. Hypothesis 4 was not supported.
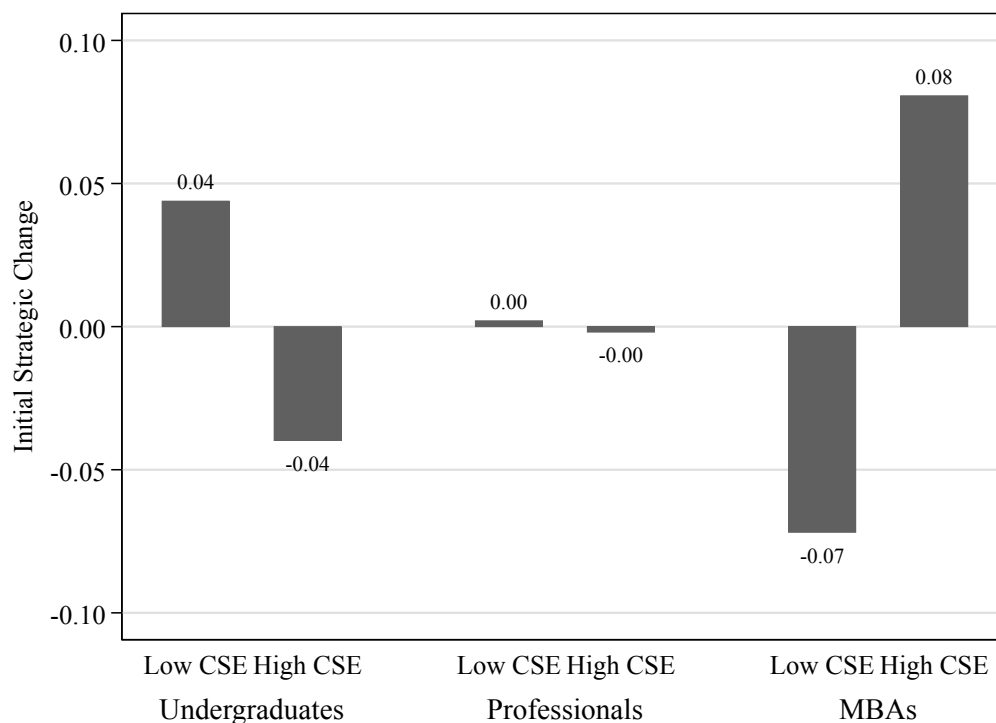
Figure 9: The influence of core self-evaluation on initial strategic change

Hypothesis 5 predicts that firm performance will have a stronger negative effect on initial strategic change than media tenor. The results show that the high-performance condition decreases strategic change at a greater rate than positive media tenor, across samples. The effects of performance and media coverage, and the difference between those effects are shown in Table 13. The table shows that the undergraduates were influenced by both performance (-0.49, $p < 0.01$) and media coverage (-0.21, $p < 0.05$)—and the differences are significant (difference of 0.28, $p < 0.05$). The difference of the effect on the professionals was weaker, but still significant (difference of 0.26, $p < 0.10$). Finally, the MBA sample saw a significant influence of performance on initial strategic change (-0.56, $p < 0.01$), but no statistical difference considering media coverage (-0.09, n.s.). The difference between these effects was significant (difference of 0.47, $p < 0.01$). This provides strong support for Hypothesis 5.

Table 13: Influence of Performance, Media Tenor, and Differences on Initial Strategic Change

	Influence of Performance	Influence of Media Tenor	Difference in Effect
Undergraduates	-0.49^{**}	-0.21^{*}	0.28^{*}
Professionals	-0.52^{**}	-0.26^{*}	$0.26^{\dagger}$
MBAs	-0.56^{**}	-0.09	0.47^{**}

† $p < 0.10$
* $p < 0.05$
** $p < 0.01$

Hypothesis 6 predicts that CSE will temper the influence of feedback on strategic change. That is, those with higher CSE will discount performance and media feedback. The results of contrast analyses show how the differences in effects, those shown in Table 14, are influenced by the CSE manipulation. The results generally show that CSE doesn't influence those effects. Only in the professional sample does CSE temper the effect of media coverage (decreases the negative

effect by 0.39, $p < 0.10$). The weakness of the result, and its appearance in only one sample, offers little support for Hypothesis 6.

Table 14: CSE's Influence on the Effect of Performance and Media on Initial Strategic Change

		Undergraduates	Professionals	MBAs
Performance	Low CSE	–0.58**	–0.44**	–0.44**
	High CSE	–0.42**	–0.59**	–0.69**
	Difference	0.16	–0.15	–0.25
Media Tenor	Low CSE	–0.25*	–0.45**	–0.04
	High CSE	–0.15	–0.07	–0.16
	Difference	0.11	0.39†	–0.14

† $p < 0.10$
$*$ $p < 0.05$
$**$ $p < 0.01$

Hypothesis 7 predicts that, at low levels of core self-evaluation, the effect of negative feedback on strategic change will decrease over time. To test this prediction, a multilevel model with rounds nested within participants was run using the full interactions of each manipulation with round number. These results are provided for each sample in Table 15. From this set of results, marginal analyses were completed to assess the slope of strategic change with respect to time using low-CSE as a constraint. These slopes are presented in Table 16. The results show that the influence of negative performance on strategic change is statistically invariant across time, as represented by the nonsignificant slope of strategic change with respect to round. Under conditions of low CSE, undergraduates and professionals see their level of strategic change decreasing over time (slope of –0.06, $p < 0.01$ and –0.05, $p < 0.05$, respectively). This shows that negative feedback—for those MBAs in the low-CSE condition—decreases the level of strategic change over time.

Table 15: Mixed-Effects Model Predicting Strategic Change

Variable	Undergraduates	Professionals	MBAs
Round	-0.07*	-0.10**	-0.05
	(0.03)	(0.03)	(0.03)
High CSE	-0.33†	-0.55*	0.44†
	(0.19)	(0.24)	(0.24)
High CSE x Round	0.08*	0.18**	-0.06
	(0.04)	(0.05)	(0.05)
High Performance	-0.62**	-0.91**	-0.66**
	(0.20)	(0.24)	(0.21)
High Performance x Round	0.02	0.10*	0.06
	(0.04)	(0.05)	(0.05)
High CSE x High Performance	-0.11	0.33	-0.30
	(0.29)	(0.33)	(0.33)
High CSE x High Performance x Round	0.01	-0.19**	0.06
	(0.06)	(0.07)	(0.07)
Positive Media Tenor	-0.37†	-1.04**	-0.42†
	(0.20)	(0.22)	(0.22)
Positive Media Tenor x Round	0.12**	0.16**	0.13**
	(0.04)	(0.04)	(0.05)
High CSE x Positive Media Tenor	0.13	1.13**	-0.12
	(0.27)	(0.32)	(0.32)
High CSE x Positive Media Tenor x Round	-0.12*	-0.27**	0.03
	(0.06)	(0.06)	(0.07)
High Performance x Positive Media Tenor	-0.02	0.78*	0.51†
	(0.29)	(0.32)	(0.30)
High Performance x Positive Media Tenor x Round	-0.06	-0.16*	-0.16*
	(0.06)	(0.06)	(0.06)
High CSE x High Performance x Positive Media Tenor	0.53	-0.75†	-0.22
	(0.40)	(0.45)	(0.44)
High CSE x High Performance x Positive Media Tenor x Round	0.02	0.23**	-0.00
	(0.08)	(0.09)	(0.09)
Constant	0.57**	0.79**	0.37*
	(0.14)	(0.16)	(0.16)
Observations	1,025	800	870
Number of Participants	205	160	174

† p < 0.10
 * p < 0.05
** p < 0.01

Table 16: Slope of Predicted Strategic Change in Round 2 For Low-CSE Participants

	Undergraduates	Professionals	MBAs
Slope Negative Performance	−0.01	−0.01	0.02
Slope Negative Media Tenor	−0.06**	−0.05*	−0.02

† p < 0.10
 * p < 0.05
** p < 0.01

Hypothesis 8 predicted that under conditions of negative performance, CSE will weaken the negative effect of media tenor on strategic change. At high CSE, the influence will be less negative. Like Hypothesis 7, I used the multilevel model provided in Table 15 to assess the influences of the manipulations across time. Specifically, I examined the influence of media coverage in the sixth round at low- and high-CSE and compared the differences using marginal analyses. These results are provided in Table 17. The results show inconsistent relationships across samples. First, the undergraduate sample shows that media increases the level of strategic change for low-CSE participants (change = 0.35, $p < 0.05$), while it decreases the level of strategic change for high-CSE participants (change = –0.26, $p < 0.05$). The difference between these two influences is –0.61 ($p < 0.01$). This result indicates that CSE reduces the influence of media coverage significantly. The low-CSE participants in the professional sample were relatively insensitive to media coverage (change of –0.07, n.s.), but high-CSE participants reduced their strategic change based on media tenor (change of –0.55, $p < 0.01$). The difference between these effects is negative (–0.47, $p < 0.05$)—like the undergraduate sample. The MBA sample, however offered contrasting results. Both low- and high-CSE participants saw increased strategic change based on media tenor (change of 0.38, $p < 0.05$ and 0.42, $p < 0.01$, respectively). The difference, however, was not significant (0.06, n.s.).

Table 17: Differences in the Influence of Media Coverage Based on CSE

		Undergraduates	Professionals	MBAs
Influence of	Low CSE	0.35*	–0.07	0.38*
Media Coverage	High CSE	–0.26*	–0.55**	0.42**
	Difference	–0.61**	–0.47*	0.06

Note: Calculated in round 6.
† $p < 0.10$
* $p < 0.05$
** $p < 0.01$

The final prediction centers around the concept of strategic helplessness, focused on participants in the low performance and low media tenor condition in their final round. Hypothesis 9 predicts that under these conditions, CSE will increase the level of strategic change undertaken. One-way ANOVAs were completed to assess the efficacy of CSE under these conditions in the sixth round. For the undergraduate sample, the performance ($F[1, 197] = 26.85$, $p < 0.01$) and performance-CSE interaction ($F[1, 197] = 3.95$, $p < 0.05$) were statistically significant. The contrast, however, predicting the effect of CSE under these conditions was not statistically significant (–0.02, n.s.). Figure 10 plots the mean values of strategic change in the final round under these conditions. For the professional sample, the performance ($F[1, 152] = 24.89$, $p < 0.01$), performance-CSE interaction ($F[1, 152] = 5.82$, $p < 0.05$), and media-CSE interaction ($F[1, 152] = 3.30$, $p < 0.10$) were all statistically significant. In this sample, we do find support for Hypothesis 9, as CSE increases the level of strategic change by 0.71 ($p < 0.01$). Finally, for the MBA sample, the ANOVA showed only statistically significant influences of performance ($F[1, 166] = 16.78$, $p < 0.01$) and the interaction of performance and media ($F[1, 177] = 10.94$, $p < 0.01$). CSE appears not to influence MBA students' level of strategic change in the final round.
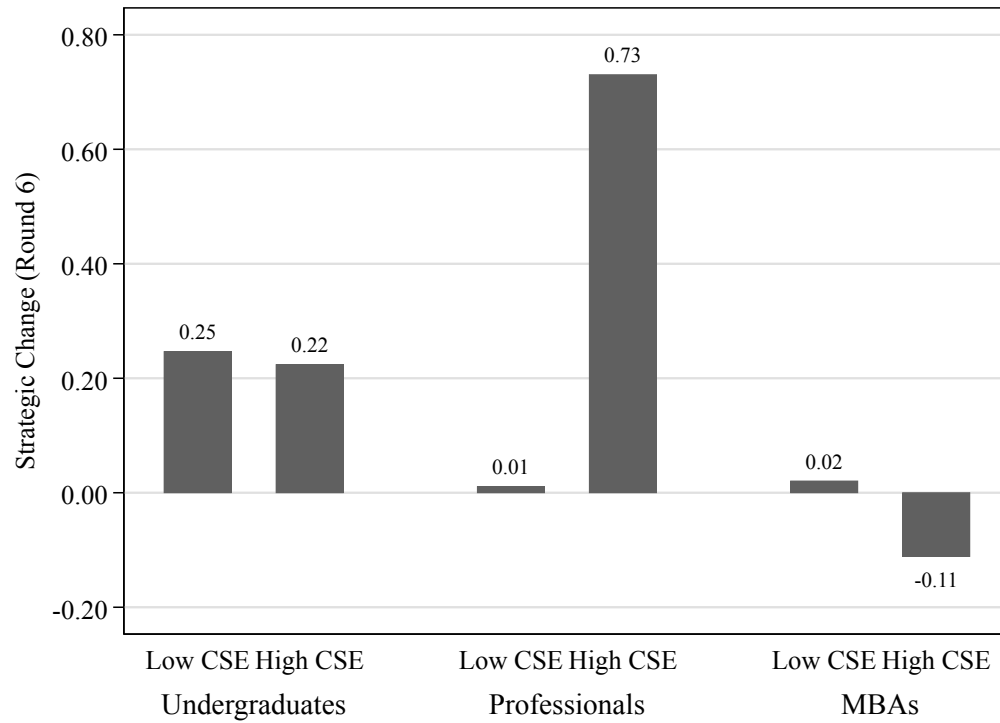
***Figure 10: Mean Strategic Change in Round 6 Under Conditions of Negative Performance
and Negative Media Tenor, by Sample and CSE***

Table 18: Summary of Hypothesized Relationships by Sample

Hypothesis	Undergraduates	Professionals	MBAs
Hypothesis 1: CSE increases decision speed.	**Supported**	Not Supported (not significant)	**Supported**
Hypothesis 2: CSE decreases decision comprehensiveness.	Not Supported (**opposite direction**)	Not Supported (not significant)	**Supported**
Hypothesis 3a: CSE increases risky investments.	Not Supported (see discussion on other investments)	Not Supported (not significant)	Not Supported (not significant)
Hypothesis 3b: CSE increases large outlays.	Not Supported (not significant)	**Supported**	**Supported**
Hypothesis 4: CSE decreases initial strategic change	Not Supported (not significant)	Not Supported (not significant)	Not Supported (**opposite direction**)
Hypothesis 5: Firm performance will have a stronger negative effect on strategic change than media tenor.	**Supported**	**Supported**	**Supported**
Hypothesis 6: CSE will decrease the effect of performance and media tenor on initial strategic change.	Not Supported (not significant)	**Supported** (media tenor only)	Not Supported (not significant)
Hypothesis 7: At low levels of CSE, the effect of negative feedback on strategic change will decrease over time.	**Supported** for Media Tenor	**Supported** for Media Tenor	Not Supported (not significant)
Hypothesis 8: Under conditions of negative performance, CSE will weaken the negative effect of media tenor on strategic change such that at high CSE, the relationship will be less negative than at low CSE.	Not Supported (**opposite direction**)	Not Supported (**opposite direction**)	Not Supported (not significant)
Hypothesis 9: Under conditions of substantial and sustained low performance and negative media coverage, CSE will be positively related to strategic change.	Not Supported (not significant)	**Supported**	Not Supported (not significant)

Supplemental Analyses

While the focus of these analyses have been core self-evaluation, the potential influences of incongruent media coverage relative to performance on decision making is also theoretically interesting. Thus, to consider such potential influences, I predict that it will take longer to make decisions when media coverage and performance are incongruent. For both the undergraduate and the MBA sample, neither the media nor the interaction of media and performance were significant in the ANOVA. In both of those samples, only performance influenced decision speed. I used contrasts to examine the effect of performance on decision speed. High performance increased decision speed for both undergraduates (for whom it increased decision speeds by 35 seconds, $p < 0.01$)[16] and for MBAs (whose decision speed was 13 seconds faster, $p < 0.10$). For the professional sample, the interaction between performance and media was statistically significant ($p < 0.01$). At low performance, incongruent media slowed decision speed by 30 seconds ($p < 0.01$), while at high performance, incongruent media slowed decision speed by 26 seconds ($p < 0.01$). This indicates that business students are relatively invariant to the tenor of media coverage, while professionals are influenced by incongruence.

Next, I consider the overall shapes of strategic change for each cell of the 2 (performance) x 2 (media tenor) manipulations based on core self-evaluation. Providing these plots can be a potential source of new insights not revealed by prior theorizing. Figure 11 provides these plots for each sample.

---

[16] A 30-second change in decision speed should be considered in the context of the overall time allotted to make the decision. The maximum time participants were granted was 8 minutes, so a 30-second difference represents approximately a 7% change. The average decision time, though, across all rounds was 194 seconds, of which 30 seconds is approximately 15%.
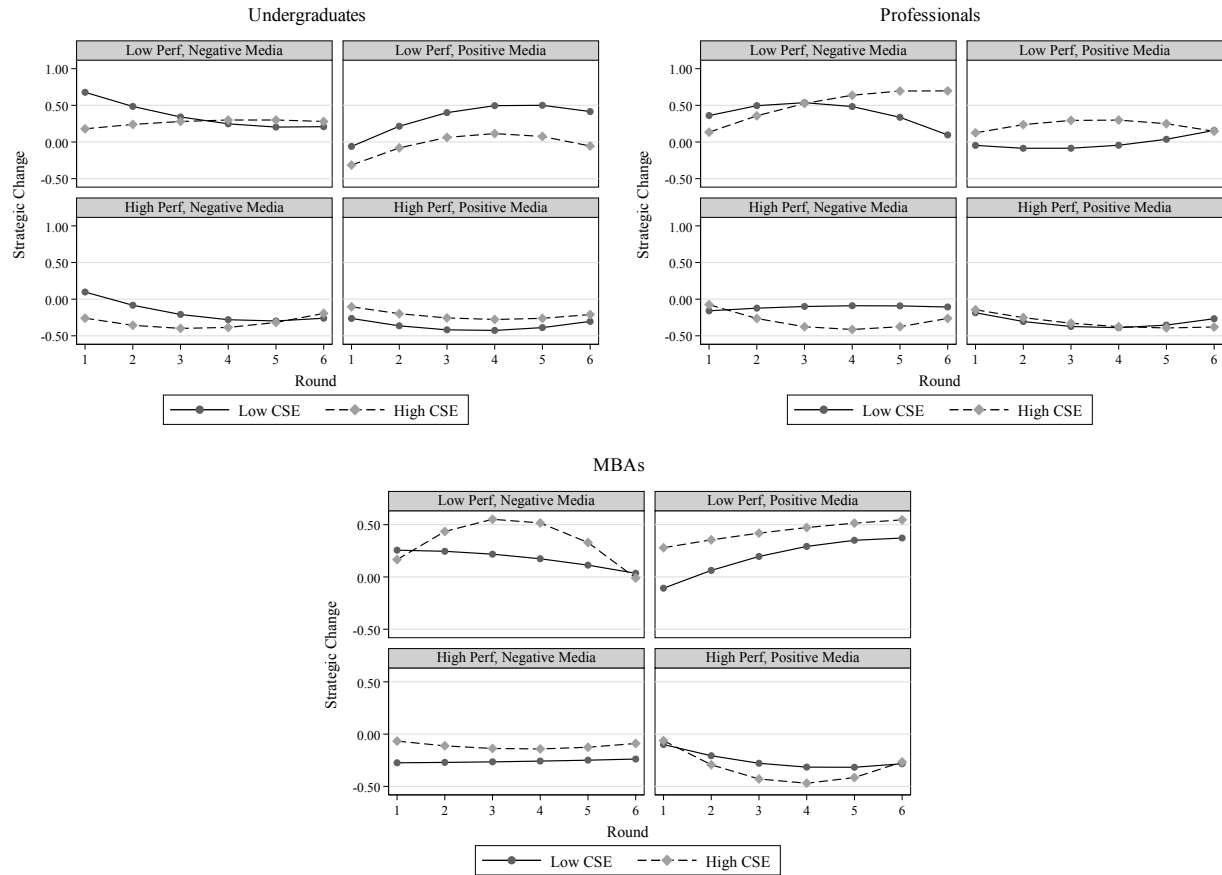
Figure 11: Plots of Predicted Levels of Strategic Change Using a Multilevel Model with Full Three-Way Interactions and Curvilinear Round By Sample

Discussion

The purpose of this study was to assess how core self-evaluation and feedback influence strategic decision processes, natural strategic tendencies, and strategic change over a number of sequential, resource allocating decisions. The theory put forward was tested using a novel business simulation experiment with three groups totaling over 500 participants. Results of the analyses show varied support for the proposed theory—differences that seem to be driven by the sample being considered. The MBA sample showed general support for theory focused around decision process, yet less support for predictions of strategic change. The professional sample, on

the other hand, showed the opposite—support for many of the hypothesized relationships regarding strategic change. The undergraduate sample, unfortunately, showed support for only a few hypotheses that spanned both decision processes and strategic change. This study has a number of theoretical, managerial, and methodological implications. After discussing those, I will address the study's limitations as well as potential future research directions.

Theoretical Implications

This study makes theoretical contributions to our understanding of Upper Echelons Theory, micro-level theories regarding core self-evaluation, organizational feedback theories, and the literature on strategic change.

I build on and extend Upper Echelons Theory (Hambrick, 2007; Hambrick & Mason, 1984) in several ways. First, I explicitly incorporate time in my theorizing. While the literature—such as Miles and Snow (1978)—proposes that strategies are built over time and "are self-reinforcing," until now we had little understanding of the micro-processes that lead individuals to change their strategies over time (Hambrick & Mason, 1984: 197). For example, the result that executive characteristics can influence the way feedback is interpreted over time to lead to various levels of strategic change is consequential. Core self-evaluation, as shown in this study, can temper the effect of media coverage on strategic change over time. Archival studies of the influence of media coverage have shown that media coverage can lead to strategic change (Bednar et al., 2013). But these studies are theoretically incomplete because, as my results show, both the individual CEO and time play critical roles in the decision to change strategies.

I also extend Upper Echelons Theory by looking at how individual characteristics lead to specific natural strategic tendencies. Hambrick (2007) recognized that managerial discretion was an important consideration of UET that was not present in his original theory (Hambrick &

Mason, 1984). This dissertation extends his theory by removing managerial discretion and, instead, embracing the idea of natural strategic tendencies—that is, the strategy an executive would choose if they were unencumbered by the organization's path dependency. The results show that executive characteristics—such as core self-evaluation—do lead to specific investment preferences. Future theory could consider what happens when these natural strategic tendencies conflict with the momentum of the organization.

Strategic helplessness was a construct that I proposed as having specific implications for Upper Echelons Theory. It is defined as a learned feeling of lack of control on declining performance. This construct brings a specific psychological condition in to the strategic management domain. Thus, rather than using only UET to predict strategic choices and performance, I propose that managerial characteristics can be better understood in light of specific psychological states that explain those relationships in more explicit detail.

Second, this study proposes new relationships regarding core self-evaluation for the micro-organizational behavior literature. It does so by examining how CSE influences decision processes and actual decisions made by participants. The results show that CSE does increase decision speed while reducing decision comprehensiveness, especially in the executive sample. CSE also influences the strategies executive chose to use. The results show that executives with high CSE are more comfortable with risk, as demonstrated by their choice to invest large sums of resources in a single investment. This extends prior psychological research that has examined tasks more generally, such as Srivastava et al. (2010)'s examination of task complexity or Judge et al. (2000)'s examination of job satisfaction. In contrast to those studies, this study incorporates specific strategic decisions, rather than more general tasks. Future studies of CSE should

continue to examine the role of the construct in specific decision processes to further explore the potential outcomes of this important characteristic in specific, theoretically important situations.

This study also supports prior studies that look at the role of core self-evaluation in persistence. Best et al. (2005), for example, examined the relationship between CSE and burnout. Their results show that CSE does reduce burnout. Erez and Judge (2001) showed how CSE leads to goal-setting motivation and activity level. Both studies, however, look only at the main effect of CSE on their specific constructs. This study takes this approach a step further by examining how two types of feedback influence the persistence of executives to continue to push their strategies forward. Specifically, I show how CSE can dampen the effect of negative feedback on strategic change—a measure that is related to effort, as effort is required to make changes—and how it can sustain strategic change in the face of mounting negative feedback. Future studies of CSE should continue to consider how CSE influences the dynamics of behavior over time, rather than simple main effect relationships.

Next, I contribute to theory on organizational feedback. I show that feedback neither positive nor negative feedback is as influential on strategic decisions as performance. Indeed, performance is a much stronger motivator of strategic change than media coverage. This finding is predicated on the unambiguousness and visibility of performance. While media tenor is influential, its meanings can take more time to decipher and might not be as concrete as a performance measure. Furthermore, many performance goals and rewards are typically more aligned toward tangible performance. Current research, however, is starting to show that other decisions are consequential to CEOs, yet they are framed in terms of financial performance (Hubbard et al., 2017).

In supplemental analyses, I show how incongruent feedback can be influential in decision making. While we normally assume that media coverage and firm performance are aligned, examples such as Apple and Facebook demonstrate that incongruent feedback is not only possible, but happens in practice. In the laboratory, I showed that incongruent feedback—when media coverage did not match the performance of the firm—requires executives to make decisions more slowly. This improves on prior studies that consider media coverage and performance (e.g. Bednar et al., 2013) by looking at a potential explanation for differences in strategic decisions under conditions of incongruent feedback.

Finally, I contribute to theory on strategic change. This study reveals that CSE can influence strategic change at the micro-level. This supports other theory that CEO personal characteristics can influence strategic change (e.g. CEO charisma in Wowak et al., 2016). For example, I show that CSE can increase the level of initial strategic change. Furthermore, CSE was shown in this study to influence how other information is processed, leading to varying levels of strategic change. This moves the bar for theory beyond the simple one-to-one relationship when predicting strategic change. Instead, strategic change is a far more complex phenomenon than we typically recognize in strategic management (Haynes & Hillman, 2010). Even when tenure is considered (e.g. Wowak et al., 2016), effects are normally considered to be consistent. That is, regardless of context, personality is expected to influence strategic change in a consistent fashion.

This study also suggests that the linear conceptualization of strategic change may be incomplete. Instead, I found that non-linearity is critical in understanding this important construct. These relationships, also, are heavily context dependent. The prior conceptualization that one variable, such as performance, leads to a specific level of strategic change without

considering the dynamics of time and subsequent feedback are undertheorized (Finkelstein & Hambrick, 1990). Future theory development may benefit from considering dynamics— considering both the dyanamics of the context and the expected relationships.

Managerial Implications

This study makes several contributions to management practice. First, this study contributes to the practices of executive selection. It joins a number of other studies that show that executive characteristics—such as charisma (Wowak et al., 2016), narcissism (Chatterjee & Hambrick, 2007), personality factors (Herrmann & Nadkarni, 2014; Nadkarni & Herrmann, 2010), and now core self-evaluation—are consequential to firm actions. High CSE executives differ from low-CSE executives. And, while others have argued that all executives should be high-CSE, indeed almost hyper-CSE (Hiller & Hambrick, 2005), the number of founders, family members, and other variants of CEOs create enough variance for CSE to be an important factor in executive selection.

Second, this study introduces the notion of natural strategic tendencies—the actions an executive is predisposed to prefer. Indeed, executives with high CSE chose to make larger bets. This basic result is quite consequential—we don't yet know what happens when an executive's natural strategic tendency diverges from the path of his or her firm. Do the executives' tendencies shift in accordance with the firm's direction, or are executive more likely to sway the firm into alignment with their own personal preferences? Understanding this can help inform executive selection and early evaluation (Graffin et al., 2013) by framing the changes early in a CEO's tenure with what they are naturally drawn to in terms of preferred strategies.

Third, this study contributes to the managerial considerations around management decision making. It shows that core self-evaluation can increase decision speed and reduce

decision comprehensiveness. This is important for managers to understand when making their own decisions, or working with others who are making decisions. Indeed, understanding just how core self-evaluation influences decision making can make it easier for managers to self-diagnose their decision-making processes.

Methodological Implications

The primary methodological contribution is the new capability to test complex strategic management theories using randomized controlled laboratory experiments. There is currently a dearth of strategic management experiments in the literature. Indeed, calls for future special issues on experimental methods continue to arise. For example, the *Journal of Business Venturing* is currently soliciting articles for an issue titled "Applying Experimental Methods to Advance Entrepreneurship Research." Indeed, experimental methods are the least used method of articles published in that journal (Aguinis & Lawal, 2012). Hopefully, this dissertation's chapter on strategic management experiments can be used by future researchers to conduct high-quality, publishable results using laboratory experiments.

Another important methodological contribution is the manipulation and measurement of core self-evaluation. I show how employing a simple manipulation—modeled off of the work of Fast et al. (2009)—can lead to meaningful changes in laboratory studies of core self-evaluation. Furthermore, by altering the scale measures, I show that proximal measures of core self-evaluation can better assess the manipulation. Both advancements demonstrate that studies of core self-evaluation can be undertaken in the laboratory and CSE can be manipulated. Judge et al. (2000: 246) demonstrate that CSE is relatively stable and note in their discussion section that it is "impressive that independent childhood assessments correlated with job satisfaction 30 years later." However, my work in the laboratory shows that meaningful results can come from

manipulating this seemingly stable characteristic. This opens new avenues for research into core self-evaluation, which has been hampered by reliance on measured CSE only. Manipulations of CSE now can allow for increased internal validity and more nuanced theory building and testing.

Limitations and Future Research

As with all studies, this study has some limitations that present interesting options for future research. The first, and primary, concern is whether the results of this study are generalizable outside the laboratory. We should consider "that the goal of most laboratory research is to discover theoretical relations among conceptual variables that are never sufficiently isolated in the real world to allow precise examination" (Anderson et al., 1999: 4). There is strong evidence that laboratory and field results are highly correlated. Anderson et al. (1999) showed a correlation of 0.73 between effect sizes seen in the laboratory compared to the field across 39 studies. Thus, while this limitation should be recognized, it is not insurmountable. Instead, I propose that we should champion laboratory studies as a key pillar for the future of strategic management research. Indeed, the dearth of strategic management experiments seems to imply that there is not a place for them in the literature. Much, however, can be learned from them and they can be used to test theory at a much more nuanced level and with greater internal validity. Especially considering the mounting distaste and contempt for coarse-grained archival studies (Boyd et al., 2013; Boyd, Gove, & Hitt, 2005; Hitt et al., 2004), laboratory studies should be welcomed with open arms.

Another possible criticism of this study may concern the manipulation of core self-evaluation. Indeed, prior research has shown that CSE is relatively stable across time (Judge et al., 2000). This, however, does not imply that the results of this laboratory study—in which CSE is manipulated—are invalid. Instead, it warrants a close examination of what Berkowitz and

Donnerstein (1982) termed the "experimental realism" or, as Colquitt (2008) recast, "psychological realism." Namely, am I able to achieve the "*intended essence* of the constructs of interest" (Colquitt, 2008: 618, emphasis in the original)? I would argue that, by using vivid and engrossing manipulations, realistic tasks, and real stakes (Colquitt, 2008), I am able to achieve an appropriate level of internal validity related to the manipulation of CSE. Furthermore, the manipulation showed meaningful differences in the theorized relationships. This indicates that the manipulation is valid.

Finally, one might criticize the laboratory experiment as testing too narrow a swath of theory. While such focus is considered a strength of this approach, it remains important to keep in mind that strategic management is inherently complex and simple relationships might mask more complex processes (Finkelstein et al., 2009). Laboratory experiments are typically designed to isolate a specific relationship and test it with high internal validity. To attempt to extend the literature even more, though, in the final chapter, I use the experimental data and transcripts from the verbal protocol analysis to generate new theory using a new inductive method tailored for experimental analyses.

CHAPTER 9: USING EXPERIMENTS TO GENERATE GROUNDED THEORY

Experiments are typically prescribed to test very specific relationships with a high level of internal validity. They are, indeed, considered the "gold standard for treatment outcome research" (Shadish et al., 2002: 13). Theory is built and, afterwards, experiments are conducted. I propose that another approach can be taken: experiments can be used to generate new grounded theory using inductive methods typically reserved for field- or case-based research. Eisenhardt (1989) serves as a proponent of inductive case-based theory development. She notes that data "is the intimate connection with empirical reality that permits the development of a testable, relevant, and valid theory" (1989, 532). However, in the field the situations, firms, and data are all inconsistent. If field research is on one extreme, Davis, Eisenhardt, and Bingham (2007) are on the other; they propose that numerical simulation can be used to generate new theory. Under such an approach, the conditions, dynamics, and variables are all explicitly controlled. Experimental conditions, however, are predicated on consistency from case-to-case, but with the human element. Thus, experimental situations may be a way to develop new and novel theory that lies between case-based and simulation-based inductive theory building. I now propose this new methodology—experimental theory development—using the transcripts of the verbal protocol analysis completed in Study 1 as an example.

Proposed Method

There are two key data sources used in experimental theory development: the transcripts of the conscious flow of thought of the participants and the data from the experiment. Typical case-based qualitative research is based on discussions with managers and the resulting

transcripts (Gioia et al., 2013). This qualitative method provides the baseline process for my inductive work, with some modifications.

Gioia et al. (2013) recommend an approach that starts with a research question and the ability to conduct semi-structured interviews.[17] The transcripts of these semi-structured interviews lay the groundwork for the analyses to follow. The first step of analysis is the collection of all potential first-order themes, requiring researchers to gather all the points that arise from their discussions. At this phase, little reduction is done. Afterwards, though, the method recommends that researchers try to distill this larger list of first-order themes down to a manageable subset, which becomes the set of first-order themes. Then, after the first-order themes are codified, researchers ask "whether the emerging themes suggest concepts that might help us describe and explain the phenomena we are observing" (Gioia et al., 2013: 20). These emerging, second-order themes represent underlying dimensions reflected in the first-order themes. Gioia et al. recommend researchers focus on emerging concepts that don't have adequate theoretical founding in the literature. Groups of second-order themes can be combined into aggregate dimensions.

In my case, I needed to incorporate the data points recorded by the simulation software. Thus, I needed a process that was tailored to these opportunities in order to analyze this data. The methods recommended by Eisenhardt (1989) and Gioia et al. (2013) were modified to include the examination of unconscious themes that were shown in the data in an experimental setting. Table 19 shows an overall process for conducting these studies while Figure 12 shows the two-way process that involved recursively reviewing the transcriptions and examining actual data

---

[17] The authors do recognize "multiple data sources (archives, field observation, media documentation, etc.), but the heart of [our methodology] is the semi-structured interview" (Gioia et al., 2013: 19).

recorded. This iterative process resulted in the development of first and second order themes

(Gioia et al., 2013). Based on these themes, I developed relationships and propositions that are

integrated with extant literature to produce testable hypotheses for subsequent studies.
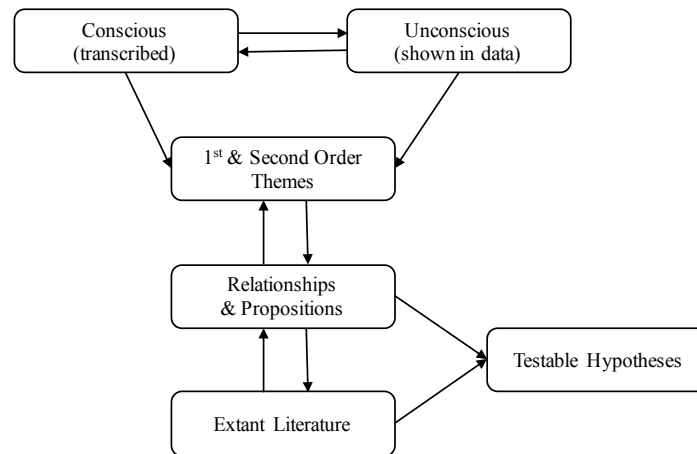
Figure 12: Experimental Theory Development Analysis

The inductive study provided a wealth of information that spanned several distinct phases: the

initial strategy, the learning phase, and the wind-down retrospective phase. An examination of

the resultant data in those phases follows.

The Initial Strategy Inductive Analysis

CEOs are appointed to specific organizations "to be the solution to the company's problems"

(Khurana, 2004: 20). In real organizations, however, path dependence limits what CEOs are able

to accomplish early in their tenure (Graffin et al., 2013; Hannan & Freeman, 1984). In the

business simulation I have conducted, though, there are no such constraints. This simulation

allows the examination of the strategies executives would employ—and how they make those

decisions—when allowed to do so without constraint.

Table 19: Process of Building Theory from Experiments

Step	Activity	Reason
Getting Started	Define the research question	Focuses effort
Prepare Experiments	Define scenarios that are apt to give insights into the behaviors surrounding the research question	Prepares to place participants in focused and consistent scenarios that may yield insights
	Select participant characteristics to be measured	Allows for measurement of key psychological constructs to be measured before participants enter the lab
	Choose data points to be measured	Focuses on the behaviors to monitor and what data will need to be collected during the experiment
Define Sample	Select a specific population	Determines the sample that will be able to provide the most accurate view of the real world
	Sampling based on research question	Ensures samples are used that are most likely going to show variance in their behaviors in the experiment based on the research question
Conduct the Experiments	Conduct pilot studies	Tests the experimental procedures and data analyses
	Work in small blocks of participants	Enables the researcher to learn throughout the process in manageable blocks
	Refine protocol as needed	When interesting theoretical avenues appear, allows for changing the procedures to explore them iteratively
Compile Data	Transcribe verbal accounts	Accurate transcripts help content analysis later
	Analyze data from experiment	Having all needed variables from dataset prepared to be analyzed efficiently alongside the transcripts
Develop First-Order Themes	Seek out participant-centric first-order codes	Ensures all first-order themes from transcripts are compiled to maintain the language that was used by the participants
	Link relationships within the data to first-order codes	Adds unconscious data to the conscious stream of thoughts collected and articulated in the first-order codes
Develop Second-Order Themes and Relationships	Organize first-order codes into second order themes	Puts sections of raw data into theory-centric themes and brings order to the data
	Develop relationships between second-order themes	Links the themes and constructs that arose from the data and transcripts in meaningful ways
Enfolding Literature	Comparison with conflicting literature	Builds internal validity, raises theoretical level, and sharpens the constructs
	Comparison with similar literature	Sharpens generalizability, improves construct definitions, and raises theoretical level
Reaching Closure	Refine theory	Ends when no material improvements in the theory

Note: Portions of this table are recreated from Eisenhardt (1989).

Further, I can see differences based on the same company—all the companies start from the exact same resource base—something that's not possible when considering CEOs in actual organizations that vary widely. The simulation doesn't provide for a baseline strategy; participants choose their initial strategy without influence. Figure 13 shows the second-order themes that arose from the inductive study of the initial strategies.

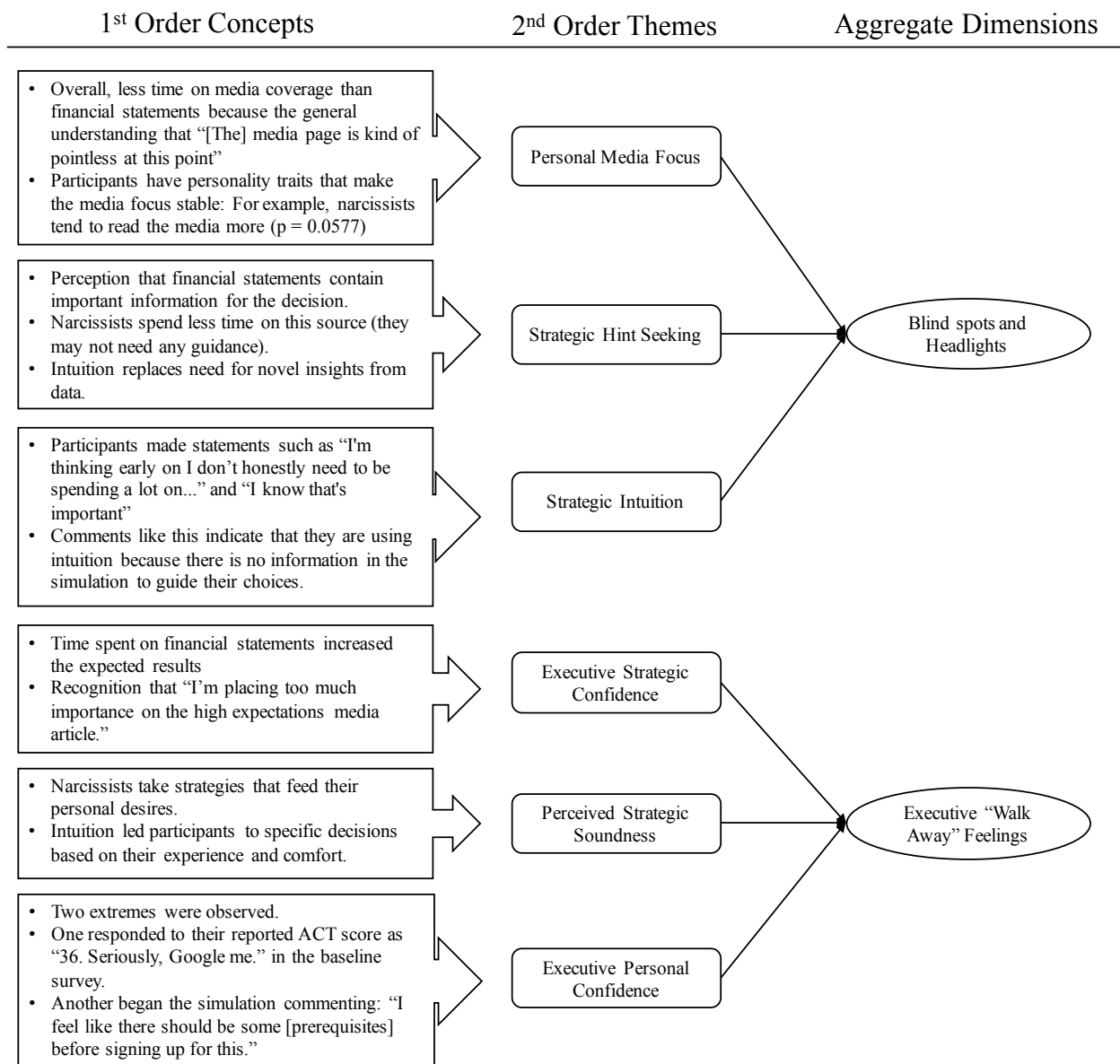| 1st Order Concepts	2nd Order Themes	Aggregate Dimensions
• Overall, less time on media coverage than financial statements because the general understanding that "[The] media page is kind of pointless at this point" • Participants have personality traits that make the media focus stable: For example, narcissists tend to read the media more (p = 0.0577)	Personal Media Focus	
• Perception that financial statements contain important information for the decision. • Narcissists spend less time on this source (they may not need any guidance). • Intuition replaces need for novel insights from data.	Strategic Hint Seeking	Blind spots and Headlights
• Participants made statements such as "I'm thinking early on I don't honestly need to be spending a lot on..." and "I know that's important" • Comments like this indicate that they are using intuition because there is no information in the simulation to guide their choices.	Strategic Intuition	
• Time spent on financial statements increased the expected results • Recognition that "I'm placing too much importance on the high expectations media article."	Executive Strategic Confidence	
• Narcissists take strategies that feed their personal desires. • Intuition led participants to specific decisions based on their experience and comfort.	Perceived Strategic Soundness	Executive "Walk Away" Feelings
• Two extremes were observed. • One responded to their reported ACT score as "36. Seriously, Google me." in the baseline survey. • Another began the simulation commenting: "I feel like there should be some [prerequisites] before signing up for this."	Executive Personal Confidence	

Figure 13: Initial Strategy Concepts and Constructs

The first aggregate dimension, or collection of second-order themes, that was observed in the transcripts and the data was executive blinders and headlights. This aggregate dimension represents the second order factors[18] which influence executives' initial strategy allocations by serving as either blind spots—factors that push executives to overlook potentially important information sources (that is, personal media focus and strategic intuition)—or headlights—factors representing actions executives use to search for relevant information (that is, strategic hint seeking).

Personal Media Focus: There was a consensus that the initial media reports were uninformative—a feature of the game designed to allow the observation of participants' natural tendencies. Again, in the first round, the media articles were designed to provide no diagnostic information. That is, they made general statements such as:

> *There are very high expectations for each team going into the first round. There are a number of different strategies that teams can use. We are excited to see what Frank Ruffalo chooses to do at the University of Georgia.*

Participants recognized this and made comments like, the "media page is kind of pointless at this point" and "media, not really helpful on anything on the first round other than that, I have high expectations." Further, the data show that participants spent far less time reading the detailed media accounts (2 minutes and 9 seconds less reading media as compared to financial statements).

---

[18] Second-order factors are the emerging themes that the first-order factors gathered in the data collection. Aggregate dimensions are groupings of like second-order factors (Gioia et al., 2013).
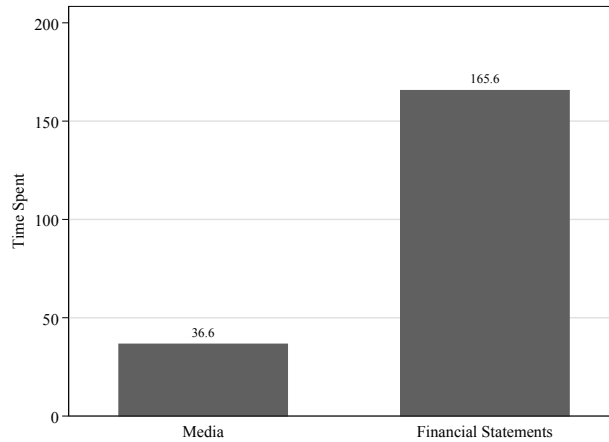
Figure 14: Total Time Spent on Different Information Sources in First Round

There is early evidence, however, that some participants had a greater propensity to read the media—specifically, t-tests show that narcissists (those participants in the top 75th percentile of narcissism) spent more time reading media coverage than non-narcissists (p = 0.057). This individual difference provided the evidence for a construct I term personal media focus.

Strategic Hint Seeking: The view that the media was not very helpful is typified by comments such as "I'm placing too much importance on the high expectations media article. It seems pretty vague." As a result, participants searched elsewhere for information to help them make decisions. Transcripts showed that participants used the financial statements as their source of information, one participant commenting that "trying to get an idea of what would be the most beneficial based on the income statement." A different participated commented, "so, I wish I had a little bit more time to interpret the financial statements," indicating that they used them heavily. I interpret participants' lack of time spent on examining media coverage—which contained no useful information—and much heavier dependence on financial statements—where participants believed they could glean beneficial information—to represent pattern searching behavior. That is, participants are looking for "strategic hints," a construct I define as patterns of information

107

that lead executives to make strategic decisions. New executives in this case sought out these strategic hints to guide their decisions in the face of uncertainty.

Strategic Intuition: Because there are no strategic hints in the first round of the simulation, the initial decisions participants make may be derived from their intuition. That is, participants have a strategic profile in mind when they make decisions that are based on what they consider intuitive strategies. I consider this a second order theme of "strategic intuition," which I define as the application of strategic configurations that are based on recalled experiences or mental heuristics rather than actual information, a definition based on observation and adapted from Pretz et al. (2014). Participants noted, for example, that "[a particular decision] makes sense to me" and "I feel like I should have a strong research and development program." These statements are indicative of pre-conceived notions of how companies should be run.

Definitions of intuition vary widely in the literature (Dane & Pratt, 2007; Pretz et al., 2014). Wally and Baum (1994) describe intuition as an ability to learn from our experience rather than as an innate cognitive ability. Pretz et al. (2014) provide a typology of three different types of intuition: holistic, inferential, and affective. I propose that strategic intuition most closely aligns closely with Pretz and colleagues (2014) conceptualization of holistic intuitions, which are "judgments based on a qualitatively non-analytical process, decisions made by integrating multiple, diverse cues into a whole that may or may not be explicit in nature" (Pretz et al., 2014: 454).

The second aggregate dimension, which I labeled executive "walk away" feelings, represents the factors that influence how an executive feels as they end their first session of decisions. Three second-order factors were observed: executive personal confidence, perceived strategic soundness, and executive strategic confidence. This aggregate dimension is

characterized as how the executive feels about their decisions, not necessarily the expected result.

Executive Personal Confidence: The first second-order theme that arose directly from the inductive analysis was executive personal confidence. Participants were spread across a range bounded by two extremes. For instance, in the baseline survey one participant reported their ACT score as "36. Seriously, Google me." A different participant began the simulation by commenting, "I feel like there should be some [prerequisites] before signing up for this [simulation]," reflecting concern for their capability. Returning to the extant literature, executive personal confidence mirrors core self-evaluation. As discussed above, Hiller and Hambrick (2005) describe core self-evaluation as follows:

> *A core self-evaluation (CSE) is a deeply sourced dispositional trait that defines how we evaluate ourselves and our relationship with the environment (Judge, Bono, Erez, Locke, and Thoresen, 2002). Thus, CSE is a relatively enduring and fundamental evaluation of oneself as an individual, essentially akin to 'self-concept' (Judge, Thoresen, Pucik, and Welbourne, 1999). At a basic level, the high-CSE person is characterized by self-confidence, self-worth, self-potency, and freedom from anxiety. (299)*

Core self-evaluation departs from narcissism—a measure I collected—because it does not include the "continuous need for applause and adulation that characterizes narcissism" (Chatterjee & Hambrick, 2007: 365).[19]

Perceived Strategic Soundness: The next second order theme that arose was based on individuals' perceptions of their strategy or "perceived strategic soundness." This construct arose from comments typical of the first round, such as "I feel like I made some informed decisions"

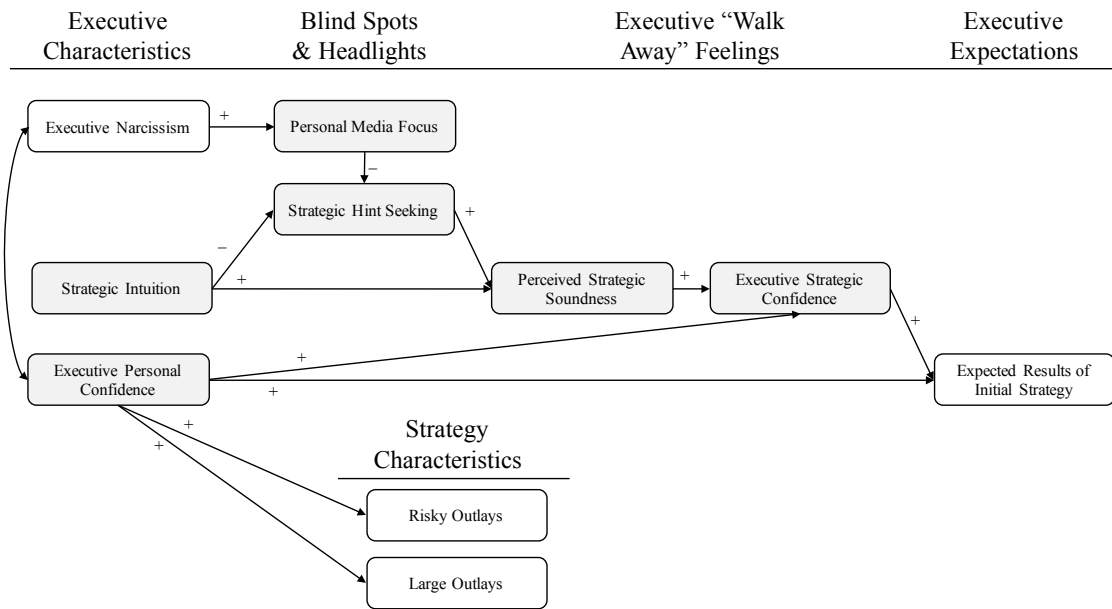[19] Furthermore, the differences between narcissism and core self-evaluation are discussed with other empirical findings in Table 1.

and "I guess I'm okay with my choices." Both quotes show that the participants were evaluating their decisions based on their overall resource allocation pattern. This construct represents their perceptions of the soundness of their strategy. While each strategy can be different, and there are no perfect answers, the perceptions an executive has of their strategy is a critically important walk away feeling.

  Executive Strategic Confidence: Beyond their perceptions of the soundness of their strategy, there was evidence that participants held different levels of confidence in their strategy—what I term "executive strategic confidence." This is the last second order theme that arose from the initial strategic decisions. These are self-evaluations of confidence in their strategy. An example from the transcripts was this participant's comment: "Just don't know what I am doing." The lack of confidence is separate from their perceptions of soundness of their actual decisions. When discussing perceived strategic soundness, I referred to a quotation about informed decisions. Examining the rest of that same comment demonstrates how executive strategic confidence differs from perceived strategic soundness: "*Not really too confident, but* I feel like I made some informed decisions." Here, the participant shows that it is possible to have a positive perception of their decisions without having strategic confidence.

Connecting the Initial Strategy Second-Order Concepts

  The next step in this inductive study is to assess the expected relationships between the second-order concepts (Gioia et al., 2013). Two final dependent variables were considered: the expected results of the initial strategy and the characteristics of the strategy employed. Figure 15 shows the overall process model that I derived. This figure allowed me to build a set of propositions.

| Executive Characteristics | Blind Spots & Headlights | Executive "Walk Away" Feelings | Executive Expectations |

Note: Second order themes highlighted in grey.

Figure 15: Relationships Between Second Order Constructs for Initial Strategies

Personal Media Focus is an individual's natural tendency to focus on the media coverage. I did not directly measure a construct specifically around a measure like this in the inductive study. Instead, to get an early assessment, I measured Personal Media Focus using the proportion of time that a participant spent on the media page compared to total time spent. While there could be a number of different factors that influence Personal Media Focus, I analyzed the relationship between narcissism and Personal Media Focus. This closely matches the expectation that narcissists seek out information that inflates their self-importance. Though the media in the simulation contains no useful information, it does refer to the participants by both name and organization. The more narcissistic a person is, the more they would be attracted to reading text that mentions their name and affiliation (Gerstner et al., 2013).

The t-tests above showed a mean-level difference in time spent on media sources (p = 0.057). Figure 16 shows the relationship in more detail—non-narcissists tend to have a flat

relationship between narcissism and Personal Media Focus (typified by the range 0.3 to 0.6), but there is a positive linear relationship at higher levels of narcissism.
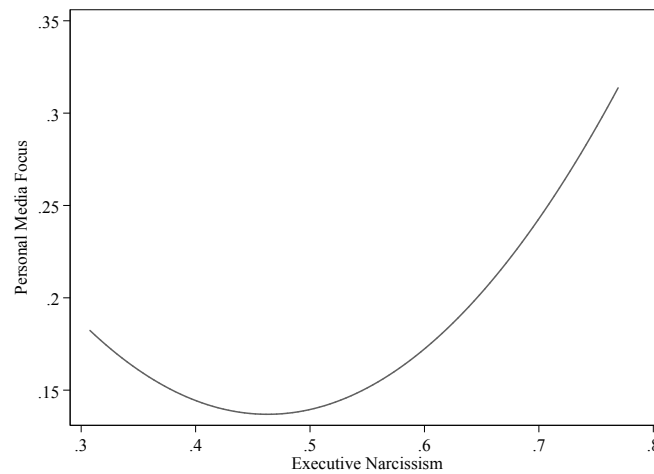

Figure 16: Relationships Between Narcissism and Personal Media Focus

Thus,

Proposition 1: Narcissism is positively related to Personal Media Focus.

Strategic Hint Seeking is the search for information an executive undertakes when beginning work in an unfamiliar environment. In this simulation, it is characterized by a search for clues that would help participants make decisions. In general, participants spent the most time seeking insight from the provided financial statements. Transcripts reveal that participants thought financial statements were the most likely source of information into the decisions they should make. Thus, as a rough approximation, I measure Strategic Hint Seeking as the amount of time spent on financial statements. All participants spent time on the media page, but they quickly moved away from it after realizing that it contained no strategic hints. But, for those with

high Personal Media Focus, there was a negative relationship with Strategic Hint Seeking. This
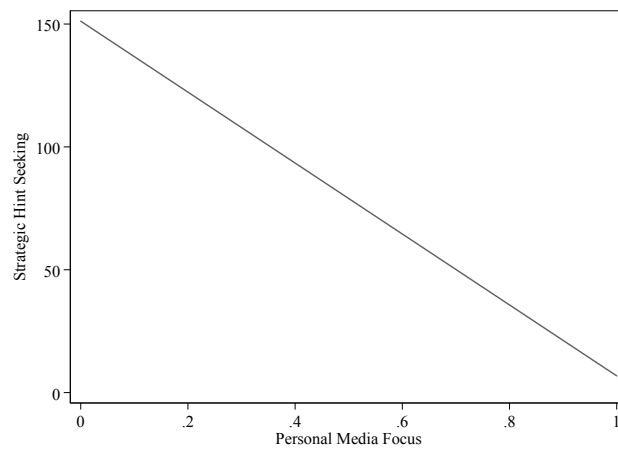
relationship is shown in Figure 17.[20]

Figure 17: Relationship Between Personal Media Focus and Strategic Hint Seeking

Thus,

> *Proposition 2: Personal Media Focus is negatively related to Strategic Hint Seeking.*

The next construct that arose was "strategic intuition," which I defined as the application

of strategic configurations that are based on recalled experiences or mental heuristics rather than

actual information. I did not measure this construct, nor did I have another useful proxy by which

to approximate it. But, when I compared the time spent on financial statements between those

that made statements such as "this seems like what I should be doing" and those that did not, it

became clear that those making such statements spent less time on financial statements. Thus, I

believe that instead of relying on the actual data they have, they instead are relying on their

---

[20] This relationship can exist beyond the mere balance between the two information sources over the duration of the round because participants can submit their decisions at any time. They are, therefore, able to spend their time on a number of activities: overall dashboard, financial statements, media coverage, and waiting after decisions have been submitted. This is also reflective of actual decisions made by executives: they can spend as much or little attention as desired on information sources before making a decision.

preconceived notions of which activities warrant an executive's investment. Thus, I expect the following relationship:

Proposition 3: Strategic Intuition is negatively related to Strategic Hint Seeking.

The next construct that requires attention is the executive's Perceived Strategic Soundness. This construct represents how strong participants perceived their strategy to be. There was indication that the more time they spent absorbing information in the simulation, the better they perceived their strategy to be. For example, participants used language like "informed decisions" and "spent the time as best I could" when talking about their decisions. Thus, I expect:

Proposition 4: Strategic Hint Seeking is positively related to Perceived Strategic Soundness.

The other major determinant of Perceived Strategic Soundness was the intuitiveness of the decisions. A participant noted "I kind of use just some preconceived ideas about what would be best." Those preconceived ideas represent the intuition that was used by the participant. Intuition can help decision makers in uncertain situations; it has recently been shown to be used by successful early stage investors (Huang & Pearce, 2015). The more participants felt their strategies matched mental models they had coming into the game, the more strongly they perceived that they had undertaken a sound strategy. There seems to be a cognitive dissonance when strategies diverge from what participants perceive as an intuitive strategy. Or, more formally:

Proposition 5: Strategic Intuition is positively related to Perceived Strategic Soundness.

Moving further along the process map, the data show a relationship between the soundness of a participant's strategy and their strategic confidence. Strategic confidence, again,

is the participant's confidence that their strategy will lead to success. Strategic confidence differs from perceived strategic soundness: one can feel they have a sound strategy without having confidence in its outcome. This could arise from organizational momentum or competitive intensity, both of which could limit an executive's confidence in their potentially sound strategy. While conceptually distinct, the data from the inductive study show that the more sound an executive perceives their strategy to be, the more confidence they have in a positive outcome. Thus,

Proposition 6: Perceived Strategic Soundness is positively related to Executive Strategic Confidence.

Next, I noticed in the inductive study that personal confidence also played a key role in participants' confidence that their strategy would lead to success. Some participants felt that their strategies would be successful because they are self-confident, regardless of their confidence their actual strategy. Meta-analytic studies have shown that CSE has a positive correlation with task performance ($\rho = 0.19$, Chang et al., 2012). Over time, this higher level of performance may lead executives to become conditioned to expect higher performance. Their performance may be further bolstered by higher generalized self-efficacy and emotional stability, both of which have been shown by meta-analysis to be positively related to job performance: 0.26 for generalized self-efficacy and 0.19 for emotional stability (Judge & Bono, 2001). Thus, I expect a baseline relationship between personal and strategic confidence or, more formally:

Proposition 7: Executive Personal Confidence is positively related to Executive Strategic Confidence.

The next logical step in the process model relates executive strategic confidence to the expected result. At first, I considered whether the expected result of the initial strategy was a

proxy for executive strategic confidence. But, there is a key difference: strategic confidence only considers the contents of their strategy—their specific decisions—without regard for whether they will be successful. It is easy to imagine that one could be confident in a strategy, but not hold an equally strong expectation regarding the outcome. For example, participants who feel confident about their strategy might nevertheless wonder if other participants chose better strategies or if external events could influence results in unexpected ways. The opposite is also possible: participants might not have confidence in their strategy, but expect to perform well in any case. Thus, I expect:

Proposition 8: Executive Strategic Confidence is positively related to the Expected Result of Initial Strategy.

Executives with high personal confidence might always perceive that they will do well, regardless of their strategy. That is, they believe they will perform better than others because of their abilities, independent of the strategy they have chosen and their confidence specifically in that strategy. All of these factors can influence and increase an executive's overall assessment of their current strategy and the prospects associated with it. Thus,

Proposition 9: Executive Personal Confidence is positively related to the Expected Result of Initial Strategy.

The next phase of the inductive study was to look at the patterns of decisions that participants made. I analyze this phase primarily through the lens of narcissism and then, as before, translate these findings to core self-evaluation arguments. The data collected in the inductive study show two patterns of decision-making based on participants' narcissism, both shown in Figure 18. The left pane of Figure 18 shows how initial investment diversification changes in relation to narcissism. Higher levels of diversification indicate that the participant

made bigger bets, while lower levels indicate more consistent disbursement of resources. Figure 18 provides early evidence that narcissism does lead to larger outlays in individual investment categories. In reviewing the literature, it seems that this early indication of a relationship might be in line with the "hubris hypothesis," which explains that hubristic CEOs are willing to take riskier actions because they have confidence that they will recoup their investment (Roll, 1986). Generally, narcissists tend to take greater risks than non-narcissists (Campbell, Goodie, & Foster, 2004). Translated into this case, they may feel more comfortable with larger outlays in fewer categories because they are more confident that the categories they've chosen to invest in will yield superior returns. This hubris hypothesis translates across both narcissism and core self-evaluation, as both are characterized by high confidence in one's own ability. Thus, I expect:

Proposition 10: Executive Personal Confidence is positively related to Large Outlays.

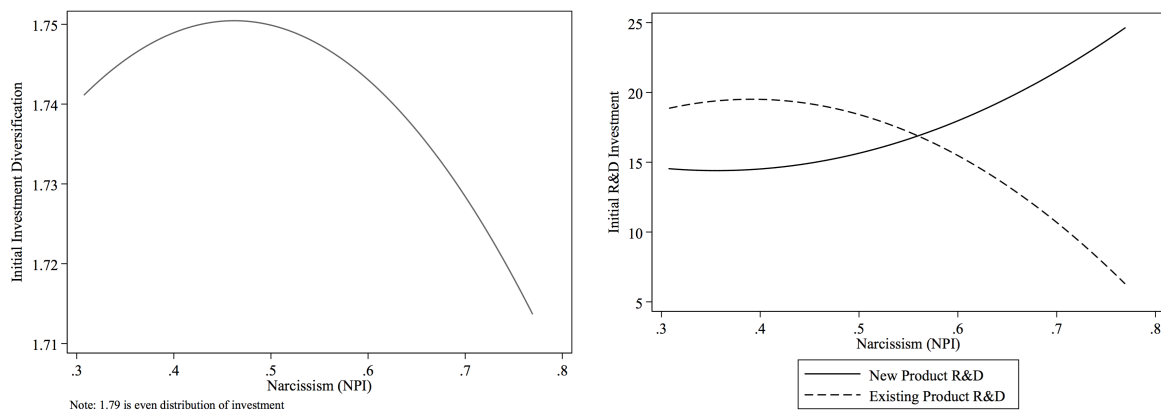Note: 1.79 is even distribution of investment

Figure 18: Plots Investigating Decision Profiles Based on Narcissism

The second pane of Figure 18 gives us an indication of the level of risk associated with different investment strategies—this time in the context of the amount of resources spent on product development. In this simulation, participants were able to invest in two types of product

development: new product research and development, and existing product research and development. Research and development is considered a risk-taking investment (Chatterjee & Hambrick, 2007; Zhu & Chen, 2015) as the development of new products is riskier than the improvement of existing products, however, with potentially greater payoffs. I would expect those with greater senses of self and higher confidence—those more closely aligned with narcissism and core self-evaluation—to prefer to invest in new products because of the potential payoffs. The early data plotted in Figure 18 indicates that this is the case: as narcissism increases, new product research and development increases, while existing product development decreases. While narcissism seems to show greater investments in risky outlays, I expect that core self-evaluation—which does not include the "negative" self-love component—should be a better predictor of risky investments.

Proposition 11: Executive Personal Confidence is positively related to Risky Outlays.

The Inductive Analysis of Strategic Change

Manipulating firm performance over time led to three different types of outcomes (see Figure 19). First, under the condition of high performance, participants changed their initial strategy very little. Second, under the condition of average performance, the middle panel of Figure 19, there is a generally higher level of strategic change that has a slight increase at the end. This could be due to endgame effects. Endgame effects are a change in decision pattern based on the fact that the game will end soon and the participant will no longer be able to change their outcomes (Friedman & Sunder, 1994). These are analogous changes in decision patterns late in an executive's tenure. Finally, the right pane of Figure 19 shows the effects under poor performance. There is evidence of a curvilinear relationship, under a general condition of high strategic change.
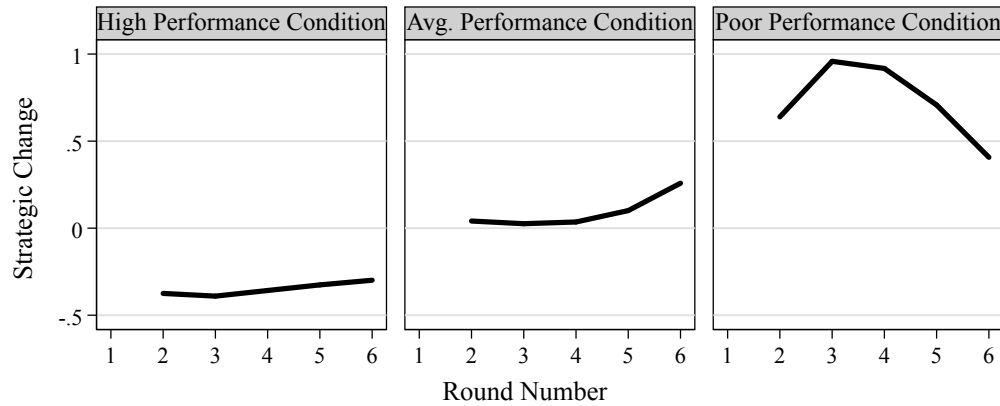
Figure 19: The Effect of Firm Performance on Strategic Change

Figure 20 plots the levels of strategic change for the three media tenor conditions. First, the positive media condition shows steadily increasing levels of strategic change. Second, the neutral media coverage condition shows an increasing level of strategic change followed by a slow decline. Third, the negative media condition results in an initial very high level of strategic change followed by decreasing strategic change that levels off at a much lower rate.

Figure 20: The Effect of Media Tenor on Strategic Change

In general, these trends show that there is an effect of the manipulation, although explaining this effect requires further exploration.

Strategic Change Inductive Analysis

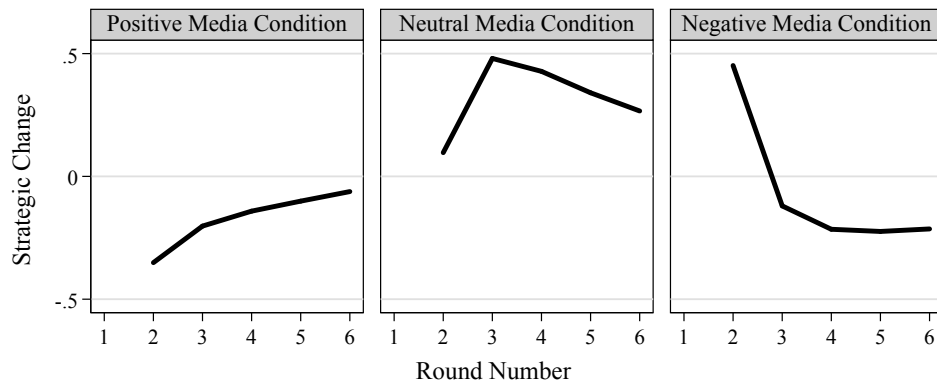After observing these trends, I returned to the transcripts and analyses to determine if any second order constructs which could help explain the variance in these trends were missing from my initial strategy inductive analysis. Figure 21 summarizes the second order constructs that were not present in the analysis of participant's initial strategies. In that situation, there were no experimental manipulations. After participants set their initial strategies, there were two manipulations influencing participants: the performance of the firm and the media coverage about the firm. While I didn't manipulate core self-evaluation, it will play an important role in building theory to explain the differences observed.

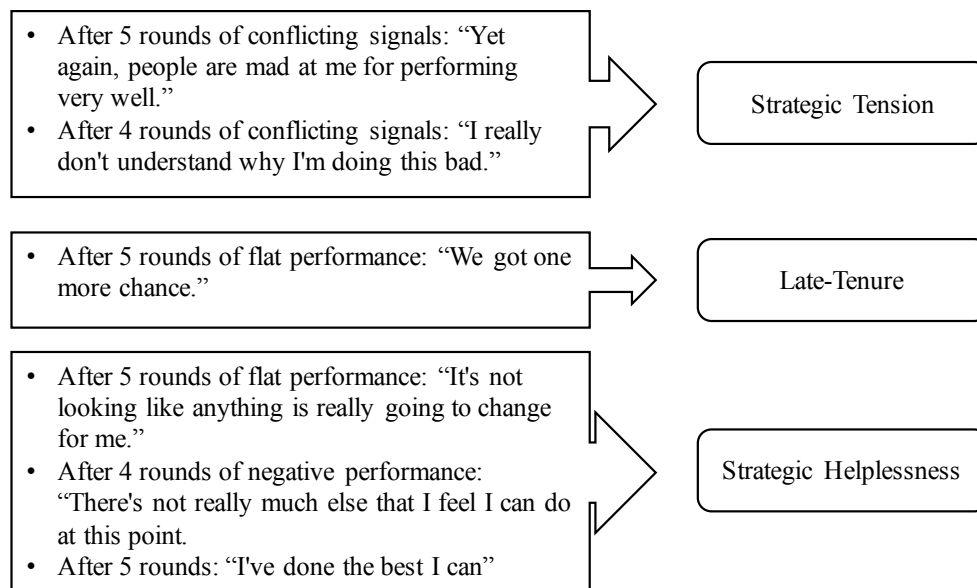|	
• After 5 rounds of conflicting signals: "Yet again, people are mad at me for performing very well." • After 4 rounds of conflicting signals: "I really don't understand why I'm doing this bad."	Strategic Tension
• After 5 rounds of flat performance: "We got one more chance."	Late-Tenure
• After 5 rounds of flat performance: "It's not looking like anything is really going to change for me." • After 4 rounds of negative performance: "There's not really much else that I feel I can do at this point. • After 5 rounds: "I've done the best I can"	Strategic Helplessness

Figure 21: Strategic Change Concepts and Constructs

Strategic Tension. I observed a number of the participants describe what I refer to as strategic tension: The cognitive tension that one feels when their objective performance doesn't match personal or social expectations. One participant noted that after four rounds of poor

120

performance, "I really don't understand why I'm doing this bad." This is an example of the cognitive tension that is felt when personal expectations aren't met. Another participant noted, "Yet again, people are mad at me for performing very well." This tension, apparent when media coverage was negative in the face of strong performance, arose from perceived social pressures, which may or may not align with reality. These two examples were typical descriptions participants provided when strategic tension was present. This strategic tension is not unlikely to occur outside the laboratory, considering the variance in firm performance explained by the CEO is probably lower than most would expect, at around 20% (Quigley & Hambrick, 2015).

Late-Tenure. End game effects have been observed in other strategy experiments (Keys & Wolfe, 1990). They represent the change in strategy that people employ when they approach the end of the game. At that point, they may change their strategy drastically because they are able to take more risk without personal loss. For example, one participant noted after five rounds, "we got one more chance." This phenomenon is particularly prevalent in strategy simulations where oversight and governance are absent.

Strategic Helplessness. The final second-order factor that was observed I term strategic helplessness. This situation arose when participants in the negative performance condition saw their performance continuously decline over the entire experiment. In these cases, participants felt that their decisions no longer mattered. One participant noted after five rounds of poor performance, "it's not looking like anything is really going to change for me," while another said, "there's not really much else that I feel I can do at this point." I define strategic helplessness as the learned feeling of lack of control on declining performance. This is analogous to learned helplessness, a construct already established in the literature (Judge et al., 1998a). Stable

negative events can lead people to be convinced that they do not have control over events, and may thus stop putting effort into tasks (Abramson et al., 1978).

Connecting the Strategic Change Second-Order Concepts

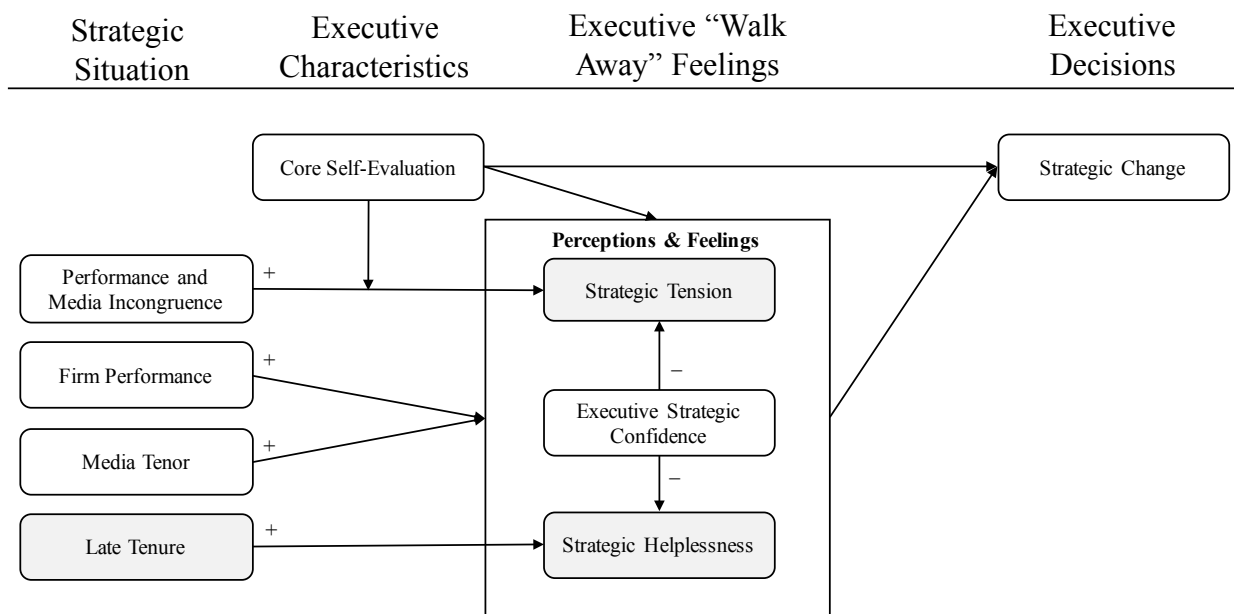Next, I connect the second order factors as shown in Figure 22.

Figure 22: Relationships Between Second Order Constructs for Strategic Change

Factors Leading to Strategic Tension. I defined strategic tension as the cognitive tension one feels when one's objective performance doesn't match personal or social expectations. Personal aspiration is one potential source of strategic tension when a significant difference arises between expected performance and actual performance. A clear aspiration for participants was high financial performance—as they were rewarded for performing well. When firm performance was low, there should be more strategic tension. As it increases though, that tension should decrease.

Proposition 12: Firm performance is negatively related to strategic tension.

Moreover, under certain conditions, social influences can lead an executive to feel strategic tension. This arises when incongruence develops between the media's expectations and actual performance—for example, when there is positive performance, but negative coverage or negative performance, but positive coverage.

Proposition 12: Incongruent feedback is positively related to strategic tension.

Another influence on strategic tension is core self-evaluation. It helps reduce the effect of incongruent feedback by allowing one to discount the negative component of the incongruence. Those executives with high core self-evaluation are more likely to conclude that the negative feedback mechanism—whether performance or media coverage—is wrong and that they are the best judges of their own performance.

Proposition 13: Core self-evaluation moderates the positive relationship between feedback incongruence and strategic tension such that the relationship is more positive for those with low core self-evaluation and less positive for those with high core self-evaluation.

The final influence on strategic tension I observed in the inductive study was executive strategic confidence. Strategic confidence reduces strategic tension because, regardless of the feedback received, such participants trust their strategy.

Proposition 14: Executive strategic confidence is negatively related to strategic tension.

Factors Leading to Strategic Helplessness. Yet another second order factor that arose was strategic helplessness. I defined it as the learned feeling of lack of control over declining performance. The first factor that leads to strategic helplessness is tenure in the experiment.

Because it is learned, it can only arise later in the experiment. Furthermore, it is only under conditions of negative performance that it can present.

Proposition 15: Sustained negative performance is positively related to strategic helplessness.

Dynamic Effects on Strategic Change. Strategic change is a firm's departure from existing resource allocation patterns (Finkelstein & Hambrick, 1990). There are four factors that individually represent an executive's degree of confidence. First is the confidence that an executive has in their current strategy. When executives feel confident that they are employing the correct strategy, there is less of a need to change that strategy. Thus,

Proposition 16: Executive strategic confidence is negatively related to strategic change.

Next, there is the influence of the executive's personal propensity to be confident in their abilities. This closely aligns with the executive's core self-evaluation. Or, more formally:

Proposition 17: Core self-evaluation is negatively related to strategic change.

The next influencer of strategic change is strategic helplessness. Strategic helplessness represents an executive's feeling that they don't have control over or the ability to change the direction of a company following sustained negative performance. In these cases, participants may stop making changes because they feel that events are outside their control. Or, more formally:

Proposition 18: Strategic helplessness is negatively related to strategic change.

Finally, strategic tension is also seen as having an influence on strategic change. When tension was evident in the feedback participants received, there were higher levels of strategic change. This relationship is proposed to exist because strategic tension can lead to self-doubt about the firm's prospects. This doubt is predicated on the feeling of not meeting personal or social goals.

This doubt may then lead participants to change tactics in order to resolve the tension that they feel. Thus,

Proposition 19: Strategic tension is positively related to strategic change.

Conclusion

The inductive study produced some important findings. The process provided a wealth of data for induction. This allowed me to better recognize the distinction between strategic confidence and personal confidence, better understand the role of intuition in decision making, and recognize strategic helplessness as a potentially important construct. The process that I have laid out can be used by future researchers to develop new theories in a controlled environment.

CHAPTER 10: APPLYING STRATEGIC MANAGEMENT EXPERIMENTS TO THE

CLASSROOM

Business simulation games were introduced to U.S. business schools in the early 1960s (Wilson, 1968). As educators, we typically use business simulation games in the classroom to teach students about developing cohesive strategies, implementing those strategies, and pushing them to achieve competitive objectives. As students compete round-by-round, they focus on winning the competition within the classroom—a goal which we typically incentivize. They make a series of decisions and we typically focus on the major topics within the strategic management curriculum when we debrief in the classroom—content such as industry analyses, corporate strategies, and business-level strategies.

We conduct these massive complicated business simulation games, however, without considering the other potential pedagogical uses for the massive amount of data generated in each game. Typically, the extent of the use of the data from these simulations is analyzing which strategies are working and why—and assessing students' grades. Indeed, even the ability to download the detailed data from business simulation game suppliers is limited.

I propose that we can greatly improve our ability to teach executive decision making— the core tenant of strategic management education—if we take the dual perspective of a behavioral strategist and an experimentalist. If instead of viewing business simulation games only as tools for teaching overall effectiveness of strategies, I view these endeavors as opportunities to learn about the types of people playing: their decision processes, tendencies, and behaviors.

There are two missing pieces in business strategy games currently that prohibit us from using them in a meaningful way to teach behavioral strategy. First, we must know something about the people—and, potentially, the teams—participating in the simulations. These can be baseline surveys of participants' personalities and experiences. The baseline survey in this dissertation can be used as an example for educators. Second, we must know more about what is happening throughout the simulation, beyond the decisions being made. This could include individual feelings, such as positive and negative affect, and team processes, such as levels of agreement and disagreement on decisions. Such data might be gathered from surveys issued throughout the game. Finally, we must be able to access and analyze the data quickly to make it available to teach in real time.

This chapter outlines my views on how we can enhance our use of business simulation games in the classroom by taking the perspective of a behavioral strategist and viewing those games as opportunities to take an experiment-like approach to teaching strategic decision making. If we can bring these perspectives together, we will be able to better train managers to understand why they make certain decisions.

Applying the Domain of Behavioral Strategy to the Classroom

Before I go into detail on how I would approach this opportunity for enhancing education, I feel it's important to agree on what behavioral strategy is, and what students can learn from the perspective. We are all comfortable with more mainstream domains such as mergers and acquisitions, but behavioral strategy is different: it crosses many philosophies, domains, and situations. Powell, Lovallo, and Fox (2011: 1371) define behavioral strategy as follows:

Behavioral strategy merges cognitive and social psychology with strategic management theory and practice. Behavioral strategy aims to bring realistic assumptions about human cognition, emotions, and social behavior to the strategic management of organizations and, thereby, to enrich strategy theory, empirical research, and real-world practice.

Upper Echelons Theory—already included in many strategic management courses—can also be a useful theory to teach in these exercises (Hambrick & Mason, 1984). Strategic decisions are related to the characteristics of the executives running the company. Many core processes span the domain of behavioral strategy. Some that Powell and colleagues (2011) point out include sensemaking, perception, individual and intragroup decision making, politics, organizational learning, and resource allocation. A wide variety of psychological concepts can be used to teach students about those core processes. Again, Powell and colleagues (2011) outline many core concepts that can be used to teach those core processes, including bounded rationality, prospect theory, heuristics and biases, dynamic inconsistency, reference groups, social cognition, social identity theory, self-categorization, cognitive schema, language, and ideology. The intersection of these core processes and concepts offer teaching opportunities.

Example Processes and Concepts. A number of questions may be answered using the methods described in this chapter. I recommend examining combinations of core processes and concepts—some outlined above—to determine the relationships to be considered. For example, one might explore how heuristics and intuition influence sensemaking. Do teams with members that naturally rely on intuition analyze less data, seek out fewer opinions, and make faster decisions? Simpler questions can also be considered, such as "do teams that log in and make decisions at the last minute fare worse than others?"; "do teams that have one member making

128

the decisions fare better?"; and "are there characteristics of teams that lead to less data being accessed in the game?" While these questions might seem elementary, they are compelling from the student's perspective—questions they have wondered about, for example, in my own strategic management courses. They can help answer a more vital question: why did that individual or team win? How did they go about the simulation that was different from the others?

Principles to Accomplish Goals

There are four key principles I propose as necessary for the efficient and effective integration of behavioral strategy and experiments into strategic management courses. First, we need to specify which core behavioral processes we want to teach and which concepts we want to apply. There are numerous available combinations of processes and concepts to teach, so it is wise to carefully select the ones that are likely to be most effective and informative to students. I propose that educators take two approaches simultaneously to select relationships to include. First, select a few relationships that are well known and established. These form the foundation for the experiments because the results will be predictable and clearly evident. The goal is to connect well known concepts with the students' behaviors to gain their buy-in to the concepts. Overall, having baseline relationships helps students feel that the concepts being taught are applicable to them and that they are subject to the same biases being discussed. Second, I propose that educators include a few relationships that are of personal interest, though they may not have received as much attention in the literature. Risking an unforeseen outcome might show students something new and interesting—something that may even further research. If those relationships do not work out, there are still the interesting baseline relationships to teach from.

Second, new software development must be prioritized. The ideas that I am proposing in this chapter need forward-thinking developers that are willing to work with educators who think

like experimentalists and behavioral strategists. It is not enough just to get the dynamics of the game right and create an appealing user interface; the scientific underpinnings need to be in place to make it work seamlessly. Think real time development, the ability to pilot new approaches, accessible data exports, and customizable code. Consider something as simple as piloting a simulation game; it must be fast in this context—games must be tried multiple times, surveys must be tested, dynamics must be confirmed. Not only does it have to be fast, it has to be open to instructors. Currently, providers do not allow for testing games, outside of their own development and testing teams. This is acceptable when they are providing a product—much like any video game.

Third, we as educators need to work together. The effect sizes in strategic management are quite small—I have shown as much in this dissertation. We should expect the same small effect sizes when we conduct similar exercises in the classroom. Working only within a few sections of ones' own class may result in non-findings; these could arise from a lack of power, rather than a null relationship. If, on the other hand, we were to work together, we could pool classroom data together to increase the power of the tests. This would be a great undertaking because many details would have to be agreed upon across instructors, including software choice, game setup, surveys to be completed, data to be analyzed, and the timeframes required. While numerous, these obstacles are not insurmountable; the educational benefits of this collaboration should outweigh the costs of coordination.

Fourth, we need to manage these processes and data carefully. The collection of individual personal information is not trivial; it requires student buy-in, data protections, and careful consideration at every step. Further, if we have a desire to potentially publish from the data collected, we would need to gain Institutional Resource Board (IRB) approval before

beginning. This, again, requires much care upfront, especially in order to coordinate across classrooms and universities. Overall, the educational benefits are, in my opinion, so great that these extra efforts are worthwhile.

Recommended Steps to Implement

I propose several key steps instructors may wish to follow to implement the ideas proposed here. They are summarized in Table 20.

First, instructors should select the processes and concepts they want to teach. Each process–concept combination can then be distilled down to the relationships that can be used to demonstrate important ideas. As discussed above, these processes and concepts can fit into two categories: baseline and stretch. The relationships in the baseline category are those that have more established and predictable relationships. The relationships in the stretch categories allow researchers to gain, and teach, new insights. This can bring cutting-edge research into the classroom by involving the students directly.

Second, data collection plans need to be created. This is a daunting step—there are so many possible data points that instructors need to be discriminating in their selection. Trying to include too many, while enticing, can lead to an overwhelming amount of data and potential data paralysis. Instead, I recommend focusing on only those variables that are directly related to the core relationships—those relationships based on the processes and concepts chosen. Three points of data collection should receive priority: those data collected before the game begins, such as personality variables; those data collected during the game, such as surveys; and those data collected from the actual software, such as decision timing.

I have an underlying concern as I write this chapter that there will not be enough power for one instructor during one semester to collect enough data to be able to show meaningful

results. The effect sizes in strategic management are sometimes small. Thus, third, I recommend that instructors work together to pool their classes' data. That way, they can show aggregate numbers that include more than just their own section. This will still have the benefit of connecting their own students with the data, but it will allow for more explanatory power.

Next, instructors must prepare for the analysis of the data. This is counter to typical research practices in which the data is collected, then analyzed. Setting up the scripts to analyze the data before the game begins will ensure that the data can be analyzed fast enough to make it available for teaching during the semester. This step requires selecting the analyses tools, developing processes to import the data, and writing the actual scripts to do the analyses. After all those factors, I recommend creating all the classroom templates to use to teach—that is, the presentations and handouts. This will speed up integration of the results into teachable material.

After preparing everything for the classroom, including the data collection and analyses, I recommend piloting the semester. It's important to pilot the business simulation game software from the student's perspective. This will ensure that the data is being collected at the appropriate points and that nothing has been forgotten. It also allows for testing the dynamics of the simulation; check that bad strategies lead to failure and good ones lead to success. I'm always surprised how many instructors have not personally tested the simulation software they use in their courses. Normally, this lapse is not an issue, but when the aim is to also teach and assess behavior, testing becomes more important. After testing the simulation from the student's perspective, test the data export, data import, and analyses. Assess how long it will take to do and plan accordingly for the semester. If it is something a teaching assistant can do, note that as well.

Once everything is prepared and tested, it's time to begin the game. There are three primary phases: collection of baseline survey, running the simulation, and collecting end-game variables. This will happen similarly to other games being run in strategic management courses, but will engender more involvement from all the students. I can imagine that some variables will need to be collected from every student. Instructors must hold students accountable for completing all surveys; otherwise, they will have to contend with missing data issues.

Once the game has been completed, test the relationships and prepare the teaching materials. It's important to synchronize the end of the game with other faculty pooling their classrooms. This will help ensure that all the data for analysis is ready at the same time. When the data is collected, I recommend going through the same steps as above in the pilot studies. Those earlier efforts, hopefully, speed up this portion of the process.

Finally, debrief the students. The steps I've laid out here should enabled educators to efficiently and effectively show results that are novel, interesting, linked to existing theory, informing new theory, and relevant to managers. If we can do this, we will have advanced the role of business simulation games in strategic management courses by integrating behavioral strategy concepts and experiments in a meaningful way.

Table 20: Steps to Implement Strategy Experiments in the Classroom

Step	Activity	Purpose
Specify Processes & Concepts	Select baseline relationships	Ensures that there are results that can be used in the classroom
	Select stretch relationships	Allows new insights to be gained and taught; brings cutting-edge research into the classroom
Develop Data Collection Plan	Select measures for initial survey	Captures the traits of the individuals and teams
	Select instruments for measurement throughout the simulation	Captures the variables that are needed to be collected throughout the game to explain the relationships
	Select data to be captured from the software	Captures the variables—such as the decisions—that will be captured separate from the individual and team
Collaborate to Increase Power	Collaborate with others to pool data	Increase power to improve the likelihood of detecting effects
Prepare for Analyses	Select analyses tools	Ensures that the analyses that need to be run can be conducted
	Develop process for data importing	Ensures that the data from multiple sources can be imported and linked for analyses
	Create scripts for analyses	Speeds up the analysis phase so that teaching content can developed as early as possible
	Develop teaching templates	Builds the ability to move from analyses to teaching quicker
Pilot Simulation	Pilot student view of simulation	Checks that the data are collected at the appropriate time
	Verify that the data can be exported and imported as needed	Gain confidence that the data can be imported efficiently into the software to be analyzed
	Test analyses	Ensures that the analyses can be completed quickly
Conduct the Simulation	Administer baseline survey	Collects the trait and other variables that are intended to be constant within individuals and teams before the simulation
	Run the simulation	Generates the data to be used in the analyses
	Collect final survey items	Collects the end-game variables that are needed in the analyses
Collect and Analyze Data	Collect and import data from all sources	Places all data into one database for fast and accurate analyses
	Run analyses scripts and test relationships	Provides the content for the teaching templates developed earlier
	Update teaching templates	Prepares materials for the classroom
Debrief Students	Demonstrate the relationships using the data from the students experiences	Creates a greater link between concepts and students to enhance learning

Possible Extensions

I further propose two ideas that I have for extending these concepts: using artificial intelligence (AI) in business simulation games and applying functional magnetic resonance imaging (fMRI) and other more intrusive measurement techniques. While these ideas might seem radical, they may drastically increase student engagement in the teaching of behavioral strategy.

Artificial intelligence is software that perceives its environment and takes actions that maximize goals. In the case of business simulations, AI can take all the psychometric properties of participants, their behaviors, and actions and detect patterns that can be used for teaching. Radical ideas can then be explored. A few examples might help illustrate how these could function. Consider all of these in the context of having had many classrooms and participants run through the simulation such that massive amounts of personal information and decisions have been collected. Imagine being able to specify a "type" of executive—a male, high conscientiousness, low reliance on intuition, low core self-evaluation, in his 30s with 10 years experience, and left handed. AI could, using all the data collected, possibly make decisions that match the patterns associated with that specific combination. The teaching opportunities are endless. Students could define profiles of AI players and allow them to compete, all the while drawing conclusions on why certain executives—that they have created—win or lose, take risk or play it safe, explore or exploit, and so on. Students could also play against them. AI teams could be based on leaders of actual competitors; students could then assume companies based on actual data and compete in a "more real world" scenario. There are a few limitations to AI. First, it requires stockpiles of data informing the software to allow for optimal pattern matching. Second, defining the fitness functions can be complicated. It's important to consider the structure

of the data, the question to be answered, and the goals of the pattern matching. Third, it takes time to teach the system and check that its actions and results are consistent and informative. Fourth, the computing power to do these types of exercises are considerable. None of these limitations are insurmountable, but they demand massive undertakings.

Another radical extension is the use of more invasive measurement of students for their classroom education. We're quite comfortable employing surveys, simple experiments, and maybe more complex business simulation games, as I propose in this chapter. We are less comfortable, however, placing students in fMRI machines, using eye tracking equipment, and performing genetic testing. These methods are arguably the future of strategic management research (Powell, 2011). Simple simulations can be run with students being monitored under more intrusive methods. This opens numerous teaching opportunities when we combine business simulation games with advanced measurement techniques. Do students gain more pleasure from market share gains or financial gains? How does a student's blood pressure change when the whole market takes a downturn? Do students have similar changes in blood pressure when markets boom? These are not questions we can answer by idly measuring students from a distance. Further, many college campuses now have the technology on campus to answer these types of questions. Taking advantage of these resources would reveal just how cutting edge universities are and expose business students to technologies with which they otherwise might not be able to interact.

Conclusion

Business simulation games were first derived in the 1960s following hundreds of years of war games. Since business schools started to develop these games, they have typically been in the forefront of development. Wilson (1968: 184) noted that "indeed business and the social

sciences have sometimes been ahead of the military in gaming." I propose in this chapter that we take the next big leap in business simulation games. We need to consider integrating the principles of behavioral strategy into these games and use them to create further educational opportunities for our students. In this chapter I have provided examples, espoused my views of key principles that need to be considered, and prescribed a series of steps to accomplish these goals. There are also numerous extensions to be considered. Two that I propose are artificial intelligence and more intrusive measurements during the simulations. When taken as a whole, I hope that we can advance strategic management education by bringing the mind of the strategist back into the classroom.

CHAPTER 11: CONCLUSION

This dissertation aims to, first, show how experiments fit into the field of strategic management. While archival studies are effective for showing general relationships, they suffer from many limitations. Archival studies, however, are currently the norm in the field. Thus, while laboratory work has many benefits, researchers are fast to criticize laboratory experiments. I believe—and I hope I have shown—that laboratory experiments have a place in the field. We are most effective when we use a variety of methods to generate and test theory. No one study is perfect, but by assessing theory from many perspectives, we can gain a greater understanding of the field. I hope that we experience a turn in the literature towards greater acceptance of high quality experiments. Experiments do not always need to be the primary method of a study; sometimes researchers might be better served to use them to test a specific mechanism for a relationship found using another method.

Second, I want to impart that experiments can be used for more purposes than only to test theory. Historically, experiments have been understood as a means to test simple relationships with a high level of internal validity. The final two chapters of this dissertation sought to change our perspective on experiments in strategic management by extending them to theory generation and business education. The consistency of experiments combined with the proximity to decision makers provides a unique opportunity to develop theories that might be harder to assess in the field when there are many confounds, situational differences, and unobserved factors. Thus, the lab can be used to generate and refine theory, as I have outlined. The principles of laboratory experiments should also be used in the classroom to teach behavioral strategy. As educators, we

are already using business simulation games and other educational tools. I believe that we can extend their use and, as I outlined in the last chapter, improve our capability to teach the principles of behavioral strategy. This is not a simple proposition and I hope the steps I have outlined may serve as a guide going forward.

Next, address the overarching question of this dissertation: across multiple sequential decisions, how do individuals—in light of their specific characteristics—interpret multiple types of varying feedback to make resource allocation decisions?

Considering the important phrase "across multiple sequential decisions," I emphasize that time is a key factor in strategic management. I showed throughout the dissertation that behaviors change as time progresses in strategic decision making. Simple relationships such as "core self-evaluation reduces strategic change" might be beneficial to study, but they do not sufficiently explain the relationship in its totality. Instead, I have shown throughout this dissertation that time plays an important factor. Thus, I recommend that we more explicitly consider time in our theory building and testing.

My research question focuses on individuals' "specific characteristics" to encourage researchers to manipulate personality constructs in their own studies. I think there is enough evidence—as I showed in the literature review on core self-evaluation—to suggest that that personality variables can be manipulated in a manner that is appropriate and effective for theory testing. The results of this dissertation also support this notion. Through a relatively simple eight-minute manipulation, I could see differences in core self-evaluation. These differences led to variance in the participants' behaviors. The gains in internal validity are also impressive; there is no need to control for other factors when using a manipulation. Not only does this simplify analyses, it also increases our confidence in relationships.

Continuing through the research question, I want to emphasize that we examine how "multiple types of varying feedback" play a role in strategic management. Many studies examine feedback mechanisms separately. The real world, however, is rife with nuances and contradictions. Future studies in strategic management that deal with feedback should consider multiple types jointly. Interacting feedback mechanisms allows directly accounting for incongruent feedback. This incongruence can be an important factor in better explaining different phenomena. Thus, better understanding the source of incongruence can help us develop and test richer theories.

Finally, I call on researchers to explore beyond my choice to study "resource allocation decisions." These decisions served as a necessary starting point, but I hope that future strategic management experiments continue to push past this dissertation to consider different decisions. There may be specific decisions that, if considered, may be more or less influenced by specific personality traits. For example, studies of agreeableness could yield different results when considering decisions regarding other people as compared to strategic decisions. Thus, we may be able to develop and test more nuanced theories by considering different decisions.

REFERENCES

Abramson, L. Y., Seligman, M. E., & Teasdale, J. D. 1978. Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology*, 87: 49–74.

Agarwal, R., Croson, R., & Mahoney, J. T. 2010. The role of incentives and communication in strategic alliances: an experimental investigation. *Strategic Management Journal*, 31: 413–437.

Aguinis, H., & Lawal, S. O. 2012. Conducting field experiments using eLancing's natural environment. *Journal of Business Venturing*, 27: 493-505.

Amason, A. C. 2011. *Strategic management: From theory to practice*. New York: Routledge.

Anderson, C., Ames, D. R., & Gosling, S. D. 2008. Punishing hubris: The perils of overestimating one's status in a group. *Personality and Social Psychology Bulletin*, 34: 90–101.

Anderson, C. A., Lindsay, J. J., & Bushman, B. J. 1999. Research in the psychological laboratory truth or triviality? *Current Directions in Psychological Science*, 8: 3–9.

Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. 2010. On making causal claims: A review and recommendations. *The Leadership Quarterly*, 21: 1086–1120.

Artinger, S., & Powell, T. C. 2015. Entrepreneurial failure: Statistical and psychological explanations. *Strategic Management Journal*.

Audia, P. G., Locke, E. A., & Smith, K. G. 2000. The paradox of success: An archival and a laboratory study of strategic persistence following radical environmental change. *Academy of Management Journal*, 43: 837–853.

Barber, A., & Wesson, M. 1998. Using verbal protocol analysis to assess the construct validity of an empirical measure: An examination of the OCP. *Advances in Qualitative Organization Research*, 1: 67–104.

Bascle, G. 2008. Controlling for endogeneity with instrumental variables in strategic management research. *Strategic Organization*, 6: 285–327.

Bass, B. M. 1964. Business gaming for organizational research. *Management Science*, 10: 545–556.

Bateman, T. S., & Zeithaml, C. P. 1989a. The psychological context of strategic decisions: A model and convergent experimental findings. *Strategic Management Journal*, 10: 59–74.

Bateman, T. S., & Zeithaml, C. P. 1989b. The psychological context of strategic decisions: A test of relevance to practitioners. *Strategic Management Journal*, 10: 587–592.

Bednar, M. K. 2012. Watchdog or lapdog? A behavioral view of the media as a corporate governance mechanism. *Academy of Management Journal*, 55: 131–150.

Bednar, M. K., Boivie, S., & Prince, N. R. 2013. Burr under the saddle: How media coverage influences strategic change. *Organization Science*, 24: 910–925.

Berkowitz, L., & Donnerstein, E. 1982. External validity is more than skin deep: Some answers to criticisms of laboratory experiments. *American Psychologist*, 37: 245–257.

Best, R. G., Stapleton, L. M., & Downey, R. G. 2005. Core self-evaluations and job burnout: The test of alternative models. *Journal of Occupational Health Psychology*, 10: 441–451.

Boeker, W. 1997. Strategic change: The influence of managerial characteristics and organizational growth. *Academy of Management Journal*, 40: 152–170.

Bono, J. E., & Colbert, A. E. 2005. Understanding responses to multi-source feedback: The role of core self-evaluations. *Personnel Psychology*, 58: 171–203.

Bono, J. E., & Judge, T. A. 2003. Core self-evaluations: A review of the trait and its role in job satisfaction and job performance. *European Journal of Personality*, 17: 5–18.

Boyd, B. K., Bergh, D. D., Ireland, R. D., & Ketchen, D. J. 2013. Constructs in strategic management. *Organizational Research Methods*, 16: 3–14.

Boyd, B. K., Gove, S., & Hitt, M. A. 2005. Consequences of measurement problems in strategic management research: the case of Amihud and Lev. *Strategic Management Journal*, 26: 367–375.

Brockner, J., Grover, S., O'Malley, M. N., Reed, T. F., & Glynn, M. A. 1993. Threat of future layoffs, self-esteem, and survivors' reactions: Evidence from the laboratory and the field. *Strategic Management Journal*, 14: 153–166.

Bromiley, P., & Rau, D. 2016. Social, Behavioral, and Cognitive Influences on Upper Echelons During Strategy Process: A Literature Review. *Journal of Management*, 42: 174–202.

Brown, S. L., & Eisenhardt, K. M. 1998. *Competing on the edge: Strategy as structured chaos*: Harvard Business Press.

Cain, D. M., Moore, D. A., & Haran, U. 2015. Making sense of overconfidence in market entry. *Strategic Management Journal*, 36: 1–18.

Camerer, C., & Lovallo, D. 1999. Overconfidence and excess entry: An experimental approach. *American Economic Review*, 89: 306–318.

Campbell, W., Goodie, A. S., & Foster, J. D. 2004. Narcissism, confidence, and risk attitude. *Journal of Behavioral Decision Making*, 17: 297–311.

Carpenter, M. A. 2000. The price of change: The role of CEO compensation in strategic variation and deviation from industry strategy norms. *Journal of Management*, 26: 1179–1198.

Chandler, A. D. 1962. *Strategy and structure: Chapters in the histoly of the great American enterprise*. Cambridge, MA: MIT Press.

Chang, C.-H., Ferris, D. L., Johnson, R. E., Rosen, C. C., & Tan, J. A. 2012. Core self-evaluations a review and evaluation of the literature. *Journal of Management*, 38: 81–128.

Chatterjee, A., & Hambrick, D. C. 2007. It's all about me: Narcissistic chief executive officers and their effects on company strategy and performance. *Administrative Science Quarterly*, 52: 351–386.

Chatterjee, A., & Hambrick, D. C. 2011. Executive personality, capability cues, and risk taking how narcissistic CEOs react to their successes and stumbles. *Administrative Science Quarterly*, 56: 202–237.

Chatterji, A. K., Findley, M., Jensen, N. M., Meier, S., & Nielson, D. 2016. Field experiments in strategy research. *Strategic Management Journal*, 37: 116–132.

Chen, G., Crossland, C., & Luo, S. 2015. Making the same mistake all over again: CEO overconfidence and corporate resistance to corrective feedback. *Strategic Management Journal*, 36: 1513–1535.

Chen, G., Gully, S. M., & Eden, D. 2001. Validation of a new general self-efficacy scale. *Organizational Research Methods*, 4: 62–83.

Chen, X.-P., Yao, X., & Kotha, S. 2009. Entrepreneur passion and preparedness in business plan presentations: A persuasion analysis of venture capitalists' funding decisions. *Academy of Management Journal*, 52: 199–214.

Colquitt, J. A. 2008. Publishing laboratory research in AMJ: A question of when, not if. *Academy of Management Journal*, 51: 616–620.

Colquitt, J. A. 2013. Research Methodology Seminar.

Conlon, D. E., & Garland, H. 1993. The role of project completion information in resource-allocation decisions. *Academy of Management Journal*, 36: 402–413.

Conner, T. S., Tennen, H., Fleeson, W., & Barrett, L. F. 2009. Experience sampling methods: A modern idiographic approach to personality research. *Social and Personality Psychology Compass*, 3: 292–313.

Cook, T. D., & Campbell, D. T. 1979. *Quasi-experimentation: Design & analysis issues for field settings*. Boston, MA: Houghton Mifflin.

Cosier, R. A., & Rechner, P. L. 1985. Inquiry method effects on performance in a simulated business environment. *Organizational Behavior and Human Decision Processes*, 36: 79–95.

Coutu, D. L. 2004. Putting leaders on the couch: A conversation with Manfred F.R. Kets de Vries. *Harvard Business Review*, 82: 64–71.

Crilly, D., Ni, N., & Jiang, Y. 2016. Do-no-harm versus do-good social responsibility: Attributional thinking and the liability of foreignness. *Strategic Management Journal*, 37: 1316–1329.

Croson, R., Anand, J., & Agarwal, R. 2007. Using experiments in corporate strategy research. *European Management Review*, 4: 173–181.

Crossland, C., Zyung, J., Hiller, N. J., & Hambrick, D. C. 2014. CEO career variety: Effects on firm-level strategic and social novelty. *Academy of Management Journal*, 57: 652–674.

Cycyota, C. S., & Harrison, D. A. 2006. What (not) to expect when surveying executives a meta-analysis of top manager response rates and techniques over time. *Organizational Research Methods*, 9: 133–160.

Cyert, R. M., & March, J. G. 1963. *A behavioral theory of the firm*. Englewood Cliffs, NJ.

Dane, E., & Pratt, M. G. 2007. Exploring intuition and its role in managerial decision making. *Academy of Management Review*, 32: 33–54.

Davis, J. P., Eisenhardt, K. M., & Bingham, C. B. 2007. Developing theory through simulation methods. *Academy of Management Review*, 32: 480-499.

Dunning, D., Griffin, D. W., Milojkovic, J. D., & Ross, L. 1990. The overconfidence effect in social prediction. *Journal of Personality and Social Psychology*, 58: 568–581.

Eisenhardt, K. M. 1989. Building theories from case study research. *Academy of Management Review*, 14: 532-550.

Elfenbein, D. W., Knott, A. M., & Croson, R. 2016. Equity stakes and exit: An experimental approach to decomposing exit delay. *Strategic Management Journal*.

Erez, A., & Judge, T. A. 2001. Relationship of core self-evaluations to goal setting, motivation, and performance. *Journal of Applied Psychology*, 86: 1270–1279.

Fast, N. J., Gruenfeld, D. H., Sivanathan, N., & Galinsky, A. D. 2009. Illusory control a generative force behind power's far-reaching effects. *Psychological Science*, 20: 502–508.

Fern, M. J., Cardinal, L. B., & O'Neill, H. M. 2012. The genesis of strategy in new ventures: Escaping the constraints of founder and team knowledge. *Strategic Management Journal*, 33: 427–447.

Finkelstein, S., & Hambrick, D. C. 1990. Top-management-team tenure and organizational outcomes: The moderating role of managerial discretion. *Administrative Science Quarterly*, 35: 484–503.

Finkelstein, S., Hambrick, D. C., & Cannella, A. A. 2009. *Strategic Leadership: Theory and research on executives, top management teams, and boards*. New York: Oxford University Press.

Fleeson, W. 2007. Situation-based contingencies underlying trait-content manifestation in behavior. *Journal of Personality*, 75: 825–862.

Flynn, F. J., & Staw, B. M. 2004. Lend me your wallets: the effect of charismatic leadership on external support for an organization. *Strategic Management Journal*, 25: 309–330.

Fournier, M. A., Moskowitz, D., & Zuroff, D. C. 2008. Integrating dispositions, signatures, and the interpersonal domain. *Journal of Personality and Social Psychology*, 94: 531.

Fredrickson, J. W. 1984. The comprehensiveness of strategic decision processes: Extension, observations, future directions. *Academy of Management Journal*, 27: 445–466.

Friedman, D., & Sunder, S. 1994. *Experimental Methods: A Primer for Economists*. Cambridge, UK: Cambridge University Press.

Gabarro, J. J. 1987. *The dynamics of taking charge*: Harvard Business Press.

Gallagher, D. 2015. Apple investors are betting on a busel, *The Wall Street Journal*. New York, New York.

Gentile, B., Miller, J. D., Hoffman, B. J., Reidy, D. E., Zeichner, A., & Campbell, W. K. 2013. A test of two brief measures of grandiose narcissism: The Narcissistic Personality Inventory–13 and the Narcissistic Personality Inventory-16. *Psychological Assessment*, 25: 1–17.

Gerstner, W.-C., König, A., Enders, A., & Hambrick, D. C. 2013. CEO narcissism, audience engagement, and organizational adoption of technological discontinuities. *Administrative Science Quarterly*, 58: 257–291.

Gielnik, M. M., Spitzmuller, M., Schmitt, A., Klemann, D. K., & Frese, M. 2015. "I put in effort, therefore I am passionate": Investigating the path from effort to passion in entrepreneurship. *Academy of Management Journal*, 58: 1012–1031.

Gioia, D. A., & Chittipeddi, K. 1991. Sensemaking and sensegiving in strategic change initiation. *Strategic Management Journal*, 12: 433–448.

Gioia, D. A., Corley, K. G., & Hamilton, A. L. 2013. Seeking qualitative rigor in inductive research: Notes on the Gioia Methodology. *Organizational Research Methods*, 16: 15–31.

Gladwell, M. 2002. The talent myth: Are smart people overrated?, *The New Yorker*, Vol. 22: 28–33.

Godfrey, P. C., Merrill, C. B., & Hansen, J. M. 2009. The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. *Strategic Management Journal*, 30: 425–445.

Graffin, S. D., Boivie, S., & Carpenter, M. A. 2013. Examining CEO succession and the role of heuristics in early-stage CEO evaluation. *Strategic Management Journal*, 34: 383–403.

Green, J. D., & Campbell, W. K. 2000. Attachment and exploration in adults: Chronic and contextual accessibility. *Personality and Social Psychology Bulletin*, 26: 452–461.

Gregoire, D. A., & Shepherd, D. A. 2012. Technology-market combinations and the identification of entrepreneurial opportunities: An investigation of the opportunity-individual nexus. *Academy of Management Journal*, 55: 753–785.

Greiner, L. E., & Bhambri, A. 1989. New CEO intervention and dynamics of deliberate strategic change. *Strategic Management Journal*, 10: 67–86.

Greve, H. R. 1998. Performance, aspirations, and risky organizational change. *Administrative Science Quarterly*, 9: 54–80.

Hambrick, D. C. 2007. Upper echelons theory: An update. *Academy of Management Review*, 32: 334–343.

Hambrick, D. C., & Fukutomi, G. D. 1991. The seasons of a CEO's tenure. *Academy of Management Review*, 16: 719–742.

Hambrick, D. C., Geletkanycz, M. A., & Fredrickson, J. W. 1993. Top executive commitment to the status quo: Some tests of its determinants. *Strategic Management Journal*, 14: 401–418.

Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, 9: 193–206.

Hamilton, B. H., & Nickerson, J. A. 2003. Correcting for endogeneity in strategic management research. *Strategic Organization*, 1: 51–78.

Hannan, M. T., & Freeman, J. 1977. The population ecology of organizations. *American Journal of Sociology*, 82: 929–964.

Hannan, M. T., & Freeman, J. 1984. Structural Inertia and Organizational Change. *American Sociological Review*, 49: 149–164.

Harrison, P. D., & Harrell, A. 1993. Impact of adverse selection on managers project evaluation decisions. *Academy of Management Journal*, 36: 635–643.

Haynes, K. T., & Hillman, A. 2010. The effect of board capital and CEO power on strategic change. *Strategic Management Journal*, 31: 1145–1163.

Hayward, M. L., & Hambrick, D. C. 1997. Explaining the premiums paid for large acquisitions: Evidence of CEO hubris. *Administrative Science Quarterly*, 42: 103–127.

Hayward, M. L., & Shimizu, K. 2006. De-commitment to losing strategic action: evidence from the divestiture of poorly performing acquisitions. *Strategic Management Journal*, 27: 541–557.

Hayward, M. L. A., Rindova, V. P., & Pollock, T. G. 2004. Believing one's own press: The causes and consequences of CEO celebrity. *Strategic Management Journal*, 25: 637–653.

Henderson, A. D., Miller, D., & Hambrick, D. C. 2006. How quickly do CEOs become obsolete? Industry dynamism, CEO tenure, and company performance. *Strategic Management Journal*, 27: 447–460.

Herrmann, P., & Datta, D. K. 2006. CEO experiences: effects on the choice of FDI entry mode. *Journal of Management Studies*, 43: 755–778.

Herrmann, P., & Nadkarni, S. 2014. Managing strategic change: The duality of CEO personality. *Strategic Management Journal*, 35: 1318–1342.

Hiller, N. J., & Hambrick, D. C. 2005. Conceptualizing executive hubris: The role of (hyper-) core self-evaluations in strategic decision-making. *Strategic Management Journal*, 26: 297–319.

Hitt, M. A., Boyd, B. K., & Li, D. 2004. The state of strategic management research and a vision of the future. *Research Methodology in Strategy and Management*, 1: 1–31.

Huang, L., & Pearce, J. L. 2015. Managing the Unknowable: The Effectiveness of Early-stage Investor Gut Feel in Entrepreneurial Investment Decisions. *Administrative Science Quarterly*, 60: 634–670.

Hubbard, T. D., Christensen, D., & Graffin, S. D. 2017. Higher highs and lower lows: The role of corporate social responsibility in CEO dismissal. *Strategic Management Journal*.

Jakab, S. 2015. Facebook Tries to Make Friends, *The Wall Street Journal*. New York, New York.

Johnson, R. E., Rosen, C. C., & Levy, P. E. 2008. Getting to the core of core self-evaluation: a review and recommendations. *Journal of Organizational Behavior*, 29: 391–413.

Jones Christensen, L., Siemsen, E., & Balasubramanian, S. 2015. Consumer behavior change at the base of the pyramid: Bridging the gap between for-profit and social responsibility strategies. *Strategic Management Journal*, 36: 307–317.

Judge, T., Locke, E., & Durham, C. 1997. The dispositional causes of job satisfaction: A core evaluation approach. *Research in Organizational Behavior*, 19: 151–188.

Judge, T. A. 2009. Core self-evaluations and work success. *Current Directions in Psychological Science*, 18: 58–62.

Judge, T. A., & Bono, J. E. 2001. Relationship of core self-evaluations traits—self-esteem, generalized self-efficacy, locus of control, and emotional stability—with job satisfaction and job performance: A meta-analysis. *Journal of Applied Psychology*, 86: 80–92.

Judge, T. A., Bono, J. E., & Locke, E. A. 2000. Personality and job satisfaction: The mediating role of job characteristics. *Journal of Applied Psychology*, 85: 237–249.

Judge, T. A., Erez, A., & Bono, J. E. 1998a. The power of being positive: The relation between positive self-concept and job performance. *Human Performance*, 11: 167–187.

Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. 2002. Are measures of self-esteem, neuroticism, locus of control, and generalized self-efficacy indicators of a common core construct? *Journal of Personality and Social Psychology*, 83: 693–710.

Judge, T. A., Erez, A., Bono, J. E., & Thoresen, C. J. 2003. The core selfevaluations scale: Development of a measure. *Personnel Psychology*, 56: 303–331.

Judge, T. A., & Kammeyer-Mueller, J. D. 2011. Implications of core self-evaluations for a changing organizational context. *Human Resource Management Review*, 21: 331–341.

Judge, T. A., Locke, E. A., Durham, C. C., & Kluger, A. N. 1998b. Dispositional effects on job and life satisfaction: The role of core evaluations. *Journal of Applied Psychology*, 83: 17–34.

Judge, T. A., Thoresen, C. J., Pucik, V., & Welbourne, T. M. 1999. Managerial coping with organizational change: A dispositional perspective. *Journal of Applied Psychology*, 84: 107–122.

Keys, B., & Wolfe, J. 1990. The role of management games and simulations in education and research. *Journal of Management*, 16: 307–336.

Khurana, R. 2004. *Searching for a corporate savior: The irrational quest for charismatic CEOs*: Princeton University Press.

Kistruck, G. M., Sutter, C. J., Lount, R. B., Jr., & Smith, B. R. 2013. Mitigating principal-agent problems in base-of-the-pyramid markets: An identity spillover perspective. *Academy of Management Journal*, 56: 659–682.

Klayman, J., Soll, J. B., González-Vallejo, C., & Barlas, S. 1999. Overconfidence: It depends on how, what, and whom you ask. *Organizational Behavior and Human Decision Processes*, 79: 216–247.

Kraatz, M. S., & Zajac, E. J. 2001. How organizational resources affect strategic change and performance in turbulent environments: Theory and evidence. *Organization Science*, 12: 632–657.

Krause, R., Whitler, K. A., & Semadeni, M. 2014. Power to the principals! An experimental look at shareholder say-on-pay voting. *Academy of Management Journal*, 57: 94–115.

Kunc, M. H., & Morecroft, J. D. W. 2010. Managerial decision making and firm performance under a resource-based paradigm. *Strategic Management Journal*, 31: 1164–1182.

Laamanen, T., & Keil, T. 2008. Performance of serial acquirers: Toward an acquisition program perspective. *Strategic Management Journal*, 29: 663–672.

Lazear, E. P., & Rosen, S. 1981. Rank-order tournaments as optimum labor contracts. *Journal of Political Economy*, 89: 841–864.

Levenson, H. 1981. Differentiating among internality, powerful others, and chance. In H. M. Lefcourt (Ed.), *Research with the locus of control construct*: 16–63. New York: Academic Press.

Lubit, R. 2002. The Long-Term Organizational Impact of Destructively Narcissistic Managers. *Academy of Management Executive*, 16: 127–138.

Maccoby, M. 2000. Narcissistic leaders: The incredible pros, the inevitable cons. *Harvard Business Review*, 78: 68–78.

Maccoby, M. 2004. *The productive narcissist: The promise and peril of visionary leadership*. New York: Broadway Books.

Mackey, A. 2008. The effect of CEOs on firm performance. *Strategic Management Journal*, 29: 1357–1367.

Malhotra, D., & Gino, F. 2011. The pursuit of power corrupts: How investing in outside options motivates opportunism in relationships. *Administrative Science Quarterly*, 56: 559–592.

Malmendier, U., & Tate, G. 2005. CEO overconfidence and corporate investment. *The Journal of Finance*, 60: 2661–2700.

Mannor, M. J., Wowak, A. J., Bartkus, V. O., & Gomez-Mejia, L. R. 2016. Heavy lies the crown? How job anxiety affects top executive decision making in gain and loss contexts. *Strategic Management Journal*, 37: 1968–1989.

March, J. G., & Simon, H. A. 1958. *Organizations*. Wiley: New York.

March, J. G., & Sutton, R. I. 1997. Crossroads-organizational performance as a dependent variable. *Organization Science*, 8: 698–706.

Marr, J. C., & Thau, S. 2014. Falling from great (and not-so-great) heights: How initial status position influences performance after status loss. *Academy of Management Journal*, 57: 223–248.

Melone, N. P. 1994. Reasoning in the executive suite: The influence of role experience-based expertise on decisino-processes of corporate executives. *Organization Science*, 5: 438–455.

Miles, R. E., & Snow, C. C. 1978. *Organization strategy, structure and process*. New York: McGraw-Hill.

Mischel, W. 1968. *Personality and assessment*. New York: Wiley.

Moore, D. A., & Healy, P. J. 2008. The trouble with overconfidence. *Psychological Review*, 115: 502–517.

Moore, D. A., Oesch, J. M., & Zietsma, C. 2007. What competition? Myopic self-focus in market-entry decisions. *Organization Science*, 18: 440–454.

Nadkarni, S., & Herrmann, P. 2010. CEO personality, strategic flexibility, and firm performance: The case of the Indian business process outsourcing industry. *Academy of Management Journal*, 53: 1050–1073.

Nag, R., Hambrick, D. C., & Chen, M. J. 2007. What is strategic management, really? Inductive derivation of a consensus definition of the field. *Strategic Management Journal*, 28: 935–955.

Naranjo-Gil, D., Hartmann, F., & Maas, V. S. 2008. Top management team heterogeneity, strategic change and operational performance. *British Journal of Management*, 19: 222–234.

Nelson, R. R., & Winter, S. G. 2002. Evolutionary theorizing in economics. *The Journal of Economic Perspectives*, 16: 23–46.

Orth, U., Trzesniewski, K. H., & Robins, R. W. 2010. Self-esteem development from young adulthood to old age: A cohort-sequential longitudinal study. *Journal of Personality and Social Psychology*, 98: 645–658.

Parks, J. M., & Conlon, E. J. 1995. Compensation contracts: Do agency theory assumptions predicted negotiated agreements. *Academy of Management Journal*, 38: 821–838.

Peters, T. 1988. *Thriving on chaos*. New York: Knopf.

Peterson, R. S., Smith, D. B., Martorana, P. V., & Owens, P. D. 2003. The impact of chief executive officer personality on top management team dynamics: One mechanism by which leadership affects organizational performance. *Journal of Applied Psychology*, 88: 795–808.

Petrenko, O. V., Aime, F., Ridge, J., & Hill, A. 2016. Corporate social responsibility or CEO narcissism? CSR motivations and organizational performance. *Strategic Management Journal*, 37: 262–279.

Phadnis, S., Caplice, C., Sheffi, Y., & Singh, M. 2015. Effect of scenario planning on field experts' judgment of long-range investment decisions. *Strategic Management Journal*, 36: 1401–1411.

Pillutla, M. M., & Murnighan, J. K. 1995. Being fair or appearing fair: Strategic behavior in ultimatum barganing. *Academy of Management Journal*, 38: 1408–1426.

Powell, T. C. 2011. Neurostrategy. *Strategic Management Journal*, 32: 1484–1499.

Powell, T. C., Lovallo, D., & Fox, C. R. 2011. Behavioral strategy. *Strategic Management Journal*, 32: 1369–1386.

Prahalad, C. K., & Bettis, R. A. 1986. The dominant logic: A new linkage between diversity and performance. *Strategic Management Journal*, 7: 485–501.

Pretz, J. E., Brookings, J. B., Carlson, L. A., Humbert, T. K., Roy, M., Jones, M., & Memmert, D. 2014. Development and validation of a new measure of intuition: The types of intuition scale. *Journal of Behavioral Decision Making*, 27: 454–467.

Quigley, T. J., & Hambrick, D. C. 2015. Has the "CEO effect" increased in recent decades? A new explanation for the great rise in America's attention to corporate leaders. *Strategic Management Journal*, 36: 821–830.

Resick, C. J., Whitman, D. S., Weingarden, S. M., & Hiller, N. J. 2009. The bright-side and the dark-side of CEO personality: Examining core self-evaluations, narcissism, transformational leadership, and strategic influence. *Journal of Applied Psychology*, 94: 1365–1381.

Rhodewalt, F., Madrian, J. C., & Cheney, S. 1998. Narcissism, self-knowledge organization, and emotional reactivity: The effect of daily experiences on self-esteem and affect. *Personality and Social Psychology Bulletin*, 24: 75–87.

Rijsenbilt, A., & Commandeur, H. 2013. Narcissus enters the courtroom: CEO narcissism and fraud. *Journal of Business Ethics*, 117: 413–429.

Roberts, B. W., Walton, K. E., & Viechtbauer, W. 2006. Patterns of mean-level change in personality traits across the life course: a meta-analysis of longitudinal studies. *Psychological Bulletin*, 132: 1–25.

Roll, R. 1986. The hubris hypothesis of corporate takeovers. *Journal of Business*, 59: 197–216.

Rosenberg, M. 1965. Rosenberg self-esteem scale (RSE). *Acceptance and commitment therapy. Measures package*, 61.

Rosenthal, S. A., & Pittinsky, T. L. 2006. Narcissistic leadership. *The Leadership Quarterly*, 17: 617–633.

Rumelt, R. P., Schendel, D., & Teece, D. J. 1991. Strategic management and economics. *Strategic Management Journal*, 12: 5–29.

Russo, J. E., & Schoemaker, P. J. 1992. Managing overconfidence. *Sloan Management Review*, 33: 7.

Sapienza, H. J., & Korsgaard, M. A. 1996. Procedural justice in entrepreneur-investor relations. *Academy of Management Journal*, 39: 544–574.

Saucier, G. 1994. Mini-markers: A brief version of Goldberg's unipolar Big-Five markers. *Journal of Personality Assessment*, 63: 506–516.

Schoemaker, P. J. H. 1993. Multiple scenario development: Its conceptual and behavioral foundation. *Strategic Management Journal*, 14: 193–213.

Semadeni, M., Withers, M. C., & Certo, T. S. 2014. The perils of endogeneity and instrumental variables in strategy research: Understanding through simulations. *Strategic Management Journal*, 35: 1070–1079.

Shadish, W. R., Cook, T. D., & Campbell, D. T. 2002. *Experimental and quasi-experimental designs for generalized causal inference*: Wadsworth Cengage learning.

Shapira, Z., & Shaver, J. M. 2014. Confounding changes in averages with marginal effects: How anchoring can destroy economic value in strategic investment assessments. *Strategic Management Journal*, 35: 1414–1426.

Shaver, J. M. 1998. Accounting for endogeneity when assessing strategy performance: Does entry mode choice affect FDI survival? *Management Science*, 44: 571–585.

Shen, W., & Cannella, A. A. 2002. Power dynamics within top management and their impacts on CEO dismissal followed by inside succession. *Academy of Management Journal*, 45: 1195.

Simon, M., & Houghton, S. M. 2003. The relationship between overconfidence and the introduction of risky products: Evidence from a field study. *Academy of Management Journal*, 46: 139–149.

Simsek, Z., Heavey, C., & Veiga, J. J. F. 2010. The impact of CEO core self-evaluation on the firm's entrepreneurial orientation. *Strategic Management Journal*, 31: 110–119.

Song, M., Calantone, R. J., & Di Benedetto, A. C. 2002. Research notes and commentaries: Competitive forces and strategic choice decisions: An experimental investigation in the United States and Japan. *Strategic Management Journal*, 23: 969–978.

Srivastava, A., Locke, E. A., Judge, T. A., & Adams, J. W. 2010. Core self-evaluations as causes of satisfaction: The mediating role of seeking task complexity. *Journal of Vocational Behavior*, 77: 255–265.

Tang, Y., Li, J., & Yang, H. 2015a. What I see, what I do: How executive hubris affects firm innovation. *Journal of Management*, 41: 1698–1723.

Tang, Y., Qian, C., Chen, G., & Shen, R. 2015b. How CEO hubris affects corporate social (ir)responsibility. *Strategic Management Journal*, 36: 1338–1357.

Tosi, H. L., Katz, K. P., & Gomez-Mejia, L. R. 1997. Disaggregating the agency contract: Effects of monitoring, incentive alignment, and term in office on agent decision making. *Academy of Management Journal*, 40: 584–602.

Tracy, J. L., & Robins, R. W. 2007. The psychological structure of pride: A tale of two facets. *Journal of Personality and Social Psychology*, 92: 506–525.

Vermeulen, F., & Barkema, H. 2001. Learning through acquisitions. *Academy of Management Journal*, 44: 457–476.

Wales, W. J., Patel, P. C., & Lumpkin, G. T. 2013. In pursuit of greatness: CEO narcissism, entrepreneurial orientation, and firm performance variance. *Journal of Management Studies*, 50: 1041–1069.

Wally, S., & Baum, J. R. 1994. Personal and structural determinants of the pace of strategic decision making. *Academy of Management Journal*, 37: 932–956.

Watson, D., & Clark, L. A. 1999. The PANAS-X: Manual for the positive and negative affect schedule-expanded form.

Wilson, A. 1968. *The bomb and the computer: Wargaming from ancient Chinese mapboard to atomic computer*: Delacorte Press.

Wowak, A. J., Mannor, M. J., Arrfelt, M., & McNamara, G. 2016. Earthquake or glacier? How CEO charisma manifests in firm strategy over time. *Strategic Management Journal*, 37: 586–603.

Zajac, E. J., Kraatz, M. S., & Bresser, R. K. 2000. Modeling the dynamics of strategic fit: A normative approach to strategic change. *Strategic Management Journal*, 21: 429–453.

Zhang, Y., & Rajagopalan, N. 2010. Once an outsider, always an outsider? CEO origin, strategic change, and firm performance. *Strategic Management Journal*, 31: 334–346.

Zhu, D. H., & Chen, G. 2014. CEO narcissism and the impact of prior board experience on corporate strategy. *Administrative Science Quarterly*, 60: 31–65.

Zhu, D. H., & Chen, G. 2015. Narcissism, director selection, and risk-taking spending. *Strategic Management Journal*, 36: 2075–2098.