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Executive Personality, Capability Cues, and Risk Taking: How Narcissistic CEOs React to Their Successes and Stumbles

Arijit Chatterjee[1] and Donald C. Hambrick[2]

Abstract

We adopt an interactionist logic to study the determinants of risk taking by chief executive officers (CEOs). We introduce the concept of ''capability cues''—contextual signals that decision makers might reasonably interpret as indicators of their current level of overall ability—arguing that positive cues will induce boldness, while negative cues will induce timidity. Then, drawing from prior theory about how narcissists react to stimuli, we hypothesize that highly narcissistic CEOs will be relatively unresponsive to objective indicators of their performance; in contrast, highly narcissistic CEOs will be exceptionally emboldened by social praise (in the forms of media praise and media awards). We test our theory in two distinct studies, one of risky outlays by CEOs of publicly owned U.S. companies from 1992 to 2006, and a second of acquisition premiums paid by CEOs of a sample of U.S. acquiring firms, 2001–2008. Our analyses show that capability cues generally influence executive risk taking, but highly narcissistic CEOs are much less responsive to recent objective performance than their less narcissistic peers; in contrast, highly narcissistic CEOs are especially bolstered by social praise.

Keywords: capability cues, narcissism, risk taking, chief executive officers

In the vast literature on risk taking, scholars have considered an array of ''human factors'' that cause decision makers to vary in their risk-taking tendencies or to deviate from objectively warranted behaviors (summarized in Shapira, 1995). For instance, theorists have argued that some societies are more risk-prone than others (Schwartz, 1992; Hofstede, 2001), that some individuals

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have more of a fundamental risk appetite than others (MacCrimmon and Wehrung, 1990; Sitkin and Pablo, 1992), that the way in which a risk is framed—either as the potential for a gain or a loss—affects decision behaviors (Thaler, 1980; Tversky and Kahneman, 1981), and that subjects react differently to a given risk in the presence of prior gains and losses (Osborn and Jackson, 1988; Thaler and Johnson, 1990). In short, it is well known that human judgments, interpretations, and preferences all enter into risk-taking behaviors.

Particularly in the case of risk taking by business executives—say, decisions to make large acquisitions, to greatly expand research and development outlays, or to install new production capacity—the a priori likelihoods of various outcomes are largely unknowable and contingent on myriad eventualities (Cyert and March, 1963; Bower, 1970; Mintzberg, Raisinghani, and Théorêt, 1976). As such, executive risk taking is not so much an economic calculus as an interpretive act. For executives, it is especially apt to say that risk exists in the eyes of the beholder (e.g., Sitkin and Pablo, 1992; Shapira, 1995).

At the core of an executive's subjective assessment of risk is his or her sense of confidence. Compared with gamblers, who cannot influence whether their bets will work out, business executives may believe that their personal talents, as well as the capabilities of their organizations, can greatly affect whether their risky initiatives will bear fruit. Executive confidence has been offered as an explanation for acquisitions (Roll, 1986), premiums paid for acquisitions (Hayward and Hambrick, 1997), the introduction of pioneering products (Simon and Houghton, 2003), and holding in-the-money stock options (Malmendier and Tate, 2005).

Yet the decision maker's degree of confidence, or conviction that a risk will work out well, has been only negligibly addressed and is not well understood. Most decisions made by executives entail estimates of one's capabilities, adversaries' capabilities, and future events. In contrast to the highly specified risk-taking scenarios posed in many experimental studies (Tversky and Kahneman, 1986; Kahneman and Lovallo, 1993), executives are rarely confronted with situations that have either fixed or knowable probabilities of alternative outcomes. As such, there is considerable scope for executives to inject into their decisions an array of personal subjective assessments: about their own or their organizations' capabilities, about how talented they are at forecasting, and perhaps even about their wherewithal to shape future events.

To some degree, these executives' assessments are shaped by contextual stimuli, especially ''capability cues,'' which are contextual signals that decision makers might reasonably interpret as indicators of their (or their organization's) current level of overall ability. Such cues include the organization's recent performance and recent social praise for the chief executive officer (CEO), in the forms of media praise and media awards. We theorize that capability cues, or signals of efficacy, will affect a CEO's confidence, even though the cues might pertain to very general accomplishments (or failures) that have little bearing on the initiatives currently being considered, and even though the cues might stem from factors such as luck or a good public relations staff that do not reflect executive talent at all. In turn, capability cues color an executive's interpretation of the riskiness of current decisions (Sitkin and Weingart, 1995). Positive cues will induce boldness, while negative cues will induce timidity.

But executives are likely to vary in their responses to cues, depending on their personal attributes. In line with prior studies showing that executives'

personal characteristics—including locus of control (Miller and Toulouse, 1986), experience (Menkhoff, Schmidt, and Brozynski, 2006), and dominance (Brown and Sarma, 2007)—affect risk taking, CEOs' personalities should shape their interpretations of any contextual indicators of their or their organization's current overall ability, giving rise to differences in risk taking. Among the personality factors that enter into risk taking, narcissism can be expected to play a prominent role. In recent decades, personality theorists have confirmed that narcissism is not solely a pathology but, rather, is a personality dimension on which all individuals can be placed (Emmons, 1984; Raskin and Terry, 1988). Under this conception, narcissism is the degree to which an individual has an inflated sense of self and is preoccupied with having that self-view continually reinforced (Campbell, Goodie, and Foster, 2004). Recent research has shown that CEOs can be meaningfully arrayed in terms of their narcissistic tendencies in ways that partially predict their subsequent strategic actions (dynamism and grandiosity) and performance (extremeness and volatility) (Chatterjee and Hambrick, 2007).

Although the psychology of narcissism has substantial implications for how individuals respond to stimuli about their efficacy, these implications are not straightforward. On one hand, research has portrayed narcissists as ''oblivious'' to stimuli, propelled by their own internal guidance systems (Greenwald, 1980; Sedikides and Gregg, 2001). On the other hand, research has emphasized that narcissists are exceedingly motivated by applause and adulation (Wallace and Baumeister, 2002), and that they respond with extreme anger and repudiation when criticized (Kernis and Sun, 1994; Rhodewalt and Morf, 1998). So, which is it? Are narcissistic CEOs less responsive to capability cues than their less narcissistic peers, or are they more responsive?

To resolve this puzzle, we adopt an interactionist logic (Endler and Magnusson, 1976; Brockner, 1979; Treviño, 1986), proposing that an executive's confidence is shaped by contextual stimuli but is moderated by his or her disposition. We hypothesize that narcissism dampens the influence of recent objective performance on risk taking. Compared with their less narcissistic peers, highly narcissistic CEOs are not dissuaded by poor performance, and they are less bolstered than are others by objectively good performance. In contrast, highly narcissistic CEOs are expected to be exceptionally emboldened by social praise.

We test our ideas with two distinct studies. First, using a sample of 152 CEOs in the computer hardware and software sectors, we examine the effects of the two types of capability cues, and their interactions with narcissism, on magnitudes of risky outlays (aggregate spending on acquisitions, research and development, and capital expenditures). Other researchers similarly have conceptualized risk taking as financial outlays for investment categories that are known to have highly uncertain returns (Miller and Bromiley, 1990; Hoskisson, Hitt, and Hill, 1993; Pablo, Sitkin, and Jemison, 1996). Executives also tend to equate the magnitudes of outlays, with their concomitant potential for loss, with magnitudes of risk (March and Shapira, 1987; Shapira, 1995). Second, we examine a heterogeneous sample of 131 CEOs who made major acquisitions, using our theory to explain the size of the acquisition premium—the amount over the target firm's pre-takeover price—that a CEO's organization pays. Prior researchers have used acquisition premiums as an expression of risk taking

(Laamanen, 2007) and as an outgrowth of CEO confidence (Hayward and Hambrick, 1997).

Our focus on CEOs is not meant to imply that these executives engage in completely autonomous decision making. CEOs are constrained by environmental and institutional forces, as well as by their organizations' histories and resource configurations (Lieberson and O'Connor, 1972; Hannan and Freeman, 1977; DiMaggio and Powell, 1983). Moreover, CEOs do not independently decide how much risk to take on. They typically depend on others in their organizations to generate investment proposals (Bower, 1970; Burgelman, 1996), and they must obtain their boards' approvals for substantial outlays (Golden and Zajac, 2001; Westphal and Fredrickson, 2001). Still, most CEOs have considerable discretion (Hambrick and Finkelstein, 1987), and their personal endorsements are required for all strategic initiatives—especially investment outlays (Chandler, 1962; Andrews, 1971). Accordingly, numerous studies have found significant associations between CEOs' characteristics, including personality, and organizational outcomes (summarized in Finkelstein, Hambrick, and Cannella, 2009).

EFFECTS OF CAPABILITY CUES AND NARCISSISM ON RISK TAKING

Role of Confidence in Risk Taking

Shapira's (1995) interviews with business executives cast light on the role of confidence in risk taking. He found that executives do not liken business risk taking to gambling, with its pre-set odds. One executive said, ''my ability to influence whatever goes on *after* the moment of choice is perhaps more important.'' (Shapira, 1995: 80; italics in original). Beyond referring to their ability to control post-decision events, Shapira's respondents also spoke of varying levels of confidence in picking good projects and avoiding bad projects, as well as in their ability to forecast future occurrences such as prices, competitors' actions, and technological trajectories. Although executives' confidence in their abilities to manage events or to foresee the future may be erroneous (Larrick, Burson, and Soll, 2007; Moore and Small, 2007), there can be little question that executives take actions, or refrain from actions, partly on the basis of their confidence.

Richard Roll (1986), a financial economist, was among the first to invoke the idea that confidence is a major ingredient in executive risk taking. With no other explanation available for why CEOs make large acquisitions, even though it is well known that most acquisitions destroy shareholder value, Roll set forth his ''hubris hypothesis'': CEOs make acquisitions because they believe they have the ability to make better deals and to manage acquisitions better than their peers. Since Roll's work, a number of studies, particularly in finance and economics, have treated ''overconfidence'' as a general human tendency (Kyle and Wang, 1997; Odean, 1998; Daniel, Hirshleifer, and Subrahmanyam, 2001). Building on the recurrent stylized fact that more people think highly of themselves than is mathematically warranted (Krueger and Dickson, 1994; Kruger and Dunning, 1999), or the ''Lake Wobegon Effect,'' researchers have shown that overconfidence generally causes individuals to engage in more risk taking than is objectively sensible (Simon and Houghton, 2003; Malmendier and Tate, 2005).

In our theorizing, we resist using the terms ''overconfidence'' and ''hubris.'' To refer to a given degree of confidence as ''over-'' or ''excessive'' confidence, an observer must know the probabilities of alternative outcomes from the specific decision faced by a decision maker. It is not sufficient to know the distribution of outcomes from a heterogeneous class of decisions. Thus, one may speak of overconfidence in a subject's bet on a coin toss or a draw from an urn, but one cannot meaningfully speak of an executive's overconfidence in, say, making a given acquisition even if it is known that the ''average'' acquisition destroys shareholder value (Fowler and Schmidt, 1988; Agrawal, Jaffe, and Mandelker, 1992). Nor is it intellectually appealing to ''peek ahead'' at the results to determine whether the decision maker warrants being called ''overconfident'' and ''hubristic'' as opposed to ''bold'' and ''courageous.'' It is more conservative and logical to refer to a person's degree of ''confidence'' when taking an action, which subsequent results might bear out as either wise or unwise.

Capability Cues and Risk Taking

Research has long shown that feedback, in terms of success vs. failure at a task, affects a subject's confidence when doing the task again (Postman and Brown, 1952; Bruner, 1957). Not only does feedback influence one's basic eagerness to try again (Baumeister and Tice, 1985), but it also greatly affects one's expectations of success in the next round, or one's confidence. Poor performance engenders hesitance and self-doubt, while high performance stimulates eagerness and a sense of potency (Fischhoff, Slovic, and Lichtenstein, 1977; Osborn and Jackson, 1988). Interestingly, such patterns have been observed not only in tasks that involve elements of skill but also in activities that strictly involve luck (Langer and Roth, 1975; Hahn and Warren, 2009). People who are currently enjoying a streak of favorable outcomes come to think of themselves as ''on a roll'' or as having a ''hot hand'' (Gilovich, Vallone, and Tversky, 1985; Hendricks, Patel, and Zeckhauser, 1993).

What has not been directly explicated is the idea that highly salient cues about one's current degree of efficacy will influence confidence on an array of fronts. When a person receives negative or positive feedback in a domain of central importance to his or her psychological self-concept, it spills over and influences his or her sense of potency in multiple domains (Strube et al., 1987; Haleblian and Finkelstein, 1999). For instance, a professor who is turned down for tenure may tend to experience self-doubt in an array of activities, including research, teaching, collegial relationships, and perhaps even in family matters. Similarly, a professor who receives a major research award will tend to be buoyed on many fronts, well beyond the honored domain. Capability cues—those contextual signals that decision makers might reasonably interpret as indications of their overall ability—can be either confidence-enhancing or confidence-dampening. The implications for risk taking are intriguing. Not only do stimuli lying beyond the boundaries of a focal decision affect one's perception of risk, but even stimuli that might have only an indirect or tenuous connection to a decision will influence one's eagerness or reluctance to take a risk.

Performance as cue. Recent success influences one's expectations of future success, particularly by influencing one's sense of efficacy (Feather, 1966; Schmalensee, 1976). Accordingly, a firm's recent performance will

provide a CEO with a strong cue about his or her own capability, as well as that of the entire organization, thus affecting risk-taking behaviors. In a scenario-based experiment, Sitkin and Weingart (1995) showed that subjects were highly influenced by their recent ''outcome histories.'' Those who were assigned to the positive history condition—i.e., favorable recent performance on a complex risk-laden activity—were more likely to perceive a similar upcoming activity as not very risky and to go ahead and engage in the activity. As the authors noted, ''decision makers will persist in taking risks if prior risk-related actions were successful'' (Sitkin and Weingart, 1995: 1576). In earlier work, Staw, Sandelands, and Dutton (1981) articulated the concept of the threat-rigidity response, arguing that decision makers who recently have fared poorly will become wary, tightly restrict their search behaviors, and generally enter a mode of cautious incrementalism.

It is well known that CEOs tend to attribute their successes to their own superior abilities, while attributing their failures, or poor performance, to external conditions (Bowman, 1976; Bettman and Weitz, 1983; Staw, McKechnie, and Puffer, 1983). Researchers have not been able to definitively partition the degree to which such self-serving attributions are due to a cognitive bias versus impression management, but there is evidence that self-delusion is far from total. For instance, Snyder, Stephan, and Rosenfield (1976) noted that self-serving attributions are less likely when there is a good chance that the offered explanations will be contradicted by others, or if one's future performance will be closely monitored by others. And Staw, McKechnie, and Puffer (1983) found that self-enhancing portrayals in company annual reports were associated with insiders' selling of company stock, rather than the purchases that would be expected if executives had strictly succumbed to a perceptual bias about their efficacy. Moreover, researchers have found that CEOs privately express (in interviews, at least) a level of personal responsibility for the performance of their companies, indicating a sense of accomplishment when things go well, as well as a sense of personal disappointment and questioning when performance is poor (Donaldson and Lorsch, 1985).

In our theorizing, CEOs generally have some sense of inward personal accountability for their organizations' performance, which they further take as a signal of how capable they and their organizations are for dealing with imminent business conditions. CEOs who have recently performed poorly will be somewhat unsure of themselves and their organizations, and hence reluctant to take big risks; those who have recently performed well will be confident and inclined to take substantial risks:

> **Hypothesis 1 (H1):** There will be a positive relationship between the recent performance of the firm and current risk taking.

Our theoretical portrayal of a positive association between recent performance and executive risk taking is at odds with the logic, expressed by some theorists, that recent performance is inversely related to current risk taking. For instance, according to the behavioral theory of the firm (summarized in Wiseman and Bromiley, 1996), subjects who have performed poorly (either relative to others or relative to their historical tendencies) will tend to take great risks in an effort to ''catch up,'' or to get back to a more satisfactory state; subjects who have recently performed well will tend to become conservative, in

efforts to protect their gains and because they are not under pressure to do better (Audia and Greve, 2006). In a related vein, prospect theory (Kahneman and Lovallo, 1993) predicts that when there is more to lose, subjects become risk-averse, and vice versa. Although it is beyond the scope of this article to reconcile the two perspectives, we believe that a positive relationship between recent performance and risk taking is a more apt expectation when decision makers believe they are playing a game of skill rather than a game of luck. If decision makers perceive that outcomes are due to their (or their organization's) talents, they have reason to bet in proportion to how well they have recently done; in their minds, their performance is due to their ability, which will serve them correspondingly well (or poorly) in the next round of play. If decision makers perceive that they are gambling against exogenous states of nature, however, they will be less likely to be positively influenced by their recent successes. Correspondingly, the logic of confidence-induced risk taking will apply when the likelihoods of alternative outcomes are not specified but, instead, are subject to personal interpretation.

Social praise as cue. Beyond the stimulating effect of objective performance, social praise will also affect a CEO's confidence and, in turn, risk taking. Scholars have long observed that social praise—in the form of flattery, applause, and acclaim—tends to buoy one's sense of capability (Koestner, Zuckerman, and Koestner, 1987). Praise can even be thought of as a form of "social proof," validating one's efficacy in a way that more sterile indicators of capability cannot (Rao, Greve, and Davis, 2001). In this vein, for instance, the prominent governance critic Nell Minow (*BusinessWeek*, 2009: 16) wryly envisioned how flattery affects executive behavior: "... investment bankers are the geishas of the financial world because they sit next to the CEO and laugh at his jokes and talk about what a big strong man he is and wouldn't it be fun to buy something together."

On the contemporary business scene, social praise for individual CEOs comes in various forms, notably in media accounts of CEOs' talents and in awards bestowed by prominent media outlets (Hayward, Rindova, and Pollock, 2004; Wade et al., 2006). Because of the well-known "romance of leadership" (Meindl, Ehrlich, and Dukerich, 1985), media outlets have a strong incentive to feature CEOs in their portrayals of business outcomes (Chen and Meindl, 1991; Shoemaker and Reese, 1996). Instead of simply reporting about a company's superior technology or appealing brand image, for instance, journalists often point to leaders as the key ingredients to business success; in the extreme, major media outlets confer awards on those CEOs deemed most worthy (Graffin et al., 2008; Malmendier and Tate, 2009). Notably, however, the association between objective company performance and social praise—via media praise or media awards—is modest (Hayward and Hambrick, 1997; Graffin et al., 2008); media outlets rely on an array of factors when deciding on which CEOs to feature (cf. Hayward, Rindova, and Pollock, 2004).

There is both direct and indirect evidence that CEOs tend to believe their own press, becoming psychologically bolstered by social praise. Hayward and Hambrick (1997) showed that media praise for individual CEOs was strongly related to the size of premiums that CEOs paid for subsequent acquisitions; on average, each highly favorable article about a CEO in the period preceding an acquisition was associated with a 4.8 percent increase in the premium paid. Other researchers have focused on media awards for CEOs, also with results

suggesting that they affect CEOs' mindsets and behaviors. Both Malmendier and Tate (2009) and Wade et al. (2006) found that CEOs who received major media awards subsequently delivered worse performance than CEOs who did not receive awards, even controlling for regression to the mean. Neither of these studies examined post-award strategic decisions, so they do not reveal whether the award-winning CEOs became psychologically bolstered by their acclaim and then increased their risk taking (as we hypothesize), with poor results, or the award-winning CEOs became fearful of falling from their pinnacles and hence reduced their risk taking. But Malmendier and Tate (2009) provided evidence that their award-winning CEOs became quite impressed with themselves. After receiving awards, CEOs had an increased likelihood of writing their autobiographies and of accepting seats on other companies' boards. Although the awards may have enhanced the opportunities to engage in these acts, an elevated sense of confidence and potency would help to explain the decisions themselves:

Hypothesis 2 (H2): There will be a positive relationship between the amount of recent social praise for the firm's CEO and current risk taking.

Interactive Effects of Capability Cues and CEO Narcissism

Although capability cues are expected to have a general effect on executive confidence and risk taking, such stimuli are filtered by the executive's personal orientation, consisting of psychological qualities and experiences (Hambrick and Mason, 1984). This orientation provides the basis on which each executive converts information into a personalized ''construed reality.'' Research has shown that executives' values (Ritchie, Anthony, and Rubens, 2004), cognitive structures (Priem, 1994), thinking styles (McNamara, Luce, and Tompson, 2002), educational backgrounds (Tyler and Steensma, 1998), functional backgrounds (Waller, Huber, and Glick, 1995), and company tenures (Finkelstein and Hambrick, 1990) influence the way they process information. Research particularly points to the promise of considering how the personality trait of narcissism affects a CEO's interpretations of, and responses to, capability cues.

The term narcissism entered the field of psychology over a hundred years ago, referring to a pathological disorder typified by self-absorption and grandiosity (Freud, 1957; Kernberg, 1975). More recently, personality theorists have reconceptualized narcissism as a personality dimension on which all individuals can be placed (Raskin and Hall, 1979; Emmons, 1984). Under this conception, narcissism is the degree to which an individual has an inflated sense of self and is preoccupied by having that self-view continually reinforced (Morf and Rhodewalt, 2001; Campbell, Goodie, and Foster, 2004). Researchers have verified several key elements of the highly narcissistic personality: sense of entitlement, desire to be the center of attention, sense of superiority that is manifested as arrogance, and self-absorption (Emmons, 1987; Ames, Rose, and Anderson, 2006).

The narcissistic personality is replete with paradoxes. Narcissists are full of self-admiration, but they have a chronic need for their self-concept to be reinforced; thus they have a high, but exceedingly fragile, sense of self-esteem (Kernis, 2005). Narcissists crave applause and approval, but they tend to act in ways that cause disdain and that repel others (Bradlee and Emmons, 1992; Farwell and Wohlwend-Lloyd, 1998). To the extent that narcissists do not

receive the requisite reinforcement, they bolster themselves by denigrating or exploiting others (Ruiz, Smith, and Rhodewalt, 2001; Sedikides et al., 2002).

Among the many accompaniments of the narcissistic personality studied so far, researchers have devoted considerable attention to how narcissism affects one's responses to feedback (Kernis and Sun, 1994; Rhodewalt and Eddings, 2002; Rhodewalt and Sorrow, 2003). In keeping with the multifaceted nature of narcissism, however, this research suggests complex patterns. In our context, we anticipate that highly narcissistic CEOs will react to objective performance very differently than they react to social praise.

Narcissism and insensitivity to objective performance. Research has consistently shown that narcissists are relatively inattentive to objective cues. Narcissists rate themselves more highly than warranted on an array of agentic dimensions, including intelligence, creativity, and leadership skills (Gabriel, Critelli, and Ee, 1994; John and Robins, 1994; Judge, LePine, and Rich, 2006). Irrespective of their actual accomplishments, narcissists maintain an inflated sense of self, liking themselves just the way they are and seeing little or no room for improvement (Raskin, Novacek, and Hogan, 1991). Performance feedback does not influence their predictions about their future performance (Campbell, Goodie, and Foster, 2004); more generally, highly narcissistic individuals tend not to be concerned with objective feedback (Rhodewalt and Eddings, 2002). Scholars have even equated narcissists with high-functioning autistics, marching on ''about their daily business, oblivious . . . '' to what is going on about them (Sedikides and Gregg, 2001: 238).

Absorbed by their own inner worlds, and by their sense of correctness, highly narcissistic CEOs will tend to ignore or downplay the significance of their objective performance. In the face of poor performance, highly narcissistic CEOs will continue to harbor their elevated self-concepts (Greenwald, 1980) and will sustain their fantasies as a coping mechanism (Raskin, Novacek, and Hogan, 1991). In the face of positive performance, highly narcissistic CEOs will conclude that their great talents and plans have been verified; but such verification was expected all along and thus calls for no change in behavior. By contrast, less narcissistic CEOs will be relatively responsive to capability cues in the form of objective performance. Poor performance will cause them to become timid and conservative, while outstanding performance will cause them to be more bold:

> **Hypothesis 3 (H3):** CEO narcissism will dampen the effect of recent firm performance on risk taking, such that the more narcissistic the CEO, the weaker the positive relationship between recent performance and risk taking.

Social praise and narcissism. Whereas narcissists are relatively unresponsive to cold facts about their performance, they can be expected to be hyperresponsive to social praise. Narcissists crave applause (Buss and Chiodo, 1991; Wallace and Baumeister, 2002); more generally, narcissists require ''narcissistic supply,'' or the fuel for their reinforced self-images, from others (Kernberg, 1975). Morf and Rhodewalt (2001) described the chief motivation of narcissists as seeking the admiration (but not necessarily affection) of others. For narcissists, then, social praise is the quintessentially salient stimulus, conveying abundant meaning about their abilities. Narcissists are energized by attentive audiences whom they respect (Baumeister, 1986; Vazire and Funder, 2006);

when such audiences register approval, narcissists are appreciative and respond with exaggerated effort (Wallace and Baumeister, 2002).

Additionally, social praise may be so valuable for the narcissist as to stimulate behavior via emotion rather than only through cognition. Following from the ''risk-as-feelings hypothesis'' (Loewenstein et al., 2001), which proposes that feelings can outweigh cognition in risk taking, one can readily envision that social praise—say, in the forms of glowing press accounts or media awards—could be so stimulating for the narcissist as to cause an elevated positive mood, which has been shown to promote risk taking (Isen et al., 1982; Mittal and Ross, 1998). In contrast to the typical conception of mood as a momentary feeling, praise in the forms of media praise or media awards might create or contribute to a pervasive elevated affective state that lasts long enough to influence the narcissistic CEO's reactions to various investment proposals.

As we argued earlier, all CEOs are somewhat susceptible to the influence of social praise, in ways that cause them to take bigger risks. But we expect that Nell Minow's (*BusinessWeek*, 2009) ''geisha effect,'' the influence of flattery and effusive applause, will be particularly great for highly narcissistic CEOs. As such, narcissism and social praise may constitute a potent mixture:

Hypothesis 4 (H4). CEO narcissism will enhance the effect of recent social praise on risk taking, such that the more narcissistic the CEO, the stronger the positive relationship between recent social praise and risk taking.

STUDY 1: EXPLAINING RISKY OUTLAYS

Sample

We drew our sample from the computer hardware and software industries, for three reasons. Data were readily available because these industries include large numbers of publicly listed firms; they are relatively high-discretion industries, exhibiting considerable variance in strategic and executive profiles and providing considerable leeway for CEOs to influence investment behavior; and they were the industries in which Chatterjee and Hambrick (2007) validated their unobtrusive index of narcissism in CEOs. We started by identifying all hardware (SIC 357) and software (primary SIC 737) companies listed in Execucomp (which consists of roughly the 1,500 largest public U.S. firms) between 1992 and 2006. We identified the CEO for every firm-year in this time frame and then imposed two filters. First, we only considered those CEOs who started their tenures (designated as year t) in 1991 or later. Second, we included only those CEOs who had four or more years of tenure within our time panel. These two filters generated 152 CEOs in 134 unique firms, representing an expansion and updating of Chatterjee and Hambrick's original sample of 111 CEOs.

To measure narcissistic tendencies, we averaged data from the second and third years of each CEO's tenure (years $t+1$ and $t+2$), omitting the first year because it often has anomalies associated with succession. Thus the measure of CEO narcissism was invariant, reflecting the prevailing view of personality theorists that narcissism is a relatively stable disposition (Livesley et al., 1993). We measured capability cues annually for each year of the CEO's tenure ($t+n–1$, where $n > 3$). Risk taking was measured annually for each of the subsequent years of the CEO's tenure ($t+n$, where $n > 4$). With this panel setup,

the independent variables temporally preceded the dependent variable, yielding a pooled time-series of 542 firm-years.

Measures

Dependent variable: Risk taking. For our measure of risk taking, we collected data on three major forms of spending that are known to have highly uncertain returns: research and development (R&D), capital expenditures, and acquisitions. Although researchers have used each of these three forms of spending as indicators of corporate risk taking (Larcker, 1983; Hoskisson, Hitt, and Hill, 1993), they are often substitutes for each other. For example, a company might decide to increase R&D instead of acquisition spending; therefore, each spending category provides only a partial picture of overall risky spending. Thus, following Sanders and Hambrick (2007), the logged sum of all three forms of spending was our aggregate indicator of risky outlays in a given year. Across all firm-years, each of the three forms of risky spending contributed roughly equally to aggregate annual spending (R&D = 37 percent; capital = 26 percent; acquisitions = 37 percent). Thus our index did not mask an overwhelming influence of any of the three individual elements, and standardizing the three elements was not necessary.

CEO narcissism. Research on the topic of executive personality is exceedingly difficult to conduct, simply from the standpoint of the data available. Executives, especially those in public companies, are generally not willing to respond to batteries of psychological tests (Cycyota and Harrison, 2006), and the coding of published biographies carries its own severe limitations. One of the most promising alternatives is to use unobtrusive indicators of personality, as originally advocated by Webb et al. (1966) and Webb and Weick (1983), and as recently reinvigorated by personality theorists (e.g., Pennebaker and King, 1999; Gosling et al., 2002)

Accordingly, we used Chatterjee and Hambrick's (2007) unobtrusive measures, averaged over years $t+1$ and $t+2$ of the CEO's tenure, to generate CEO narcissism scores. Following Chatterjee and Hambrick (2007), whose validation tests we describe below, we used four indicators of narcissism. We measured *Prominence of the CEO's photograph* in the company's annual report on a 4-point scale: 4 points if the CEO's photo was of him or her alone and occupied more than half a page; 3 points if the photo was of the CEO alone and occupied less than half a page; 2 points if the CEO was photographed with one or more fellow executives; and 1 point if there was no photograph of the CEO or if the firm did not publish an annual report, instead relying only on 10-K filings. Annual reports were obtained from Mergent Online and company Web sites. We calculated *Prominence of the CEO in press releases* as the number of times the CEO was mentioned by name in the company's press releases divided by the number of times the company's other top executives were mentioned. We obtained press releases from Factiva. We calculated *Relative cash pay* by dividing the CEO's cash compensation (salary and bonus) by that of the second-highest-paid executive in the firm. *Relative non-cash pay* was calculated by dividing the CEO's non-cash pay—deferred income, stock grants, and stock options (using the Black-Scholes valuation) —by that of the second-highest-paid executive. Compensation data came from Execucomp.

Chatterjee and Hambrick (2007) conducted interviews with corporate communications consultants and executive compensation consultants and relied on prior research to confirm that the several indicators of narcissistic tendencies are considerably under the control of CEOs and, in turn, at least in part reflect their personal biases and preferences. Moreover, Chatterjee and Hambrick (2007: 365) elaborated on how the individual indicators map onto the primary elements of the narcissistic personality (their table 1). For instance, the CEO's prominence in annual reports maps onto the narcissist's craving for leadership/authority (''I am the central figure in this company.''), self-absorption/self-admiration (''I enjoy the visibility that comes with being CEO.''), and exploitativeness/entitlement (''I deserve to be showcased.'')

Chatterjee and Hambrick (2007) provided two tests of the validity of their index. First, they showed that the narcissism scores were much more a reflection of individual CEOs (those who moved from firm to firm showed great consistency) than of the firms themselves (successive CEOs in a given firm had little consistency). Second, and more persuasively, they asked a panel of experienced securities analysts (who specialized in the technology sector) to rate the degree of narcissism of 40 of the CEOs in the sample. The analysts exhibited strong interrater reliability and, more importantly, rated the CEOs very much in line with the unobtrusive index scores (r = .82).

For our sample, the correlations among the indicators were all positive, ranging from .29 to .48, and significant at $p < .01$. To further confirm their coherence, we conducted exploratory factor analysis. With a principal axis factoring procedure, all four indicators loaded on a single factor (with loadings above .50) that had an eigenvalue of 2.13 explaining 38.5 percent of the variance. Moreover, confirmatory factor indices were at or above recommended standards (Bagozzi and Yi, 1988) (Non-Normed Fit Index = .98, Comparative Fit Index = .99, Standardized Root Mean Square Residual = .06, and Root Mean Square Error of Approximation = .05); and the Cronbach alpha for the standardized values (mean = 0; s.d. = 1) of the four indicators was .71, above the level acceptable for forming an index (Nunnally, 1978). To develop the narcissism index, we calculated the simple mean of the four measures, after standardization, for each CEO.

We excluded a fifth measure used by Chatterjee and Hambrick (2007), the CEO's use of first-person singular pronouns in interviews, because it weakened the internal reliability of the index. In extending Chatterjee and Hambrick's sample into the post-Sarbanes-Oxley era, we found that CEOs' interviews, especially with the investment community, have tended to follow a more regimented, formulaic format; as a result, self-referencing by CEOs has declined generally, and it no longer coheres with the other indicators of narcissism.

Capability cues. We used two indicators of recent performance: *Total shareholder returns (TSR)* and *Return on assets (ROA)*, both calculated net of industry average in year t + n–1. TSR, a market-based performance indicator, was calculated as year-end share price minus year-beginning price, plus dividends paid, all divided by year-beginning share price. ROA, an accounting measure, was calculated as net income divided by assets. Again, the industry average for the year was subtracted to obtain industry-adjusted performance indicators.

We used two distinct indicators of recent social praise for the CEO, both measured in t + n–1. Media praise for the CEO was assessed by a content

analysis of prominent newspapers and business magazines. These included the newspapers *New York Times*, *Wall Street Journal*, *Washington Post*, *Boston Globe*, *Los Angeles Times*, *Chicago Tribune, Atlanta Constitution*, *San Francisco Chronicle*, *San Jose Mercury News,* and the magazines *BusinessWeek*, *Fortune*, *Forbes,* and *The Economist*. Following Hayward and Hambrick (1997), we isolated only those articles that included evaluative comments about the CEO. Each such article was rated on a scale ranging from –2 to +2, with –2 points for a very critical article about the CEO, –1 point for an article that was generally negative but had some positive comments, 1 point for an article that was on balance positive, and 2 points for an unequivocally favorable article about the CEO. Two independent raters coded all articles, and interrater agreement was high [Intraclass Correlation Coefficient (ICC1) = .82; $p < .01$]. Each year's media praise for a CEO was computed as the sum of ratings of all evaluative articles. For example, if there were three evaluative articles about a CEO in a year, with scores of 1, 2, and 1, the CEO's media praise measure for that year was 4. For CEOs who had no evaluative articles in a given year, we assigned a score of zero. Consistent with prior studies of media portrayals of CEOs (Pollock and Rindova, 2003), fewer than 2 percent of all CEO-years yielded negative ratings, precluding us from meaningfully examining "media criticism."

For our measure of media awards, we identified all awards conferred on CEOs by prominent business publications and other major organizations, following Malmendier and Tate (2009). These publications included *BusinessWeek*, *Financial World*, *Chief Executive*, *Forbes*, *Industry Week*, *Morningstar.com*, *Time*, *CNN*, *Electronic Business Magazine*, and *Computer Reseller News*, a major industry-specific magazine. Some of these entities ceased giving awards before 2006 (e.g., *Financial World)*, but most continued through the end of the panel. A CEO received one point for every award received in a given year; thus, for instance, a CEO who won two awards received a two.

CEO controls. Because strategic behaviors can vary with executive seniority, we controlled for CEO age $_{t+n-1}$ and CEO tenure $_{t+n-1}$ using data from proxy statements. To control for the CEO's structural power (Finkelstein, 1992), we coded whether the CEO was also chairman, again using proxy statements for year $_{t+n-1}$. Using data from Execucomp, we controlled for the percentage of company stock owned by the CEO$_{t+n-1}$, which is another basis of power (Finkelstein, 1992). Because CEOs sometimes delegate operational matters to their close associates, we also included a binary indicator of whether the firm had a chief operating officer (COO).

Firm controls. Since the magnitude of risky outlays in the prior year could affect outlays in the current year (Audia and Greve, 2006), we included the amount of risky outlays (logged)—the sum of R&D, capital, and acquisition expenditures—in year t + n–1 as a control variable. Because large and old firms may have distinct risk-taking tendencies, we controlled for firm size (logarithm of revenues $_{t+n-1}$) and firm age $_{t+n-1}$. To control for resource availability, or slack, we included the ratio of current assets to current liabilities $_{t+n-1}$ and the debt to capital ratio $_{t+n-1}$. Finally, to control for the overall amount of media attention paid to a firm, we included the total number of media articles (in our selected media outlets) about the firm in year t + n–1.

Table 1. Study 1: Correlations and Descriptive Statistics (N = 542)*

Variable	Mean	S. D.	1	2	3	4	5	6	7
1. Risky outlays (log) $_{t+n}$	2.09	.84							
2. CEO narcissism	.03	.74	.13						
3. Last year's TSR $_{t+n-1}$	−.12	.51	.13	−.02					
4. Last year's ROA $_{t+n-1}$	.05	.17	.28	.08	.24				
5. Last year's media praise for CEO $_{t+n-1}$	.87	2.01	.45	.11	.02	.05			
6. Last year's media awards for CEO $_{t+n-1}$	.18	.61	.36	.04	.06	.09	.47		
7. CEO age $_{t+n-1}$	50.69	6.84	.21	−.07	.03	−.01	−.01	.06	
8. CEO tenure $_{t+n-1}$	6.05	2.15	.17	.07	.04	.09	−.03	−.02	.17
9. CEO is chair $_{t+n-1}$	.66	.47	.05	.09	−.03	.06	−.07	−.04	.07
10. CEO ownership $_{t+n-1}$	1.78	4.96	−.15	−.07	.01	−.09	.03	−.03	−.31
11. Separate COO $_{t+n-1}$	.39	.49	.13	−.16	.02	.07	−.01	−.03	.05
12. Firm revenues (log) $_{t+n-1}$	2.82	.79	.69	.17	−.01	.26	.37	.41	.31
13. Firm age $_{t+n-1}$	24.05	23.30	.30	.14	-.04	.10	.07	.13	.32
14. Current ratio $_{t+n-1}$	2.82	2.83	−.19	−.08	.04	−.01	−.03	−.03	−.23
15. Debt-to-capital ratio $_{t+n-1}$	.14	.22	.17	−.01	−.11	−.21	−.01	.03	.29
16. Last year's risky outlays (log) $_{t+n-1}$	2.05	.89	.81	.11	−.02	.19	.26	.31	.21
17. Number of articles about firm $_{t+n-1}$	5.01	7.93	.44	.11	.11	.09	.55	.33	−.02

Variable	8	9	10	11	12	13	14	15	16
9. CEO is chair $_{t+n-1}$	.20								
10. CEO ownership $_{t+n-1}$	.01	.13							
11. Separate COO $_{t+n-1}$	.09	.14	.08						
12. Firm revenues (log) $_{t+n-1}$	.17	.13	−.14	.08					
13. Firm age $_{t+n-1}$	.09	.13	−.17	.02	.53				
14. Current ratio $_{t+n-1}$	−.04	−.17	−.01	−.12	−.35	−.19			
15. Debt-to-capital ratio $_{t+n-1}$	−.01	.13	−.04	.02	.25	.32	−.14		
16. Last year's risky outlays (log) $_{t+n-1}$	.18	.06	−.14	.16	.71	.30	−.21	.19	
17. Number of articles about firm $_{t+n-1}$	.01	−.01	.01	−.01	.39	.09	−.05	−.01	.41

* Correlations greater than |.08| are significant at the $p < .05$ level; calendar-year dummies are not included in this table.

Time controls. We included calendar-year dummies to control for year-wise risky outlays by the overall industry.

Endogeneity. Narcissistic CEOs might be drawn to certain situations, or some conditions might particularly allow demonstration of narcissistic tendencies. To explore this possibility, we regressed our measure of CEO narcissism against a set of antecedent and contemporaneous variables. The antecedent variables, which captured key aspects of the CEO's entry conditions, were measured in t–1 (the year prior to the CEO's start); they included firm revenues, age, ROA, and calendar year. We also included ROA change between t

and t + 1, on the assumption that early performance improvements might stimulate manifestations of narcissism. The contemporaneous variables, measured in t + 1, included three measures of power (CEO is also board chair, CEO founder, and CEO ownership), CEO age, and a dummy variable for whether the CEO was an outside hire, defined as having arrived at the firm within a year prior to becoming CEO. We also included a dummy variable to indicate whether the firm was in the software or hardware sector. Among all these variables, only one significantly predicted CEO narcissism: the CEO as an outside hire. Thus our measure of narcissism does not appear to be an endogenous proxy for other factors; most notably, the narcissism index is not a reflection of the CEO's structural power. Given that our main results did not change when we included CEO outsider status as a control variable, we omitted it to save degrees of freedom.

Estimation Method

Because we had multiple observations for each firm, we used generalized estimating equations (GEE) (Liang and Zeger, 1986), which derive maximum likelihood estimates and control for non-independent observations. We specified a Gaussian (normal) distribution for the dependent variable, with an identity link function and auto-correlated dependent variables, and used robust variance estimators (White, 1980) in all the models. We used a random-effects model because fixed-effects models are problematic when the number of unique panels (in this study, CEOs) is large but the number of years for which they are observed is small. In our sample of 152 CEOs, the average number of observations per CEO was 3.56 years. Fixed-effects models also preclude the use of any variables that are invariant over time, such as CEO narcissism or industry sector.

Results

Table 1 reports descriptive statistics and correlations for all variables, and table 2 reports GEE results for tests of our hypotheses. All models were highly significant, by the Wald χ^2 test.

The first model in table 2 includes all control variables, several of which were significant in predicting risky outlays. Model 2 adds the four capability cues. Both measures of objective performance were significantly positively associated with risky outlays, supporting hypothesis 1; specifically, last year's TSR was significant at $p < .05$ and last year's ROA was significant at $p < .01$. Among the two social cues, last year's media praise for the CEO was significantly positively related to risky outlays ($p < .05$), while last year's media awards was not significant; from this model, then, hypothesis 2 was partly supported.

Models 3 and 4 test hypothesis 3, which posited that a CEO's narcissism would diminish the effect of objective performance on risk taking. This hypothesis was supported, as evidenced by the significant negative interaction of both narcissism and last year's total shareholder return ($p < .05$) and narcissism and last year's ROA ($p < .05$).

Models 5 and 6 similarly test hypothesis 4, which stated that a CEO's narcissism would amplify the effect of social praise on risk taking. The interaction of narcissism and media praise for the CEO was significantly positively associated

Table 2. Study 1: Effects of Capability Cues and CEO Narcissism on Firm Risk-taking (GEE Analysis) (N = 542 firm-years)*

Predictor variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
CEO age $_{t+n-1}$	.01	.01	.01	.01	.01	.01	.01
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
CEO tenure $_{t+n-1}$	.02•••	.02•••	.03•••	.02•••	.02•••	.02••	.02•••
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
CEO is chair $_{t+n-1}$	−.07	−.06	−.07	−.07	−.05	−.07	−.05
	(.06)	(.05)	(.05)	(.05)	(.05)	(.05)	(.05)
CEO ownership $_{t+n-1}$	−.01	−.01••	−.01••	−.01•	−.01••	−.01••	−.01•
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Separate COO $_{t+n-1}$	.04	.02	.03	.02	.02	.03	.02
	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)	(.04)
Firm revenues (log) $_{t+n-1}$	.27••	.17••	.17••	.17••	.16••	.17••	.17••
	(.08)	(.07)	(.08)	(.08)	(.08)	(.08)	(.08)
Firm age $_{t+n-1}$	−.01	.01	.01	.01	−.01	.01	−.01
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Current ratio $_{t+n-1}$	.01	.01	.01	.01	.01	.01	.01
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
Debt-to-capital ratio $_{t+n-1}$	−.01	.17	.17	.17•	.17	.18•	.15
	(.09)	(.11)	(.11)	(.11)	(.11)	(.11)	(.11)
Last year's risky outlays $_{t+n-1}$	.49•••	.40•••	.39•••	.39•••	.39•••	.39•••	.38•••
	(.11)	(.09)	(.09)	(.09)	(.09)	(.09)	(.09)
Number of articles about firm $_{t+n-1}$	.01••	.01••	.01••	.01••	.01••	.01••	.01••
	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)
CEO narcissism	.03	.02	.02	.02	−.01	.02	−.01
	(.03)	(.03)	(.03)	(.03)	(.04)	(.03)	(.04)
Last year's TSR $_{t+n-1}$		.09••	.25••	.09••	.09•	.10••	.21••
		(.04)	(.06)	(.04)	(.04)	(.04)	(.07)
Last year's ROA $_{t+n-1}$		.67•••	.65•••	1.26•••	.71•••	.66•••	1.21•••
		(.16)	(.16)	(.32)	(.16)	(.16)	(.32)
Last year's media praise for CEO $_{t+n-1}$		.09••	.09••	.09••	.02	.09••	−.01
		(.04)	(.03)	(.03)	(.04)	(.04)	(.04)
Last year's media awards for CEO $_{t+n-1}$		−.05	−.04	−.06	−.06	.05	.16
		(.07)	(.07)	(.07)	(.07)	(.15)	(.14)
CEO narcissism* last year's TSR $_{t+n-1}$			−.09••				−.07•
			(.03)				(.04)
CEO narcissism* last year's ROA $_{t+n-1}$				−.01••			−.01••
				(.01)			(.01)
CEO narcissism* last year's media praise for CEO $_{t+n-1}$					.04••		.05••
					(.02)		(.02)
CEO narcissism* last year's media awards for CEO $_{t+n-1}$						−.05	−.11
						(.05)	(.07)
Wald chi^2	538.52•••	578.45•••	609.18•••	619.21•••	580.11•••	609.14•••	709.05•••
Pseudo R^2	.698•••	.714•••	.718•••	.720•••	.715•••	.715•••	.723•••

• $p < .10$; •• $p < .05$; ••• $p < .01$.

* Standard errors are in parentheses; coefficients of calendar-year dummies are not shown.

with risky outlays ($p < .05$); however, the interaction of narcissism and media awards was not significant. From these models, hypothesis 4 was partially supported.

Model 7 presents a complete model, with all hypothesized variables and interactions. The significant negative interactions between narcissism and last

Figure 1a. The interactive effect of recent TSR and CEO narcissism on risky outlays.

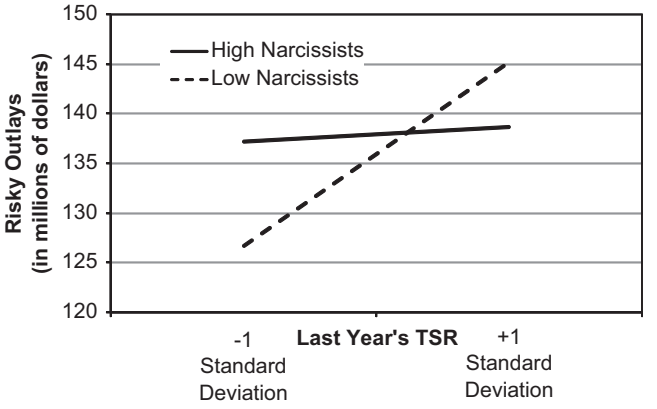
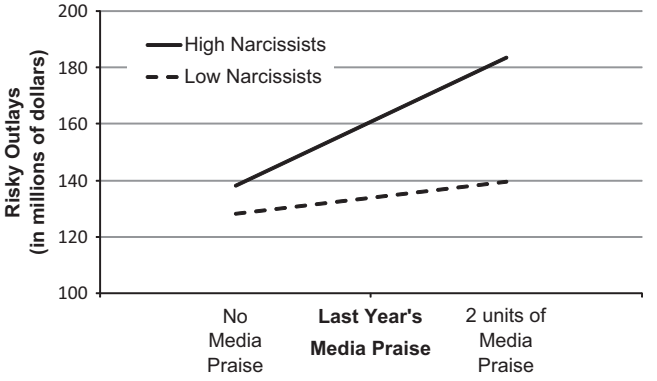


Figure 1b. The interactive effect of recent media praise and CEO narcissism on risky outlays.



year's objective performance continued to be significant (TSR at $p < .10$; ROA at $p < .05$), indicating that narcissists were less responsive to objective performance than were non-narcissists, providing support for hypothesis 3. And the interaction of narcissism and media praise continued to be positively significant ($p < .05$), in partial support of hypothesis 4.

Discussion

We found evidence that recent objective performance was positively related to current risk taking (H1) and that CEO narcissism moderated the strength of this relationship (H3). To illustrate the practical importance of these effects, figure 1a shows the graphed relationships among last year's TSR, CEO narcissism, and risky outlays, using the coefficients in model 3, and assuming median values for all control variables. As can be seen, less narcissistic CEOs (those below the median) were relatively responsive to recent objective performance, spending liberally after a good year—as measured by industry-adjusted TSR—and spending conservatively after a poor year. By comparison, highly narcissistic CEOs were not as sensitive to these objective performance cues.

We found limited support for the idea that social praise generally propels risk taking (H2). Once CEO narcissism was factored in, however, the effect of social cues—specifically media praise for the CEO—on risky outlays was highly significant, in support of hypothesis 4. These relationships are portrayed in figure 1b, graphing last year's media praise, narcissism, and risky outlays. As can be seen, highly narcissistic CEOs were exceptionally responsive to media praise.

STUDY 2: EXPLAINING ACQUISITION PREMIUMS

As a second test of our hypotheses, we examined the effects of capability cues, and their interactions with narcissism, on acquisition premiums. When CEOs acquire other companies, they almost always must pay amounts greater than the targets' pre-takeover market values (Black, 1989). The size of an acquisition premium reflects the acquiring CEO's assessment of how much more valuable the target company will be in his or her hands, or confidence that he or she can manage the target's assets better than the incumbent managers (Roll, 1986; Moeller, 2005). The bigger the premium, of course, the greater the risk, as recouping a large premium can be very difficult (Allen et al., 1995), and some acquirers have gone bankrupt after paying outsized acquisition premiums (Kaplan, 1989; Haunschild, 1994).

Hayward and Hambrick's (1997) study of acquisition premiums, as manifestations of CEO hubris, provides a foundation for our study. As noted earlier, Hayward and Hambrick used three indicators of what they called ''sources of hubris'': the firm's recent performance, recent media praise for the CEO, and the CEO's ''self-importance'' (measured by the CEO's cash pay relative to the second-highest-paid executive). Though the authors treated these as equivalently relevant antecedents of hubris (and even combined them into an index), in our theoretical framework these indicators have very different conceptual meanings. The firm's recent performance is an objective capability cue; recent media praise is a social capability cue; and self-importance is an element of the narcissistic personality. We expected the two types of cues—objective performance and social praise—to exert their own direct positive effects on acquisition premiums (H1 and H2), as Hayward and Hambrick found, but that the cues would interact with CEO narcissism in very different ways: we expected CEO narcissism to dampen the effect of objective performance on premiums (H3) and narcissism to accentuate the effect of social praise (H4).

Sample

We used Security Data Corporation's Mergers and Acquisitions database to identify pairs of publicly traded firms involved in acquisitions between 2001 and 2008. We applied several criteria for selecting our sample. We stipulated that the acquirer's revenues must be greater than $100 million, as smaller companies often have unreliable financial figures; we only studied deals in which the acquirer bought 100 percent of the target firm, rather than just a portion; and we required that the target's revenues be at least 10 percent of the revenues of the acquirer, to ensure that we were studying highly material deals that would centrally involve the acquirers' CEOs. Finally, we only studied acquisitions that were done in the fourth year, or beyond, of the acquiring CEO's

tenure, as narcissism was measured using indicators from the second and third tenure years (as in Study 1). Our final sample consisted of 131 acquisitions from a wide range of industries: consumer products and services, retail, healthcare, computer software and hardware, telecommunications, media and entertainment, industrials, and materials.

Measures

Dependent variable: Acquisition premiums. The SDC database was our data source for determining acquisition premiums. We noted the target firm's share price four weeks prior to the date on which the takeover was first announced and computed acquisition premiums as the purchase price minus the pre-takeover price divided by the pre-takeover price (following Hayward and Hambrick, 1997).

CEO narcissism. To measure a CEO's narcissistic tendencies, we used the same method as in Study 1, relying on four unobtrusive indicators. For this sample, the correlations among the four indicators were again all positive (ranging from .32 to .49) and significant ($p < .01$). Principal axis factoring generated a single factor (with loadings above .50) that had an eigenvalue of 2.17 explaining 40.09 percent of the variance. Confirmatory factor indices were at or above recommended standards (Non-Normed Fit Index = .98, Comparative Fit Index = .99, Standardized Root Mean Square Residual = .05, and Root Mean Square Error of Approximation = .04); and the Cronbach alpha for the standardized values (mean = 0; s.d. = 1) of the four indicators was .72. We computed narcissism scores for each CEO by averaging the four measures, after standardization.

Capability cues. We used the same two measures of capability cues as Hayward and Hambrick (1997): total shareholder returns (TSR) and recent media praise, both calculated for the year leading up to the acquisition. As in Study 1, we subtracted industry averages to obtain industry-adjusted TSR. Media praise for the CEOs was measured by the same method described earlier. Interrater agreement between two independent raters was high [ICC1 = .85; $p < .01$]. Fewer than 3 percent of the media articles generated negative ratings; therefore, as in Study 1, the media scores overwhelmingly reflected gradations of praise (but not criticism).

Control variables. We controlled for several CEO-level variables that might have an effect on strategic decisions: the CEO's age, CEO tenure in the firm, and whether the CEO was also board chair. We collected these data from company proxy statements. Following Hayward and Hambrick (1997), we also controlled for potentially confounding factors at the level of the acquirer-target pair, and separately at the level of the individual firms.

Target-acquirer pair controls. Financial or product synergies inherent in the acquisition can influence premiums (Slusky and Caves, 1991). We controlled for the first possibility by including a financial synergy variable, the debt-to-equity ratio of the target firm less the debt-to-equity ratio of the acquirer firm (Fluck and Lynch, 1999). We used a 4-point product-relatedness scale to control for product synergy: 4 points if the acquirer and target firms shared identical 4-digit SIC codes; 3 points if the firms shared 2-digit SIC codes; 2 points if the firms shared intangible commonalities (e.g., related technologies); and 1 point if the firms were in unrelated businesses. Because premiums can vary according

Table 3. Study 2: Correlations and Descriptive Statistics (N = 131)*

Variable	Mean	S. D.	1	2	3	4	5	6	7	8	9
1. Acquisition premium	.33	.31									
2. CEO narcissism	−.01	.74	.06								
3. Acquirer firm's last year's TSR	.20	.58	.37	−.09							
4. Last year's media praise for acquirer CEO	1.50	3.82	.28	−.03	.07						
5. Acquirer CEO age	54.42	6.97	.07	.12	.03	−.04					
6. Acquirer CEO tenure	7.95	3.22	.19	.06	.09	−.03	.18				
7. Acquirer CEO is chair	.79	.41	.15	.03	.01	.08	.23	.13			
8. Target's officer and board holdings	15.68	17.43	−.04	.02	.19	−.18	−.07	.06	−.09		
9. Acquirer current ratio	2.19	1.62	.01	.02	.07	−.08	.13	.03	−.09	−.01	
10. Acquirer firm revenues (log)	3.24	.61	.11	.13	−.17	.39	.06	.08	.11	−.33	−.36
11. Product relatedness	3.24	.87	.04	.04	.07	−.04	−.01	−.10	−.01	.21	.09
12. Financial synergy	1.54	10.77	.07	−.12	−.09	−.09	.01	.03	−.09	−.03	−.05
13. Target's relative profitability	−6.51	24.73	.15	.21	.11	.12	.17	−.09	.18	−.23	.12
14. Payment method	1.63	.49	.04	−.03	.05	.23	.01	.10	.07	−.16	.19
15. Competing bidders	.05	.23	−.05	.01	−.05	.06	.09	.09	.04	−.17	−.11
16. Number of media articles	1.41	4.46	.01	−.17	−.14	.53	−.15	.12	.03	−.11	−.11
17. Average acquisition premium	.33	.06	.21	−.06	.08	−.10	−.13	.15	.11	.01	.03

Variable	10	11	12	13	15	16	17
11. Product relatedness	−.10						
12. Financial synergy	−.01	−.17					
13. Target's relative profitability	.09	.05	−.41				
14. Payment method	−.01	−.01	−.16	.13			
15. Competing bidders	.24	−.03	−.03	.02	.02		
16. Number of media articles	.32	.09	.03	−.25	.03	.05	
17. Average acquisition premium	−.18	.07	−.03	−.08	.24	−.11	−.01

* Correlations greater than |.17| are significant at the $p < .05$ level.

to the payment method (Comment and Schwert, 1995), we included a dummy variable coded as 1 if the deal was all cash.

Firm controls. We controlled for the percentage of stock owned by the target firm's directors and executives. If holdings are high, the potential for performance improvement may be difficult, and premiums might be small. Because a target firm's recent operating performance can have an impact on acquisition premiums, we controlled for the target firm's return on assets (ROA) for the year preceding the acquisition, relative to the industry average. Because large firms may have established processes for big acquisitions, we controlled for the acquirer's size as measured by the logarithm of revenues. We also

Table 4. Study 2: Effects of Capability Cues and CEO Narcissism on Acquisition Premiums (OLS Regression Analysis) (N = 131)*

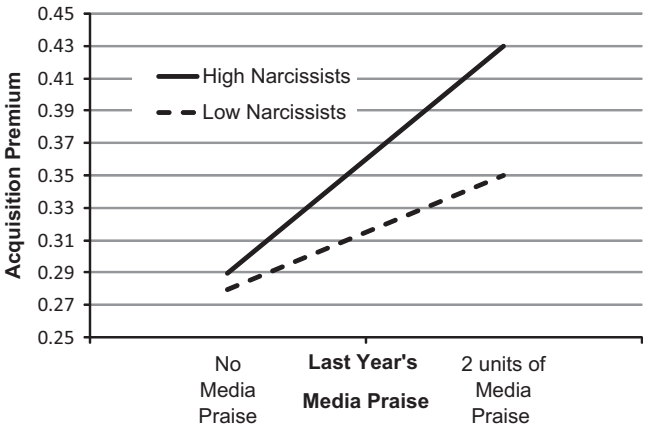
Predictor variable	Model 1	Model 2	Model 3	Model 4	Model 5
Acquirer CEO age	.01	.01	.01	−.01	−.01
	(.01)	(.01)	(.01)	(.01)	(.01)
Acquirer CEO tenure	.02•	.02•	.02•	.01•	.01•
	(.01)	(.01)	(.01)	(.01)	(.01)
Acquirer CEO is chair	.05	.05	.05	.05	.05
	(.07)	(.06)	(.06)	(.06)	(.06)
Acquirer firm revenues (log)	.07	.05	.05	.05	.05
	(.06)	(.05)	(.05)	(.05)	(.05)
Target's officer and board holdings	.01	−.01	−.01	.01	.01
	(.01)	(.01)	(.01)	(.01)	(.01)
Acquirer current ratio	.01	.01	.01	.01	.01
	(.02)	(.02)	(.02)	(.02)	(.02)
Product relatedness	.02	.03	.03	.03	.03
	(.03)	(.03)	(.03)	(.03)	(.03)
Financial synergy	.01••	.01••	.01••	.01••	.01••
	(.01)	(.01)	(.01)	(.01)	(.01)
Target's relative profitability	.01••	.01	.01	.01	.01
	(.01)	(.01)	(.01)	(.01)	(.01)
Payment method	.02	−.03	−.03	−.03	−.03
	(.06)	(.05)	(.05)	(.05)	(.05)
Competing bidders	−.09	−.08	−.08	−.06	−.06
	(.12)	(.11)	(.11)	(.11)	(.11)
Number of media articles	.01	−.01	−.01	−.01	−.01
	(.01)	(.01)	(.01)	(.01)	(.01)
Average acquisition premium	1.01••	1.03••	1.02••	1.02••	1.02••
	(.44)	(.39)	(.39)	(.39)	(.39)
CEO narcissism	.01	.02	.02	.05	.05
	(.04)	(.03)	(.04)	(.03)	(.04)
Acquirer firm's last year's TSR		.17•••	.19•••	.17•••	.19•••
		(.04)	(.09)	(.04)	(.09)
Last year's media praise for acquirer CEO		.03•••	.03•••	−.03	−.03
		(.01)	(.01)	(.03)	(.03)
CEO narcissism × Last year's TSR			−.02		−.02
			(.06)		(.07)
CEO narcissism × Last year's media praise for CEO				.04••	.04••
				(.02)	(.02)
R^2	.159••	.350•••	.351•••	.382•••	.383•••

•$p < .10$; ••$p < .05$; •••$p < .01$.
* Standard errors are in parentheses.

controlled for the acquirer firm's slack, as measured by the ratio of current assets divided by current liabilities.

The presence of competing bidders can increase premiums. We controlled for this with a dummy variable. Because acquisition premiums vary over time, we controlled for the average acquisition premium in a given year. As in Study 1, to control for a firm's overall amount of media attention, we included the total number of media articles for the firm in the acquisition year. To save degrees of freedom, we did not include the target firm's relative size or

Figure 2. The interactive effect of recent media praise and CEO narcissism on acquisition premiums.



industry sector dummies in the models shown here; results for our hypothesized variables were unchanged when we included them.

Results

Table 3 reports the descriptive statistics and correlations for the variables in this study. Table 4 presents the OLS regression results. Model 1 of table 4 includes all control variables. Model 2 adds the capability cues—TSR and media praise. Models 3 and 4 add the interaction terms separately, followed by a complete specification in model 5.

In support of hypothesis 1, last year's total shareholder return was positively and significantly associated with acquisition premiums in all models. In support of hypothesis 2, last year's media praise was positively and significantly associated with acquisition premiums in models 2 and 3; however, this main effect was no longer evident when the interaction of narcissism and media praise were included. As seen in models 4 and 5, the interaction of CEO narcissism and recent media praise was positive and significant, supporting hypothesis 4. Only hypothesis 3 failed to receive any support: the interaction between narcissism and last year's TSR, even though exhibiting the expected negative coefficient, was not significant.

This study of acquisition premiums provides considerable corroboration of our earlier tests. As in Study 1, we found that CEOs engage in greater risk taking in response to favorable capability cues in the form of recent TSR and media praise. We found partial support for the idea that narcissistic CEOs react to capability cues differently than less narcissistic CEOs. On one hand, the interaction of narcissism and TSR was not predictive of acquisition premium size. On the other hand, however, we found evidence that highly narcissistic CEOs were more buoyed by social praise than were less narcissistic CEOs.

The interaction graph in figure 2 shows that recent media praise tends to push up acquisition premiums in general, but the effect is very pronounced for highly narcissistic CEOs. Specifically, a less-narcissistic CEO who received two

units of recent media praise (one highly favorable article) paid an acquisition premium about 7 percentage points greater than a similarly non-narcissistic CEO who had received no praise (28 vs. 35). For a highly narcissistic CEO, however, the added premium that followed from such media praise was about 14 percentage points (29 vs. 43). Thus, as shown in Study 1, evidence from this study indicates that narcissistic CEOs are exceptionally responsive to social praise.

GENERAL DISCUSSION AND CONCLUSION

Adopting an interactionist perspective, we have theorized and shown that capability cues generally influence executive risk taking but that executives differ in their responses to cues, depending on their degree of narcissism. We found partial evidence that highly narcissistic CEOs are much less responsive to recent objective performance than are less narcissistic peers; in contrast, we showed that highly narcissistic CEOs are exceptionally emboldened by social praise. As such we have contributed to an embryonic but highly promising literature on the antecedents of executive confidence as they pertain to risk-taking behaviors.

Our project opens two main avenues for consideration by scholars of executive risk taking. First, we introduced the concept of capability cues, or highly salient indicators of a decision maker's current level of talent or ability, and showed that these cues are positively related to risk taking. Negative cues induce conservative investment behavior, while positive cues stimulate more aggressive outlays. Although executives' confidence remained an unobserved mediator in our empirical analyses, the results were highly consistent with the view that recent signals about one's level of skill affect one's sense of potency, which in turn affects risk taking. As such, we provide new insights about the antecedents of executives' confidence, which will be relevant for researchers studying the topic from various vantages, including finance and economics, psychology, organizational theory, and strategic management.

In drawing a distinction between two forms of capability cues—recent objective performance and recent social praise for the CEO—we found that the former had a robust, general effect on executive risk-taking behavior. Across both of our studies, recent financial performance was consistently associated with heightened risk taking. Moreover, our controls allowed us to largely set aside the interpretation that recent performance was simply a proxy for resource availability, rather than a confidence influencer. In contrast, social praise had a main effect on risk taking only until CEO narcissism was added to the picture, when it became evident that social praise, particularly recent favorable media portrayals of the CEO, propelled risk taking only in proportion to the CEO's degree of narcissism. This pattern, too, was evident in both of our studies. Our results thus provide consistent evidence that executives respond to capability cues when deciding how much risk to take on.

Our second main contribution was to demonstrate the merits of an interactionist perspective for predicting risk taking. Following prior research about how narcissists respond to feedback (Kernis and Sun, 1994; Rhodewalt and Eddings, 2002), we argued and found that narcissists react to objective performance cues very differently than they react to social praise. Our results provided some evidence (at least in Study 1) that highly narcissistic CEOs were

relatively unresponsive to their recent objective performance. Poor performance did not dampen their investment behavior, and outstanding behavior did not greatly propel them. Less narcissistic CEOs exhibited substantially stronger responses to objective performance cues. By comparison, and as noted above, results from both of our studies suggested that highly narcissistic CEOs were exceptionally stimulated by recent media praise, while less narcissistic CEOs registered less effect. Again, these results align with prior portrayals of how narcissists respond to feedback, but our study is the first to specifically juxtapose the narcissist's differential responses to objective performance and social praise.

As our earlier literature review suggests, studies of risk taking have overwhelmingly considered only contextual conditions (Singh, 1986; Sanders and Hambrick, 2007) or only individual characteristics (e.g., Miller and Toulouse, 1986; Delgado-García and Fuente-Sabaté, 2010), or the two as rival predictors (MacCrimmon and Wehrung, 1990). But research has generally stopped short of considering how contextual and individual-level factors combine, or interact, to affect risk taking, an approach long called for by interactionist theorists (e.g., Brockner, 1979; Treviño, 1986). Our study suggests that it is very fruitful to ask, ''When facing risky decisions, how do individuals differ in their interpretations of and responses to various contextual stimuli?'' (Mischel, 1977; Hambrick and Mason, 1984). Theoretical inquiry into the interactive effects of contextual stimuli and individual differences on risk taking could be one of the most promising frontiers awaiting students of strategic decision making.

Given our within-person focus, we did not develop any hypotheses about the main effect of narcissism, in and of itself, on risk taking. One might reasonably expect that narcissists, who have elevated levels of self-admiration, would be generally inclined to take big risks. In that vein, Hayward and Hambrick (1997) found that their measure of CEO ''self-importance,'' a facet of the narcissistic personality, was significantly positively associated with acquisition premium size. In contrast, we did not find any such main effect for narcissism, either on acquisition premiums (Study 2) or on overall risky outlays (Study 1). Though much more research is needed, our interpretation is that the influence of narcissism on risk taking is best considered in the context of the stimuli at hand. Certain stimuli, notably social praise, stir extraordinary risk taking by narcissists; but other stimuli, specifically, objectively good performance, actually serve as a stronger stimulant for non-narcissists. Overall, then, we see little evidence, either in our data or in the practical world of business affairs, for the premise that narcissists are pervasively extreme risk takers.

In our earlier theoretical overview, we briefly noted that the behavioral theory of the firm (Cyert and March, 1963) and prospect theory (Kahneman and Lovallo, 1993) both envision an inverse relationship between recent performance and risk taking, instead of the positive relationship we theorized and found. It is beyond our scope to attempt a complete reconciliation of these competing expectations, but future research should target this apparent conflict for resolution. Any number of lenses might be used for undertaking such a reconciliation, but two frameworks—expectancy theory and regulatory focus theory—come to mind.[1]

[1] We are indebted to an anonymous reviewer for proposing these lines of thought.

One might apply classic expectancy theory (Vroom, 1964) to consider how executives view the likelihoods (expectancies) as compared with the attractiveness (valences) of alternative outcomes. Our premise is that capability cues, for instance, are inputs into executives' expectancies, but recent performance could also be treated as an input into executives' valences, or one's sense of which outcomes are now most wanted or most dreaded. Alternatively, researchers might apply the newer regulatory focus theory (Higgins, 1998; Molden and Higgins, 2005), in which decision makers can approach their decisions with either a ''promotion focus'' (looking primarily for the upside) or a ''prevention focus'' (concerned about avoiding the downside). Research has shown that one's regulatory focus can stem from contextual stimuli (Crowe and Higgins, 1997) as well as from one's own personality and other biases (Wallace and Chen, 2006). To use the language of our theory, perhaps capability cues contribute to one's promotion vs. prevention orientation, and perhaps narcissism serves to further heighten or to lessen these contextual influences.

Future Research

Like any empirical project, ours has limitations that suggest additional research possibilities. We used archival data, which provided us with a large sample with which to demonstrate the practical significance of our ideas, but with no opportunity to gauge the psychological properties of the CEOs we studied. Most notably, CEO confidence—the operative mechanism in our logic—remains unmeasured, and our index of CEO narcissism, though validated, is surely an imprecise measure of narcissistic tendencies. Although we doubt that primary psychological data can be obtained from large samples of top executives, perhaps our hypotheses about the effects of capability cues and narcissism on risk taking could be tested in controlled conditions with non-executive samples. With such a method, which might entail the use of the Narcissistic Personality Inventory (NPI), subjects could be asked directly about their degree of confidence or their perceptions of risky alternatives (Sitkin and Weingart, 1995).

The measure of risk taking we used in Study 1—aggregate spending on R&D, capital investment, and acquisitions—has certain advantages and precedent in the literature on risk taking (Sanders and Hambrick, 2007), but it has limitations as well. Most obviously, this measure masks a great deal of variance in the riskiness of investments. For instance, some R&D projects might be much riskier than others, and money distributed across dozens of research projects might be thought of as less risky than if the same amount were committed to just one project. Identifying more granular, and highly specified, indicators of risk taking would be very useful.

Our measure of risk taking in Study 1 also carries a less obvious limitation, which might represent one of the most promising avenues for follow-on research. Specifically, our measure of risky outlays allows no insight about whether a CEO's aggressive spending behavior amounts to a continuation of existing strategies, intensifying efforts in current directions, as opposed to major commitments in new directions. It may be, for instance, that capability cues particularly spur behavior that is consistent with past behaviors, as classic research on feedback has shown (Postman and Bruner, 1948; Postman and Brown, 1952), but that such cues are not strongly related—and might even be inversely related—to aggressive pursuit of new behaviors. Perhaps future

studies can distinguish more precisely between investment outlays that represent a heightened commitment to, rather than a repudiation of, the status quo.

Our study stops short of examining the performance implications of our ideas. It may be, for instance, that when highly narcissistic CEOs take big risks in response to effusive media praise, the results tend to be poor. Or perhaps the muted response of narcissists to objective performance cues yields inferior results, as those narcissistic CEOs who are not very capable tend to overinvest while those who are highly capable tend to underinvest. Attention to the performance implications of our findings will require theoretical perspectives and data analysis well beyond what can be presented here, but such an avenue might be very fruitful.

Finally, future research should attempt to refine and validate various measures of social praise. Contrary to our hypotheses, for instance, we did not find that media awards brought about greater risk taking or that narcissistic CEOs were ultra-responsive to awards, as they were to media praise. Our challenge may have been in how we coded awards (although we followed Wade et al., 2006, and Malmendier and Tate, 2009), or perhaps we simply had too few awards in our samples. In Study 1, there were only 48 firm-years (out of 542) in which CEOs had recently received awards, and we excluded media awards from Study 2, as only eight of the sampled CEOs had recently received awards. With these low proportions, it is easy to see why Malmendier and Tate (2009) used a matched-pair sampling strategy for studying CEO awards.

Moreover, we were unable to gather enough instances of ''scorn'' to assess how CEOs react when they are publicly criticized. It may be that highly narcissistic CEOs respond to criticism with aggressive risk taking, in a dramatic effort to refute their critics; if so, the overall relationship between social cues and risk taking by narcissists would be U-shaped: extreme risk taking after either criticism *or* praise, with more measured responses when there are no (or neutral) social cues. It would be very interesting to engage in more fine-grained theorizing and empirical analysis of exactly how, and in what forms, social praise is most stimulating for CEOs—and for decision makers in general.

Another promising idea is to introduce financial incentives into our theory. How would CEO compensation arrangements interact with capability cues to affect risk taking? And, even more intriguingly, how would pay arrangements alter the behaviors of narcissists vs. non-narcissists? The last several years have seen a surge of interest in the consequences of executive pay plans (e.g., Sanders, 2001), and it might be highly fruitful to examine various combinations of capability cues, CEO personality, and pay arrangements (Wowak and Hambrick, 2010). Various theoretical avenues are open to those who wish to clarify and enrich our understanding of the effects of an executive's recent successes or stumbles on his or her risk taking.

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