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Which CEO Characteristics and Abilities Matter?

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Working Paper No. 230

**“Which CEO Characteristics and Abilities
Matter?”**

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Preliminary

Which CEO Characteristics and Abilities Matter?

by

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Abstract

We study the characteristics and abilities of CEO candidates for companies involved in buyout (LBO) and venture capital (VC) transactions and relate them to hiring decisions, investment decisions, and company performance. Candidates are assessed on more than thirty individual abilities. The abilities are highly correlated; a factor analysis suggests there are two primary factors with intuitive characterizations – one for general ability and one that contrasts team-related, interpersonal skills with execution skills. Both LBO and VC firms are more likely to hire and invest in CEOs with greater general abilities, both execution- and team-related. Success, however, is more strongly related to execution skills than to team-related skills. Success is, at best, only marginally related to incumbency, holding observable talent and ability constant.

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I. Introduction

Given their leadership positions and compensation, CEOs likely have a significant impact on the their companies' success. And, of course, there is a great deal of anecdotal evidence about what CEOs do and how they matter, particularly in the popular press. Surprisingly, economic theorists provide little guidance, and there is very little systematic, large sample, empirical work in the economics, finance and management literatures on how and why CEOs matter.

There are many economic theories that model CEOs or agents running firms. Some theorists, like Holmstrom (1979) treat all agents or CEOs as being the same and focus on effort provision. In these theories, however, the individual CEO does not matter. Some theorists do model CEOs with different talents and abilities, and assume those abilities map into firm performance. For example, Rosen (1981) models talent or ability with an index, q . The talent distribution is assumed fixed and costlessly observable. Murphy and Zabojnik (2004) assume that CEOs have ability, a_i . And Gabaix and Landier (2007) assume that managers and CEOs have talent, $T(m)$. While these theorists assume CEOs have different ability or talent, and assume the ability is observable, they provide little guidance concerning what those abilities or talents are.

A recent exception is a paper by Bolton et al. (2008) who model CEOs as trading off the ability to coordinate employees' actions with the ability to react to new information. CEOs vary in being more or less resolute which the authors define as a type of overconfidence. In their model, more resolute CEOs are more successful because the increased coordination benefits from being resolute outweigh the costs of not fully reacting to new information. Also, see Van den Steen (2005) for a related paper.

Similarly to the theoretical literature, empirical work in economics and finance suggests that CEOs matter, but that work is just beginning to consider what particular abilities or skills are important. For example, Bertrand and Schoar (2003) study managers who move from one firm to another, and find evidence consistent with different managers having different styles, different behavior, and different performance. Bloom and Van Reenen (2006) use survey data to find that different management practices

are related to firm performance. Bennedsen et al. (2007) find that firm performance is negatively related to CEO focus. These papers are silent, however, on what defines the different styles and characteristics.

More recently, several papers have begun to consider what characteristics might be important. Schoar (2008) finds that CEO actions are related to whether they join the labor market in a downturn or a boom. Graham and Narasimhan (2004) find specific effects on leverage for managers going through the Great Depression. One might interpret both papers as using measures of conservatism. Malmendier and Tate (2004, 2007), Ben-David et al. (2007) and Graham et al. (2008) find that CEO decisions and outcomes are related to measures of CEO overconfidence, optimism and risk aversion.

The empirical management literature, like the most of the economics and finance literature, focuses on directly observable characteristics, such as CEOs' "education," "functional background," and "age." Hambrick and Mason (1984) stress that these observable characteristics are, at best, proxies for underlying psychological factors, but they also recognize the difficulties of gathering data with these underlying factors for CEOs.

This paper adds to the empirical literature by providing new evidence on CEO characteristics and abilities, and their relation to hiring, investment decisions, and firm performance. We rely on detailed assessments of 316 CEO candidates for positions in firms funded by private equity (PE) investors – both buyout (LBO) and venture capital (VC) investors. The assessments are based on four-hour structured interviews performed from 2000 to 2006 by ghSmart, a firm that assesses CEO candidates. The data include quantitative and qualitative information about the candidate's education and employment history as well as assessments of a wide range of personal skills and attributes. We complement the assessment data with data on hiring, investment and success from the PE firms and from public sources.

With these data, we make three contributions. First, we extend the set of measured CEO characteristics and abilities.

Second, existing empirical work is primarily concerned with the relation between CEO identity (i.e., fixed effects) and investment policy, financial policy, and performance (see Bertrand, Schoar, 2003 and Bennedsen et al., 2007). This paper takes a first step towards understanding why a particular CEO

might have those effects by studying the relation of particular CEO candidate characteristics and abilities to CEO hiring decisions, to investor investment decisions, and, conditional on hiring, to firm performance. The data also allow us to consider whether different abilities matter for different companies or investments (i.e., companies funded by VC versus LBO firms).

Finally, we consider the related question of the importance of firm-specific knowledge or ability versus general ability by comparing inside and outside CEO candidates. Several theories about the trade-off between firm-specific ability and general ability predict that outside candidates have higher abilities, on average, but there is very limited evidence about whether this is true in practice, nor is there any evidence on the particular dimensions where this trade-off is more relevant (see Frydman (2006) and Murphy and Zabojnik (2004)). In the management literature, Khurana (2002) takes the opposite position and argues that firms should shy away from outsiders, particularly charismatic outsiders.

In this paper, we focus on the 30 specific characteristics or abilities that ghSMART assessed for the candidates in our sample. Because many of the individual characteristics are correlated, we also use a factor analysis to extract the main patterns of variation in the characteristics. We find two factors that are particularly important and have intuitive interpretations: the first loads positively on all abilities and, thus, appears to measure overall talent; the other loads positively on team-related abilities (“teamwork,” “listening skills,” “open to criticism,” and “treats people with respect”), and negatively on execution-related capabilities (“aggressive,” “fast mover,” “persistent,” and “proactive”).

We also separate the second factor into its team-related and execution-related components to investigate the absolute effects of these types of abilities rather than their relative effects that are picked up in the initial factor analysis. In the framework of Bolton et al. (2008), “resolute” CEOs would score high on the execution-related component while “good listeners” and flexible CEOs would score high on the team-related component.

Ratings for outsider CEOs are generally higher than ratings for incumbent CEOs although the differences are largely driven by candidates from LBO-funded firms. This is consistent with investors and firms trading off general skills and ability against firm-specific skills and knowledge.

We then consider determinants of hiring and investment decisions. PE firms – both LBO and VC firms – are more likely to hire and invest in more highly rated / talented CEOs, particularly for outsider hires. We also find that insider CEOs are significantly more likely to remain in their positions or be hired, holding their skill constant. Firms appear to trade off general or observable abilities against firm-specific skills and knowledge.

Next, we consider the relation between a CEO's ratings and subsequent success. We measure success using evaluations from the PE firms (when we can obtain them) and our own assessments of success from publicly available data.

For LBO firms, success is significantly positively related to a number of individual abilities. They tend to be the execution-related measures ("efficient," "organized," "detailed," "follows through," "persistent," "proactive," "sets high standards," and "holds people accountable"), rather than the interpersonal, team-related ones. Consistent with this, we find that success is significantly positively related to the general talent factor and to the execution-related factor in regressions that include the separated factors. We find no relation between incumbency and success controlling for ability.

For VCs, success is negatively (not positively) related to some of the individual measures of talent, including execution-, neutral and team-related measures. Many of the relations become positive (although not significant) when we control for time, apparently reflecting the fact that many of the VC-funded companies in the sample were funded during the tech boom in the late 1990s and early 2000s when many of those businesses were not viable. When we move to a regression framework, we find a significantly negative relation between success and the team-related factor and a positive (but not significant) relation between success and the execution-related factor. We find mixed evidence for a positive relation between incumbency and success (controlling for ability).

Together, the results for LBOs and VCs suggest that execution-related abilities are positively related to success while team-related abilities are negatively related to success. Holding ability constant, incumbency is only marginally related to success if at all.

Finally, we explore whether the success results are sensitive to observables or to sample selection issues. We do not find that the results are sensitive to the inclusion of observables like experience, education, and industry. We also attempt to address the problem of endogenous matching of candidates and companies that arises when unobservable characteristics affect which candidates particular firms hire. While we cannot completely reject a sample selection bias, we report two analyses that are not consistent with one. We find no systematic correlation between outcomes and the qualities of candidates who are not hired for a particular job. If selection were a problem, we would expect candidates who are not hired as the CEO of a particular company to have similar characteristics to the hired candidates. We also consider a Heckman selection model in which the first stage is the hiring decision and the second stage is the performance relation. We include the insider dummy or an overall recommendation in the hiring decision, but exclude it in the performance regressions. We obtain similar results to our basic specifications.

Overall, we believe the analysis and results are novel and suggestive. The results on success are generally consistent with the predictions of Bolton et al. that “resolute,” less flexible CEOs are more successful than “good listeners.”

The results also are related to studies in the psychology literature. According to the five factor model (of personality), personalities consist of five factors: extraversion, emotional stability, agreeableness, conscientiousness, and openness to experience. Studies that relate personality to performance tend to find conscientiousness has the most explanatory power. This is consistent with our findings that execution-related skills of CEOs are related to performance. See Barrick et al. (2001) and Borghans et al. (2008) for summaries of this literature (and Morgeson et al. (2007) for a skeptical view). In a related paper, McClelland (1998) measures twelve executive competencies using interviews. In a cross-section, he finds that executives with high competencies are better performers. For a relatively small sample at one firm, he also finds a relation between executives’ competencies and their subsequent bonuses. None of this work, however, studies a large sample of CEOs.

This research is also closely related to Collins (2001) who studies a sample of eleven CEOs of companies with outstanding performance. He identifies them as “Level 5” leaders who build “enduring greatness” and share the traits of: compelling modesty; giving credit to others and taking blame on themselves; showing unwavering resolve and workmanlike diligence; and building strong teams. The primary concerns with his study are the small sample size and the potential for ex-post selection bias, because he chooses his sample of CEOs based on superior past performance. Our analysis uses a larger sample of CEO candidates chosen ex-ante. Our results for LBO CEOs are consistent with important roles for unwavering resolve and workmanlike diligence. They are not consistent, however, with important roles for the other traits Collins identifies.

Interestingly, our results, particularly those for buyout CEOs, seem most consistent with those described in Drucker (1967). According to Drucker, effective executives “differ widely in their personalities, strengths, weaknesses, values and beliefs. All they have in common is they get the right things done.” To get things done, effective executives: “utilize time efficiently”; “focus on contribution”; “make strengths productive”; “do first things first”; and “make effective decisions.” These appear to be the execution-related skills we find are most correlated with success.

We add one last caveat to interpreting the results. The people we study are CEOs of buyout and VC-funded companies that may have special needs. As a result, it is not possible to know whether the results generalize to CEOs of other firms, particularly public companies. However, we believe the similarity of our results to those of Drucker (1967) is suggestive in that Drucker’s work was based on personal observations of many executives in many different types of firms.

II. Data

A. Assessments

We rely on detailed assessments of 316 CEO candidates for positions in firms funded by private equity (PE) investors, consisting of both VC and LBO investors. The assessments are performed from 2000 to 2006 by ghSMART, a firm that specializes in assessing top management candidates. The

assessments are requested by the PE investors, typically at the time the PE firm is considering an investment or considering hiring a new CEO.

The assessments are typically 20 to 40 page documents that include detailed information on the candidates' life, from childhood through current job experiences. They are based on structured interviews with the candidates that are of roughly four hours in duration and are performed by professional interviewers. The data include quantitative and qualitative information about the managers' education and employment histories as well as assessments of a wide range of personal skills and characteristics.

The typical assessment classifies the CEO candidate on 30 dimensions in five general areas: "leadership," "personal," "intellectual," "motivational," and "interpersonal." Table 1 presents ghSMART's descriptions as well as guides for high and low scores for the assessed characteristics. The characteristics are organized in the general areas used by ghSMART.

The candidates are also typically assessed on abilities specific to the particular deal. Because these abilities are not consistent across candidates, we do not include them in our analyses. The results are qualitatively similar when we include them although the number of observations is reduced.

In the discussion, we informally refer to characteristics as interpersonal / team-related, neutral, and execution-related. Based largely on the factor analysis we describe below, we refer to "Develops People," "Treats People with Respect," "Calm," "Flexibility," "Listening," "Open to Criticism," and "Teamwork" as interpersonal or team-related skills. We view "Removes Underperformers," "Efficiency," "Aggressive," "Moves Fast," "Persistence," "Sets High Standards," "Proactive," "Work Ethic," "Holds People Accountable" as execution-related skills. We classify "Network," "Hires A Players," "Follows through on Commitments," "Organization," "Brainpower," "Analytical," "Strategic," "Creative," "Attention to Details," "Integrity," "Enthusiasm," "Writing," "Oral Communication," and "Persuasion" as neutral or mixed.

For each of the characteristics ghSMART assigns a letter grade to the CEO candidate, ranging from D (lowest) to A+ (highest). We rescale these grades into four categories. We classify grades of B or below as 1. ghSMART reports that such grades are quite negative. We combine these grades because

there are relatively few below B. We classify grades of A and A+ as 4. ghSMART reports that such grades are very positive. We combine them because there are relatively few A+'s. We classify grades of B+ as 2 and grades of A- as 3. We obtain qualitatively similar results when we do not combine grades.

ghSMART structures the interviews in a systematic way to generate as much consistency as possible across interviews. All interviews follow the same specified structure, and are conducted by trained, professional interviewers. The interviewers generally either hold doctoral degrees or have degrees from top MBA programs and have worked at strategy consulting firms (such as McKinsey & Co., Bain, and Boston Consulting Group). According to ghSMART, internal testing has found a high degree of consistency across assessments performed by different interviewers. Our results are qualitatively identical when we use interviewer fixed effects in some of our analyses (not reported).

When asked whether it is possible for executives to “game” the interview by providing answers that the candidates believes are “right,” ghSMART provided two main reasons why this is difficult. First, VC and LBO investors almost always conduct detailed reference checks on the CEO candidates of their portfolio companies to verify the information in the assessments. A candidate who gives misleading answers in the assessments risks exposure through comparison with the information from the reference checks. Candidates are aware that reference checks are conducted, and this provides some motivation to be truthful. Second, ghSMART has found that it is difficult to “game” the questions consistently in the course of a four-hour interview with an experienced interviewer.

Personality assessments have been used and studied in the management psychology literature. That literature finds that the assessments generally provide reliable information. For example, industrial organization psychologists find that self-reported questionnaires are robust to gaming and are substantially consistent (John and Srivastava, 1999). External assessments (by supervisors, co-workers and customers) are typically found to be more reliable than self-assessments (Mount, Barrick and Strauss, 1994). McClelland (1998) finds that interviews of the type conducted by ghSMART successfully classify top performers. We believe that four-hour interviews by professional interviewers are likely to be at least as informative as the self-reported questionnaires and external assessments in those psychology studies.

There are two other reasons we believe that these assessments are informative. First (and anecdotally), at least two PE firms told us they do not make an investment without a CEO assessment of the type ghSMART provides. Second, the assessments are costly for the PE firms. They require at least four hours of a CEO's time and a payment to ghSMART.

While we believe the assessments are informative, it is worth stressing that if the assessments are subject to gaming, this would make the assessments noisy and create a bias against finding any relation of characteristics to outcomes. In fact, characteristics are systematically related to outcomes in ways that are difficult to reconcile with gaming. We discuss this in more detail below.

We also record information in the assessments in addition to ratings. When provided, we record observables about the CEO including age, college and graduate degrees, industry, and test scores. We note if the candidate is the incumbent CEO or is an outsider. In a few cases, the candidate works for the company but not as CEO. We include these candidates with outsiders. Our results are identical if we include these candidates as incumbents. We note if the PE firm has already invested in the company at the time of the assessment. We collect information on the PE firms, particularly assets under management (a measure of size and prominence) at the time of the assessment. Because young companies may require executives with different skills than more mature companies, we distinguish between assessments made by VC and by buyout investors.

B. Corporate Decisions and Performance

In addition to information about the candidates, we coded three outcome measures, whether: (1) the CEO candidate is hired; (2) the PE firm invests in the firm; and (3) the CEO who is hired succeeds. We collected this post-assessment information in two ways. First, either ghSMART or we approached the PE firms. We asked each PE firm whether it invested; if the firm invested, whether the candidate was hired; and if the PE firm invested and one of the candidates was hired, whether the CEO was successful. We also asked if the investment had succeeded, as well as for any available quantitative success measures. We obtained responses from PE firms for 146 of the 316 CEO candidates in our sample.

We complemented the PE firms' information by using public sources to assess whether the investment was made, the CEO was hired, and the hired CEO was successful. These sources included CapitalIQ, Zoominfo.com, VentureOne, Lexis-Nexis, company websites and the PE firms' websites.

Using the public sources, we created two additional measures of success. The first we call the public measure and the second we call the broad public measure. For both, we used PE firm responses if they were available. For the first measure, we studied the hired CEOs for whom we did not get PE firm responses. We classified a CEO as successful, if the CEO led the company or another company to a clearly favorable exit such as an IPO or sale to another company. We classified the CEO as unsuccessful if the company went bankrupt, the company was sold to another firm under distress or at a substantial loss, or the CEO was removed as CEO before any exit occurred. In a few cases, we classified the CEO as having mixed success. For example, we did this if the investors exited, but earned only a modest return.

For the broad public measure, we began with the first public measure. We then classified additional CEOs as successful if the company received positive press regarding its operations or received additional financing at higher valuations. Similarly, we classified CEOs as unsuccessful, if the company had unfavorable press regarding its operations or subsequent financing. We also classified the CEO as mixed if the company that the CEO ran had not exited in any form (IPO, sale, liquidation, etc.) and the company had not received any informative press.

While we recognize that the two public success measures are somewhat coarse, they are similar to (and perhaps less coarse than) the success measures of IPO or IPO and sale used in many studies of venture capital. (E.g., see Gompers et al. (2006) or Hochberg et al. (2007).) When we compare the three measures of success, we view the PE measure as the most precise and the broad public measure as the least precise. While the results are generally consistent using all three measures, the explanatory power of the regressions declines as we move from the most precise to least precise measure.

C. Summary sample descriptive statistics.

Table 2 provides descriptive statistics for the sample. Panel A presents information on incumbency and hiring, and the relation of the two. In our sample of 316 candidates, 224 are hired. There is a large difference in hiring rates for incumbents and outsiders. Of 171 incumbents, 159 (or 93%) are hired; of 145 outsiders, only 65 (or 45%) are hired. The reason for this discrepancy is that in many cases, the CEO candidate was a founder and was extremely likely to remain with the company whether or not the PE firm invested.

Panel B presents information on hiring, PE firm investment, LBO and VC representation, incumbency, and the relation of those three variables. Of the 316 candidates, 148 are assessed for LBO firms and 168 are assessed for VC firms, a roughly equal representation.

Panel C presents information by firm. The 316 CEO candidates are assessed for 258 different companies. The PE firms invested in 181 of these 258 firms. The panel shows that the PE firms tended to assess fewer outsiders in the firms in which they eventually did not invest. It also shows that a larger fraction of incumbents remained CEO in firms in which the PE investors did not invest. Again, this is consistent with the incumbents in a number of firms being founders and wishing to remain as CEOs.

Panels D and E summarize our success variables for the 224 CEO candidates who are hired. The PE firms provided performance assessments for 81. Of these, 37 (46%) were considered successful; (30) 37%, not successful; and 14 (17%), either of mixed or uncertain success. Using the first, more certain public measure, we can rate 126 candidates and estimate that 54 (43%) are successful, 67 (53%) are unsuccessful, and 5 (4%) are mixed. Finally, using the broad public measure, we can rate 208 candidates and estimate that 92 (44%) are successful, 84 (40%) are unsuccessful, and 32 (16%) are mixed.

Panel F describes the number of CEO candidates assessed per company. Only one candidate was assessed in 219 of 258 companies; multiple candidates were assessed in the other 39 firms.

III. Distribution and Aggregation of Managerial Characteristics

Panel A of table 3 presents the average ratings of the characteristics for all 316 CEO candidates. Panel A indicates that there is a fair amount of variation in the ratings of the different CEO candidates.

The standard deviations for most of the characteristics exceed 1 suggesting a wide spread in measurements for those characteristics. Interestingly, the variables with the highest means and lowest standard deviations are “work ethic” and “integrity,” suggesting most individuals who reach the CEO candidate phase are perceived to have high integrity and a strong work ethic.

Panel B presents the average ratings separately for LBO and VC candidates and for incumbents and outsiders. The LBO candidates are rated more highly than the VC candidates on 20 of 30 characteristics, significantly so on seven. Those seven are a mix of team-related, interpersonal, and neutral skills – “Attention to Details,” “Open to Criticism,” “Respect,” “Listening Skills,” and “Persistence,” “Flexibility,” and “Follow Through on Commitments.” The VC candidates are rated more highly on only two characteristics at the 10% level – “brainpower” and “strategic vision”.

Because of the large number of included characteristics, one should be cautious in interpreting a few of those as being statistically significant. Even if the data were random, some characteristics would be significant by chance. Nevertheless, the patterns are suggestive. Buyout CEOs score higher on characteristics related to a broader range of managerial and executive functions while VC CEOs appear to score higher only on characteristics related to intelligence and vision. To the extent that entrepreneurs are over represented relative to professional managers in the VC-funded firms, these results suggest that entrepreneurs require less general management ability, but more knowledge-related skills than the professional managers.

The second half of panel B of table 3 compares insider and outsider CEO candidates. There are large ratings differences. Outside candidates score higher than insiders on 19 of 30 characteristics. In 8 cases – “hires A players,” “develops people,” “efficiency,” “network,” “organization,” “analytical skills,” “oral communication,” and “holds people accountable” – the differences are significant. In only one case, “creativity,” do insiders outscore outsiders at the 10% significance level.

Panel C compares insiders and outsiders for LBO and VC firms separately. This panel shows that the outsider / insider differences are strongly driven by the LBO candidates. Outsider LBO candidates outscore insiders in 21 of 30 abilities, significantly so in 7. Insiders outscore outsiders at the 10% level

on only one ability. For VC candidates, outsiders and insiders are rated more highly on 15 characteristics each. Insiders' scores are significantly higher on brainpower and creativity while outsiders' are significantly higher on the management-related skills of "efficiency" and "hiring A players."

These results, particularly those for the LBO candidates, are consistent with a number of explanations. First, it is possible, that outside candidates are considered when internal candidates are not performing well. Second, the results support the view that an important function of PE firms is to upgrade the managerial talent in the firms in which they invest. (See Hellmann and Puri (2002) and Kaplan and Stromberg (2004).) Third, in some cases the incumbent manager may have control over who can invest in the company. As a result, a private equity investor must maintain the incumbent management, even if this management is not ideal, or not invest at all. Finally, concerns about employee moral and political turmoil may prompt investors to keep the incumbent management. All of these explanations are consistent with outsiders being more talented than insiders / incumbents.

B. Correlations and Aggregation

The individual ratings are highly correlated. On average, when a candidate scores well on one characteristic, the candidate tends to score well on all the others. Over 85% of the pair-wise correlations of the individual characteristics are significant at the 10% level. To conserve space, we do not report these correlations. The strong correlations suggest that talent, ability, or skill have some kind of general characteristic or quality that is spread across many dimensions.

The large number of highly correlated characteristics relative to the number of candidates is potentially problematic. The resulting multicollinearity means that including all the individual characteristics as explanatory variables in a regression model leads to results that are difficult to interpret. To address this problem, we perform a factor analysis (see Fabrigar, Wegener, MacCallum, and Strahan (1999) and Jolliffe (2004)). This analysis extracts the main variation in the candidates' characteristics and calculates the loadings on these characteristics.

Table 4 reports the results of this analysis. The first four factors have eigenvalues greater than one and explain cumulative 93% of the variation. The first two factors turn out to be more important and have natural interpretations. The first and most important factor is a general factor, explaining 53% of the variation in the ratings. All individual characteristics load positively on this factor, ranging from a loading for “integrity” of 0.33 to a loading for “efficiency” of 0.68. It is natural, therefore, to interpret this factor as capturing general talent or ability. This pattern in the first factor is common in factor analysis, and reflects the fact that all the characteristics tend to move together.

The second factor is perhaps more interesting. Candidates who score higher on this factor have higher ratings on interpersonal and team-related skills like “treats people with respect,” “open to criticism,” “listening skills,” and “team work.” Candidates with a lower (negative) score on this factor have higher ratings on execution-related skills like “moves fast,” “aggressive,” “proactive,” and “persistent.” Interpreting these characteristics, the factor appears to sort the candidates such that a larger positive loading corresponds to a candidate with stronger “interpersonal / team player” abilities whereas a negative loading corresponds to a candidate who is best characterized as “fast, aggressive, and persistent.” This second factor, therefore, also can be interpreted as measuring agreeableness versus conscientiousness in the context of the five factor model of the psychology literature. One might expect Jack Welch – the former CEO of General Electric who was often referred to as “Neutron Jack” – to have a negative score on this factor while his successor, Jeff Immelt, cited in Fast Company (2005) for “holding ‘dreaming sessions’ with customers and developing ‘imagination breakthrough’ teams,” would likely have a positive score.¹ This second factor explains 20% of the variation in the ratings.

The third factor is more difficult to interpret. It explains only 11% of the variation, and it plays a smaller role below. Candidates with higher loadings on this factor score higher on “analytical skills,” “organization,” “attention to detail,” and “written communication.” A candidate with a negative loading on this factor scores higher on “enthusiasm” and “persuasion.” The first set of characteristics evokes a

¹ See also “Running G.E., Comfortable in his Skin,” by Joe Nocera, New York Times, June 9, 2007.

sense of deliberate analytic ability and organizational talent; whereas the second set of characteristics evokes a sense of being emotional and inspirational.

Given the difficulty of interpreting increasingly marginal factors, we limit the analysis to the initial three factors and primarily the first two. In factor analysis, each factor's eigenvalue is often taken as a measure of the amount of aggregate information captured by the factor, and it is usually argued that factors must have eigenvalues greater than one to capture meaningful patterns in the data. Consistent with this, the initial three factors have eigenvalues of 7.7, 3.0, and 1.7.

We also estimate an alternative factor specification to isolate the distinction captured by the second factor. We use only the characteristics "fast," "aggressive," "persistent," "efficiency," "proactive," and "high standards" to capture the negative loadings and "respect," "open to criticism," "listening skills" and "team work" to capture the positive loadings. By design, this analysis finds two strong factors, with the first loading positively on the first set of characteristics and the second loading positively on the second set. Although it does not affect the loadings dramatically, we also use an oblique quartimin transformation to emphasize the differences. The resulting loadings on the two alternative factors are presented in Panel B of Table 4. Again, in the context of the five factor personality model, the first factor appears to capture conscientiousness; the second factor, agreeableness.

Cronbach's alpha is used to measure the degree to which a set of characteristics are internally consistent. The characteristics we have included in the two factors in the second factor analysis maximize this measure and largely coincide with the characteristics with the largest absolute factor loadings on the second factor in the first factor analysis. The six characteristics in the first alternative factor have a Cronbach's alpha of 0.85, and the four characteristics in the second alternative factor have an alpha of 0.84, strongly suggesting that the two sets of characteristics capture internally consistent underlying traits.

IV. Managerial Characteristics and Hiring Decisions

In this section, we study the relation between the characteristics and the decision to hire the candidate.

A. Average ratings

We compare the average ratings of hired candidates to those of non-hired candidates. We distinguish between candidates assessed for LBO and VC firms and between incumbent and outside candidates. Distinguishing between incumbent and outside CEOs is important because in some investments, the PE firm does not have the ability to choose an outside CEO.

Panel A compares hired versus non-hired candidates overall. The hired candidates are more highly rated on 27 of 30 characteristics; in 12 cases, the differences are significant. The three characteristics for which non-hired candidates score higher, the difference are small and insignificant.

Panel B looks at VC and LBO candidates separately. For LBO candidates, the hired candidates are rated more highly on 24 of 30 characteristics; 10 of those differences are statistically significant. The significant differences include execution-related, neutral, and team-related characteristics. Non-hired candidates are significantly higher on only once characteristic, “analysis,” and only at the 10% level.

For VC candidates, the hired candidates are rated more highly on all but three characteristics. “Brainpower,” “creativity,” “written communication” and “integrity” are statistically significant.

Panel C looks at incumbents and outsiders separately. Hired outsiders are more highly rated on every characteristic and significantly so on 20 of 30. While hired incumbents are rated more highly on 20 of 30 characteristics, only two differences are statistically significant. This partially reflects the fact that most of the incumbents assessed are hired or remain CEOs of their companies. Again, this suggests that for some companies, the CEO and the company are inseparable or, in other words, the PE firm must keep the incumbent CEO if it wants to make the investment.

Panel D restricts the sample to only those companies that assessed more than one candidate. For these companies, the PE firm presumably had some choice in the hiring decision. The hired candidates are rated more highly on 28 of 30 characteristics; 14 are significant. Again, the significant differences include all types of characteristics.

Overall, these patterns strongly suggest that abilities can be measured and that hiring decisions are based on those perceived abilities.

B. Factor regressions

Table 6 presents linear regressions that estimate the relation of the likelihood of being hired to the CEO candidate's ratings on each the three primary factors and, also, on the two alternative factors. Most of the regressions also include a dummy variable for whether the candidate is the incumbent CEO. All of the regressions include year dummies to control for any time variation.

The first two regressions use the full sample of 316 candidates. The first regression uses the three factors from the factor analysis where the first factor appears to measure general talent and the second factor, "team player versus fast and aggressive." The regression indicates that the likelihood of being hired is strongly related to the first, general talent factor. The likelihood of being hired also is much greater if the candidate is already the CEO, holding talent or skill constant.

The second regression uses the alternative factors in which the first factor loads on execution-related abilities and the second factor on interpersonal and team-related abilities. Hiring is positively related to both of these factors, but only the first is statistically significant. Again, incumbents are significantly more likely to be hired.

The next set of regressions restricts the observations to companies in which the PE firms actually invested. We do this to increase the focus on companies in which the PE firms had a choice in the hiring decision. We first estimate three regressions using the first three factors. In regression 3, we consider only outsider hires. The PE firms undoubtedly chose to hire these candidates. The results are similar to those for all candidates. The likelihood of being hired is strongly related to the first, general talent factor. The likelihood of being hired is marginally negatively related to the third factor.

Regressions 4 and 5 consider LBO and VC candidates separately. The results, however, are similar. The general talent factor is strongly significant in both regressions. And, again, incumbents are significantly more likely to be hired, holding talent constant.

In the last three regressions, we use the two alternative factors as independent variables. The coefficients on the execution-related factor are positive and significant in all three regressions. The coefficients on the interpersonal and team-related factor are positive in all three, significantly so for the LBO candidates. As in the previous regressions, incumbents are significantly more likely to be hired.

Overall, then, the regressions strongly suggest that hiring is strongly related to greater general talent. Hiring is not significantly related to the second, “team player” versus “fast aggressive” factor, although the “fast aggressive” factor comes in more strongly for VC candidates. The regressions also indicate that incumbents are more likely to be hired by both LBO and VC-funded companies, holding talent equal. This is consistent with companies placing substantial value on firm- and position-specific skills relative to general talent or skills.

V. Managerial Characteristics and Investment Decisions

We next look at the relation of investment decisions to CEO candidate characteristics. For this analysis, we only consider CEO candidates who were assessed before the PE firm committed to invest. Again, we distinguish between buyout and VC candidates, incumbent and outside CEO candidates. We also distinguish whether or not the CEOs were hired.

A. Average ratings

Panel A of table 7 presents the average ratings of CEO candidates in companies in which the PE firms chose to invest compared to the ratings of CEO candidates in companies in which the PE firms did not invest. The first part of the panel looks at all candidates; the second part at incumbents only. In the full sample, invested candidates score higher than non-invested candidates on 27 of 30 characteristics; 6 are significant. The significant variables are of all three types, with “efficiency” and “teamwork” having the greatest differences. The results are qualitatively similar, albeit not so strong for incumbents only.

Panel B considers LBO and VC candidates separately. Invested candidates score higher than non-invested candidates for both LBO and VC; 23 of 30 differences are positive for LBO while 25 of 30 differences are positive for VC.

These results suggest that buyout and VC investors condition their investment decision to some extent on management quality.

B. Factor regressions

In table 8, we present regressions that estimate the likelihood of investment as a function of the CEO candidate's ratings on the three factors and, then, the two alternative factors. Again, the regressions include a dummy variable for whether the candidate is the incumbent CEO and year dummies.

For the full sample, investment is positively and significantly related to the first general talent factor. This relation is positive both for LBO and VC candidates, but significant only for VC candidates. The other two factors are not significant. For the entire sample, investment is more likely for incumbents. Investment also is more likely for the LBO and VC candidates separately, and by roughly the same magnitude, although the result is significant only for the LBO candidates.

The three regressions using the two alternative factors yield positive coefficients on all six coefficients. The "team player" factor is significant for the full sample while the "fast aggressive" factor is significant only for the VC candidates. The pattern for incumbents is the same as in the regression using the three basic factors.

Overall, then, investment decisions are conditioned on management quality, but not so strongly as the hiring decisions.

VI. Managerial Characteristics and Performance

In this section, we compare the CEO characteristics to CEO and investment success. We restrict the analysis to CEOs who were actually hired. As described earlier, we use three measures of success.

First, we rely on direct appraisals of CEO success by the PE firms that invest and hire the CEOs. We code a successful CEO at a rating of 1; a mediocre or mixed CEO at 0.5; and an unsuccessful CEO at 0. We obtained PE firm appraisals for 81 of the 234 CEOs hired.

Second, we supplement the PE appraisals with information from public sources. We classify a CEO as successful, if the CEO led the company or another company to a clearly favorable exit such as an IPO or sale to another company. We classify the CEO as unsuccessful if the company went bankrupt, the company was sold to another firm under distress or at a substantial loss, or the CEO was removed as CEO before any exit occurred. In a very few cases, we classify the CEO as having mixed success.

Third, we create a broad public measure. This measure begins with the previous measure and then classifies additional CEOs as successful if their company has experienced positive press regarding its operations or has received additional financing at higher valuations. Similarly, we classify CEOs as unsuccessful, if the company has unfavorable press regarding its operations or subsequent financing. We also classify the CEO as mixed if the company that the CEO ran has not had an exit in any form (IPO, sale, liquidation, etc.) and there is no company informative about its success.

We also considered, but do not report, two measures of financial success. Again, we first used direct appraisals of financial success of 68 investments by the PE firms. The PE firms classify the deals as not successful (the firm lost money), unclear, successful (the investment returned up to two times its costs) and very successful (the investment returned more than two times its cost). Second, we supplemented the PE firm answers with information we could obtain from publicly available sources. We only included financial returns if the CEO remained CEO through the exit. The financial success measures are highly correlated with the CEO success measures and generate qualitatively similar results. Accordingly, we do not report these results in the tables.

A. Average ratings

Panel A of table 9 compares the ratings of successful CEOs to unsuccessful CEOs using the PE measure and the first public measure of success. We do not report ratings for mixed CEOs in the average

ratings tables. (We do include the observations for mixed CEOs in the factor regressions.) The successful CEOs tend to be more highly rated, but few of the differences are significant. It is more informative to look at the LBO and VC candidates separately.

Panel B presents ratings for LBO and VC candidates using the PE success measure. For LBOs, successful CEOs are rated more highly on 24 of 30 characteristics; 9 are statistically significant. The significant variables are entirely execution-related or neutral. Not one of the significant variables is team-related. The magnitudes of the significant variables are economically meaningful. For example, the success rate of CEOs with a rating of 4 (the top rating) on “efficiency” are 93% and 88% using the PE and public success measures; the analogous success rates for CEOs rated below 4 on “efficiency” are only 50% and 33%.

Surprisingly, for VC candidates, successful CEOs are rated higher on only 6 of 30 characteristics. Five of the characteristics are significantly negative with “teamwork” and “flexibility” being the most negative. This negative result appears to be strongly related to the technology bust. When we estimate the differences between successful and unsuccessful candidates in a regression framework that includes year dummies, successful CEOs are rated more highly on 20 of 30 characteristics. The coefficients on “efficiency” and “attention to details” switch from being negative to positive while the coefficients on “teamwork,” “respect,” and “flexibility” remain negatively related to success. These results are confirmed in the factor regressions that include year dummies in the section that follows. (The results for LBO CEOs in panel B are not affected by including year dummies.)

Panel C of table 9 uses the first public success variable. For LBOs, again, successful CEOs are more highly rated on 27 of 30 characteristics. Again, none of the interpersonal or team-related variables is statistically significant. Instead, the execution-related and neutral abilities, particularly “efficiency,” “organization,” “commitments,” “persistence,” and “proactive” are highly statistically significant.

For VC CEOs, the results are qualitatively similar to those using the PE success measure. The results also are similarly affected by controlling for year. When year dummies are included, 24 of the 30 coefficients become positive. Again, it is the team-related coefficients that remain negative.

Panel D of table 9 uses the broad public success measure. The results are qualitatively similar to those for the first public success measure.

Overall, then, table 9 strongly suggests that more talented CEOs are more successful in LBO transactions. The results for CEOs of VC firms are more difficult to interpret as they appear to be affected by the technology bust of the early 2000s. Both the results for LBOs and VCs suggest, however, that execution-related skills are more strongly related to success than team-related skills.

B. Factor regressions

In table 10, we present regressions that estimate the likelihood of success as a function of the CEO candidate's ratings on the three factors and the two alternative factors. In these regressions, we include observations in which CEO success is mixed as 0.5. (The results are qualitatively identical if we exclude the mixed observations and estimate probit regressions.) Again, the regressions include year dummies and, in most cases a dummy variable for whether the candidate is the incumbent CEO.²

The regressions in panel A of table 10 combine the entire sample, both LBO and VC CEOs. Using the PE measure and the more precise public measure, success is significantly positively related to the first "general talent" factor and negatively related to the second, "team player versus execution" factor. Both relations are significant. When we use the broader public success measure, "team player versus execution" factor remains significantly negative while the "general talent" factor does not.

The coefficients in these regressions are economically meaningful. A one standard deviation increase (0.97) in general talent increases the likelihood of both the PE and public success measures by almost 10%. A one standard deviation increase (0.93) in the "team player versus execution" factor reduces the likelihood of PE and public success by almost 19% and 10%, respectively.

² The results also are qualitatively unchanged when we include other observables such as CEO age, CEO test scores, gender, and industry. We do not include them in the regressions that we report because we do not have data on all observables for all CEOs. Including all of the observables in the regressions would substantially reduce the number of observations.

When we estimate the regressions using the alternative factors that separate the “fast aggressive,” execution-related and “interpersonal and team-related” factors, we find that the execution-related (alternative 1) factor is strongly and significantly positively related to success for all three measures of success. The team-related factor is negatively related to success, although the coefficient is significant only using the PE success measure. The coefficients for the execution-related factor are also economically meaningful. A one standard deviation increase (0.93) in the execution-related factor increases the likelihood of PE and public success by almost 18% and 14%, respectively

Overall, then the results in panel A suggest that success is related to execution-related talent rather than team-related talent. Given that the first factor is significantly related to hiring decisions while the second factor is not, this result also suggests that firms and investors may overweight team-related attributes in hiring and investment decisions.

The incumbent variable is not significantly related to success in any of the specifications. One interpretation of the insignificant relation of incumbency to performance is that the firm-specific skills did not have any impact on ultimate success controlling for CEO talent.

Panel B of table 10 estimates the success regressions separately for LBO and VC CEOs. For LBO CEOs, all three success measures are significantly positively related to the general talent factor. All three success measures are negatively related to the “team player versus execution” factor with the coefficient on PE success being statistically significant. All three success measures are significantly positively related to the “execution-related” alternative factor and unrelated to the “team-related” alternative factor. As with the regressions in panel A, the coefficients are economically meaningful. A one standard deviation increase (0.93) in the execution-related factor increases the likelihood of PE and public success, respectively, by more than 30% and 25%.

The patterns are somewhat different for the VC CEOs. The “general talent” factor is not significantly related to any of the success variables. The “team player versus execution” factor is negatively related to all three success measures, significantly so for the PE and public success measures. In the alternative factor regressions, success is positively related to the “execution-related” factor and

negatively related to the “team-related” factor. The coefficients for the “team-related” factor are significant for the two public measures. The positive coefficients on the “execution-related” factors contrast with the negative results in the univariate analysis in table 9. This confirms the importance of controlling for years in the VC analysis. The regressions also indicate a marginally positive role for incumbents holding abilities constant. The incumbent variable is positive in all of the regressions and is marginally significant using the two public measures.

The results in panel B are broadly consistent with the results in panel A. Success tends to be positively related to execution-related skills, particularly for LBO CEOs, and tends to be unrelated or negatively related to team-related skills, particularly for the VC CEOs.

Panel C of table 10 estimates success regressions separately for incumbent and outsider CEOs. The patterns are qualitatively similar for both types of CEOs and consistent with the conclusions from panels A and B. The PE and public success measures are positively related to the general talent factor and negatively related to the “team player versus execution” factor. The relations with general talent are stronger for outsiders. Similarly, the PE and public success measures are positively significantly related to the execution-related alternative factor for both incumbents and outsiders. The PE success measure is negatively significantly related to the team-related alternative factor.

Again, success tends to be positively related to execution-related skills and negatively to team-related skills.

VII. Robustness

A. Selection Issues

It is important to acknowledge the potential selection issues with our analysis. The candidates in our sample have been selected as CEO candidates by the firms in our sample. As a result, it is possible the certain types of companies look for certain types of people or certain characteristics for their CEOs. This is the problem of endogenous matching of candidates and companies that arises when unobservable

characteristics affect which CEOs are hired by particular firms. For example, if the most promising companies hire fast and aggressive CEOs, then we will find that fast and aggressive CEOs perform better.

We think this type of selection is unlikely to drive our results for several reasons. First, we think it is implausible economically that the most promising firms hire execution oriented CEOs while struggling firms hire team and interpersonally oriented candidates. One might, in fact, expect the opposite, in which case our results reasonably could be expected to underestimate the true effect.

Second, we consider a Heckman selection model in which the first stage is the hiring decision and the second stage is the performance relation. In one specification, we include the incumbent dummy in the hiring decision, but exclude it in the performance regressions. To the extent that the incumbent dummy is unrelated to performance (which is plausible for the sample overall and for LBOs), this provides exogenous variation in the hiring decision. When we do this, the results in the performance regressions are qualitatively unchanged. If selection were a problem, we would expect to see a diminution in the performance-characteristic relation.

In another specification, we use the aggregate ghSMART hiring recommendation in the hiring regression. This helps explain the hiring decision, and, to the extent that it does not contain any more information than is in the individual ratings, this also provides exogenous variation in the hiring decision not related to performance. Again, the results in the performance regressions are qualitatively unchanged.

Third, for companies for which we have more than one CEO assessment, we consider the relation of the non-hired CEO candidate(s) characteristics to company performance. If selection were a problem, we would expect the characteristics of candidates who are not hired as the CEO of a particular company to be similar to those of the hired candidates and, therefore, to help explain performance. However, we find no systematic relation between the qualities of candidates who are not hired for a particular job and subsequent outcomes.

The sample also is selected in that the sample firms are LBO- and VC-funded firms. These may differ in some ways from public, family owned, and other companies. While we do not have the data to address this issue, we discuss the likelihood that our results generalize in the summary and conclusions.

B. Observables

As we noted earlier, we recorded biographical information about the CEO candidates in addition to the ratings on the different characteristics. This information includes years of experience (which effectively measures age), years of management experience, number of siblings, college selectivity, and, for some candidates, SAT scores and high school academic performance.

We reran all the main regressions for hiring, investment and success including the personal variables. The results are qualitatively identical to those reported in the tables.

VIII. Summary and Conclusion

Using a novel dataset of assessments of CEO candidates of companies involved in private equity transactions (PE), we study how CEO characteristics and abilities relate to hiring decisions, PE firms' investment decisions, and subsequent performance. The candidates are assessed on more than 30 individual characteristics. To our knowledge, this is the first systematic study with this level of detail on CEOs' specific characteristics, skills and abilities.

First, when studying the characteristics and abilities, we find that CEO ratings are positively correlated across characteristics and abilities. A factor analysis of these characteristics generates two strong factors that can be characterized as a general talent factor and a factor that contrasts interpersonal and team-related skills with execution-related skills. We also find that outsiders are rated more highly than incumbents, particularly for buyout firms.

Next, we relate the abilities and characteristics to hiring and investment decisions. CEOs appear to be hired based on general ratings or talent. Many individual abilities are significant, particularly for outsider hires. Those abilities can be characterized as interpersonal / team-related, execution-related, and

neutral. There is a strong tendency to hire incumbent CEOs, holding ratings or talent constant. We also find that both LBO and VC investors tend to invest in more highly rated CEOs.

Finally, we relate the characteristics and abilities to subsequent performance or success. Success tends to be positively related to execution-related skills, particularly for LBO CEOs, and tends to be unrelated or negatively related to team-related skills, particularly for the VC CEOs. Success is not related to incumbency for LBO CEOs and, at best, only marginally for VC CEOs.

We believe our results have several implications.

First, it is possible to measure individual CEO talents and skills over and above the usual observable variables like age, industry and college SAT scores.

Second, the CEO talents and skills appear to matter in that they are consistently correlated with hiring, investment, and performance.

Third, success and performance are more strongly correlated with execution-related skills than with interpersonal and team-related skills, conditional on hiring a CEO. In other words, CEOs with the execution-related skills of a Jack Welch appear more successful than CEOs with the more team-related skills of Jeff Immelt. This is consistent with the prediction in Bolton et al. (2008) that more “resolute, steadfast CEOs who stick to their guns tend to be better leaders than ‘good listeners’.” It also is consistent with results in the psychology literature that tend to find “conscientiousness” is the best predictor of performance. Our results are consistent with Collins’ (2001) findings that “Level 5” CEOs have unwavering resolve, are fanatically driven, and exhibit workmanlike diligence. At the same time, our results do not support Collins’ findings that successful CEOs exhibit compelling modesty, build strong teams, and give credit to others / take blame on themselves.

Fourth, while team-related skills are significantly related to hiring and investment decisions, they are not related to success and performance. This suggests that, on the margin, team-related skills may be overweighted in hiring decisions. It is worth addressing the fact that this suggests that firms do not always make optimal hiring decisions. This may occur because an ideal candidate is not available or

because private benefits (e.g., of a founder) affect the decision. It also may occur because investors and companies do not have the right information or decision rules to compare candidates and need to learn.

Fifth, incumbent or insider CEOs are no more successful than outside candidates, holding talent constant, particularly for LBOs. This is consistent with the predictions of Murphy and Zabojnik (2004) and others, and less consistent with the admonition in Khurana (2002) to focus on insiders and avoid outsiders. Our results suggest that investors should hire the CEO candidate with the most talent.

Finally, we recognize that the data and analysis have limitations. First, the results reflect buyout and VC-funded companies. While these are two quite different groups, these types of companies may have specific needs and, therefore, the results may not generalize to all companies. Second, the performance data are coarse and potentially noisy.

That said, the correlation of our results with the description of the “Effective Executive” in Drucker (1967) is suggestive. Drucker based his work on personal observation of all types of executives, but, particularly, public company executives. According to Drucker, effective executives “differ widely in their personalities, strengths, weaknesses, values and beliefs. All they have in common is they get the right things done.” Those “right things,” detailed in separate chapters, include utilizing time efficiently, focusing on contribution, making strengths productive, doing first things first, and making effective or rational decisions. The attributes are largely execution-related and appear to correspond well to the “efficient,” “persistent,” “proactive,” “commitment,” and “analytical” skills in our study.

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TABLE 1: This table contains descriptions of the characteristics assessed by ghSMART for 316 CEO candidates.

	Description of Characteristic	Description of a Candidate with a high score on this characteristic	Description of a Candidate with a low score on this characteristic
<i>Leadership:</i>			
Hires A Players	Sources, recruits, hires A Players.	Hires A Players 90% of the time.	Hires A Players 25% of the time.
Develops People	Coaches people in their current roles to improve performance, and prepares them for future roles.	Teams say that Candidate gives a lot of coaching / development. Many team members go on to bigger roles.	Teams do not say on Candidate gives a lot of coaching. Team members do not go on to do better things.
Removes Underperformers	Removes C Players within 180 days. Achieves this through coaching-out, redeployment, demotion, or termination.	Removes C Players within 180 days of taking a new role or hiring the person.	May remove occasional C Player, but keeps most of them, often for years.
Treats People with Respect	Values others, treating them fairly and showing concern for their views and feelings.	Teams would say Candidate is fair and respectful. Candidate describes performance in terms of team efforts.	Candidate is self-absorbed. Team members might call Candidate abrasive, rough around the edges.
Efficiency	Able to produce significant output with minimal wasted effort.	Candidate gets a lot done in a short period of time.	Candidate's output is unimpressive. He is a "thinker" with poor execution.
Network of Talented People	Possesses a large network of talented people.	Candidate has a proven ability to build a network very quickly.	Candidate does not have big network and shows limited ability to build one.
Flexible/Adaptable	Adjusts quickly to changing priorities and conditions. Copes with complexity and change.	Candidate is not bothered by new or changing circumstances. Faces change in a matter-of-fact manner.	Candidate bristles when changes take place, often blames others for not doing their jobs.
<i>Personal:</i>			
Integrity	Does not cut corners ethically. Earns trust and maintains confidences.	Takes pride in always doing what is right.	Cuts corners, unaware of how actions are borderline unethical.
Organization and Planning	Plans, organizes, schedules, and budgets in an efficient, productive manner.	Job accomplishments closely match goals. Candidate sets priorities.	Candidates' accomplishments do not match goals, and individual meanders.
Calm Under Pressure	Maintains stable performance when under heavy pressure or stress.	Performs under a wide variety of circumstances, regardless of stress.	Overreacts to high pressure situations. Fails to accomplish goals under stress.
Aggressive but respectful	Moves quickly and takes a forceful stand without being overly abrasive.	Candidate sticks neck out with words and actions, even if upsets others.	Candidate takes a wait-and-see attitude, moving more slowly to minimize risk.
Moves Fast	Takes action quickly without getting bogged down by obstacles.	Candidate takes action and gets a lot done in a short period of time.	Candidate is slow to accomplish results.
Follows through on Commitments	Lives up to verbal and written agreements, regardless of personal cost.	Gets the job done, no matter what.	Does not live up to verbal or written agreements.

<i>Intellectual:</i>			
Brainpower	Learns quickly. Demonstrates ability to quickly understand and absorb new info.	High GPA and SAT scores, ability to pick-up new job details quickly.	Low GPA and SAT scores. May remain in same role for a long time.
Analytical Skills	Structures and processes qualitative or quantitative data and draws conclusions.	Cites multiple examples of problem solving skills.	Rarely solves problems through analysis. Heavy reliance on gut.
Strategic Thinking/Visioning	Able to see and communicate the big picture in an inspiring way.	Holds a big vision for current and future roles. Inspires others vision.	Does not have a vision for current or future roles. Does not value planning.
Creative/Innovative	Generates new and innovative approaches to problems.	Offers new and innovative solutions to intractable problems many times.	Rarely offers creative solutions.
Attention to Detail	Does not let important details slip through the cracks or derail a project.	Makes time to review the details. Asks penetrating questions.	Makes many mistakes because of ignoring small, but important details.
<i>Motivational:</i>			
Enthusiasm	Exhibits passion and excitement over work. Has a “can do” attitude.	Displays high energy and a passion for the work..	Displays low energy and limited passion for the work.
Persistence	Demonstrates tenacity and willingness to go the distance to get something done.	Never gives up. Sticks with assignments until they are done.	Has a track record of giving up.
Proactive /Initiative	Acts without being told what to do. Brings new ideas to company.	Regularly brings new ideas into an organization. Self directed.	Never brings in new ideas. Takes direction / does not act until being told.
Work Ethic	Possesses a strong willingness to work hard and long hours to get the job done.	Works long, hard hours to get the job done.	Does just enough to get the job done.
Sets High Standards	Expects personal performance and team performance to be the best.	Expects top performance from himself and from others around him.	Allows himself to do 80% of the job / lets poor performance from others slide
<i>Interpersonal:</i>			
Listening Skills	Lets others speak and seeks to understand their viewpoints.	Displays ability to listen to others to understand meaning.	Cuts people off, does not address questions, misunderstands.
Open to Criticism and Ideas	Often solicits feedback and reacts calmly to receiving criticism.	Responds to criticism by finding ways to grow and become better.	Reacts to criticism by blaming others and becoming bitter.
Written Communication	Writes clearly and articulately using correct grammar.	Demonstrates ability to write clearly in all forms of communication.	Does not offer any evidence of being a strong writer.
Oral Communication	Speaks clearly and articulately without being overly verbose or talkative.	Speaks clearly, articulately, and succinctly.	Speaks too quickly or too slowly, mumbles, uses a lot of jargon, etc.
Teamwork	Reaches out to peers and cooperates with supervisors to establish relationship.	Recognizes the power of a strong team, and works collaboratively.	Prefers to operate in isolation. May not work harmoniously with others.
Persuasion	Able to convince others to pursue a course of action	Convinces others to take a course of action, even if initially in opposition.	Fails to or never tries to convince others to take a course of action.
Holds People Accountable	Sets goals for team and follows-up to ensure progress toward completion.	Sets goals, follows-up, and holds people accountable for shortfalls.	Does not set goals, follow-up, or hold people accountable.

TABLE 2: Descriptive tabulations of 316 CEO candidates assessed by ghSMART with respect to whether assessed candidates are hired or not, incumbents or outsiders, assessed by LBO or VC investors, successful or not, and the number of candidates assessed for each company.

Panel A: Hiring and Incumbency

Full Sample

Incumbent	Hired		Total
	0	1	
0	80	65	145
1	12	159	171
Total	92	224	316

Panel B: Hiring and Investments by Investor Type and Incumbency

Full Sample

Invest	Hired		Total
	0	1	
0	26	56	82
1	66	168	234
Total	92	224	316

Buyout Investors

Invest	Hired		Total
	0	1	
0	16	18	34
1	33	81	114
Total	49	99	148

Venture Capital Investors

Invest	Hired		Total
	0	1	
0	10	38	48
1	33	87	120
Total	43	125	168

Outsiders (Incumbent = 0)

Invest	Hired		Total
	0	1	
0	25	4	29
1	55	61	116
Total	80	65	145

Insiders (Incumbent = 1)

Invest	Hired		Total
	0	1	
0	1	52	53
1	11	107	118
Total	12	159	171

Panel C: Incumbency and Hiring Decisions by Investment

PE Firm Invested (181 Companies)

		Hired		
Incumbent	0	1		Total
	0	55	61	116
	1	11	107	118
Total	66	168		234

PE Firm Not Invested (77 Companies)

		Hired		
Incumbent	0	1		Total
	0	25	4	29
	1	1	52	53
Total	26	56		82

Panel D: PE and Public Success Measures

Success (Public Measure)	Success (PE Measure)				Total
	0	0.5	1	.	
0	30	4	0	33	67
0.5	0	3	0	2	5
1	0	2	37	15	54
.	0	5	0	93	98
Total	30	14	37	143	224

Panel E: Broad and Public Success Measures

Success (Public Measure)	Success (Broad Measure)				Total
	0	0.5	1	.	
0	64	2	0	1	67
0.5	0	4	1	0	5
1	0	0	54	0	54
.	20	26	37	15	98
Total	84	32	92	16	224

Panel F: Candidates Assessed Per Company

Candidates Interviewed	Freq.
1	219
2	26
3	9
4	2
5	2
Total	258

TABLE 3: Mean rating, standard deviation, minimum and maximum ratings for each individual characteristic for 316 CEO candidates assessed by ghSMART. A higher number reflects a better rating.

Panel A: Distribution of Individual Ratings

	Mean	Obs.	Std. Dev.	Min	Max
Hires A Players	2.201	[314]	1.139	1	4
Develops People	2.248	[315]	1.138	1	4
Removes Underperformers	1.914	[314]	1.131	1	4
Respect	2.910	[310]	1.233	1	4
Efficiency	2.868	[311]	1.158	1	4
Network	2.619	[312]	1.197	1	4
Flexibility	2.603	[310]	1.212	1	4
Integrity	3.594	[308]	0.851	1	4
Organization	2.752	[311]	1.183	1	4
Calm	3.188	[309]	1.055	1	4
Aggressive	3.136	[308]	1.037	1	4
Fast	3.023	[309]	1.115	1	4
Commitments	3.340	[312]	0.966	1	4
Brainpower	2.865	[312]	1.103	1	4
Analysis	2.579	[311]	1.239	1	4
Strategic	2.562	[313]	1.226	1	4
Creative	2.671	[313]	1.142	1	4
Attention to Details	2.170	[312]	1.162	1	4
Enthusiasm	3.016	[313]	1.079	1	4
Persistence	3.425	[294]	0.909	1	4
Proactive	3.354	[308]	0.993	1	4
Work Ethics	3.564	[312]	0.795	1	4
High Standards	2.961	[311]	1.106	1	4
Listening Skills	2.534	[313]	1.214	1	4
Open to Criticism	2.287	[307]	1.192	1	4
Written Communication	2.672	[244]	1.210	1	4
Oral Communication	2.961	[311]	1.034	1	4
Teamwork	2.707	[311]	1.200	1	4
Persuasion	2.955	[313]	1.097	1	4
Accountable	2.545	[308]	1.189	1	4

Panel B: Comparison of Buyout and Venture Capital deals and Incumbents and Outsiders.

	Buyout		Venture Capital		Means	P-value	Incumbents		Outsiders		Means	P-value
	Mean	Obs.	Mean	Obs.			Mean	Obs.	Mean	Obs.		
Hires A Players	2.143	[147]	2.251	[167]	-0.108	0.400	2.012	[169]	2.421	[145]	-0.409	0.001 ***
Develops People	2.257	[148]	2.240	[167]	0.017	0.894	2.088	[170]	2.434	[145]	-0.346	0.007 ***
Removes Underperformers	1.932	[147]	1.898	[167]	0.034	0.792	1.834	[169]	2.007	[145]	-0.173	0.178
Respect	3.082	[147]	2.755	[163]	0.327	0.019 **	2.929	[169]	2.887	[141]	0.042	0.763
Efficiency	2.808	[146]	2.921	[165]	-0.113	0.391	2.740	[169]	3.021	[142]	-0.281	0.032 **
Network	2.667	[147]	2.576	[165]	0.091	0.504	2.497	[169]	2.762	[143]	-0.265	0.051 *
Flexibility	2.747	[146]	2.476	[164]	0.271	0.049 **	2.518	[168]	2.704	[142]	-0.186	0.178
Integrity	3.648	[145]	3.546	[163]	0.102	0.293	3.588	[165]	3.601	[143]	-0.014	0.890
Organization	2.767	[146]	2.739	[165]	0.028	0.837	2.619	[168]	2.909	[143]	-0.290	0.031 **
Calm	3.103	[145]	3.262	[164]	-0.159	0.187	3.137	[168]	3.248	[141]	-0.111	0.357
Aggressive	3.116	[146]	3.154	[162]	-0.038	0.749	3.222	[167]	3.035	[141]	0.186	0.117
Fast	3.014	[145]	3.030	[164]	-0.016	0.896	3.060	[168]	2.979	[141]	0.081	0.527
Commitments	3.483	[147]	3.212	[165]	0.271	0.013 **	3.320	[169]	3.364	[143]	-0.044	0.688
Brainpower	2.755	[147]	2.964	[165]	-0.209	0.096 *	2.935	[168]	2.785	[144]	0.150	0.232
Analysis	2.514	[144]	2.635	[167]	-0.121	0.392	2.462	[169]	2.718	[142]	-0.257	0.069 *
Strategic	2.422	[147]	2.687	[166]	-0.265	0.056 *	2.618	[170]	2.497	[143]	0.121	0.385
Creative	2.660	[147]	2.681	[166]	-0.021	0.872	2.781	[169]	2.542	[144]	0.239	0.065 *
Attention to Details	2.422	[147]	1.945	[165]	0.477	0.000 ***	2.113	[168]	2.236	[144]	-0.123	0.352
Enthusiasm	3.108	[148]	2.933	[165]	0.175	0.153	3.035	[170]	2.993	[143]	0.042	0.730
Persistence	3.582	[141]	3.281	[153]	0.301	0.004 ***	3.484	[159]	3.356	[135]	0.129	0.227
Proactive	3.441	[145]	3.276	[163]	0.165	0.145	3.395	[167]	3.305	[141]	0.090	0.427
Work Ethics	3.596	[146]	3.536	[166]	0.060	0.509	3.521	[167]	3.614	[145]	-0.093	0.305
High Standards	3.054	[147]	2.878	[164]	0.176	0.161	2.869	[168]	3.070	[143]	-0.201	0.111
Listening Skills	2.696	[148]	2.388	[165]	0.308	0.025 **	2.482	[170]	2.594	[143]	-0.112	0.417
Open to Criticism	2.462	[145]	2.130	[162]	0.332	0.014 **	2.204	[167]	2.386	[140]	-0.182	0.183
Written Communication	2.630	[127]	2.718	[117]	-0.088	0.571	2.677	[130]	2.667	[114]	0.010	0.947
Oral Communication	2.966	[147]	2.957	[164]	0.009	0.941	2.846	[169]	3.099	[142]	-0.252	0.032 **
Teamwork	2.808	[146]	2.618	[165]	0.190	0.164	2.675	[169]	2.746	[142]	-0.072	0.599
Persuasion	3.007	[148]	2.909	[165]	0.098	0.432	2.971	[170]	2.937	[143]	0.034	0.788
Accountable	2.648	[145]	2.454	[163]	0.194	0.153	2.361	[166]	2.761	[142]	-0.399	0.003 ***

Panel C: Comparison of Incumbents and Outsiders for Buyout and Venture Capital Deals.

	Buyout						Venture Capital					
	Incumbents		Outsiders		Means	P-value	Incumbents		Outsiders		Means	P-value
	Mean	Obs.	Mean	Obs.			Mean	Obs.	Mean	Obs.		
Hires A Players	1.868	[68]	2.380	[79]	-0.512	0.005 ***	2.109	[101]	2.470	[66]	-0.361	0.050 **
Develops People	2.029	[69]	2.456	[79]	-0.427	0.026 **	2.129	[101]	2.409	[66]	-0.280	0.112
Removes Underperformers	1.735	[68]	2.101	[79]	-0.366	0.049 **	1.901	[101]	1.894	[66]	0.007	0.969
Respect	3.132	[68]	3.038	[79]	0.094	0.620	2.792	[101]	2.694	[62]	0.099	0.638
Efficiency	2.706	[68]	2.897	[78]	-0.192	0.303	2.762	[101]	3.172	[64]	-0.409	0.031 **
Network	2.500	[68]	2.810	[79]	-0.310	0.128	2.495	[101]	2.703	[64]	-0.208	0.267
Flexibility	2.603	[68]	2.872	[78]	-0.269	0.179	2.460	[100]	2.500	[64]	-0.040	0.837
Integrity	3.652	[66]	3.646	[79]	0.006	0.964	3.545	[99]	3.547	[64]	-0.001	0.992
Organization	2.500	[68]	3.000	[78]	-0.500	0.009 ***	2.700	[100]	2.800	[65]	-0.100	0.602
Calm	3.030	[67]	3.167	[78]	-0.137	0.428	3.208	[101]	3.349	[63]	-0.141	0.414
Aggressive	3.179	[67]	3.063	[79]	0.116	0.505	3.250	[100]	3.000	[62]	0.250	0.136
Fast	3.059	[68]	2.974	[77]	0.085	0.662	3.060	[100]	2.984	[64]	0.076	0.662
Commitments	3.588	[68]	3.392	[79]	0.196	0.190	3.139	[101]	3.328	[64]	-0.190	0.239
Brainpower	2.676	[68]	2.823	[79]	-0.146	0.434	3.110	[100]	2.738	[65]	0.372	0.030 **
Analysis	2.191	[68]	2.803	[76]	-0.611	0.003 ***	2.644	[101]	2.621	[66]	0.022	0.909
Strategic	2.377	[69]	2.462	[78]	-0.085	0.667	2.782	[101]	2.538	[65]	0.244	0.221
Creative	2.691	[68]	2.633	[79]	0.058	0.766	2.842	[101]	2.431	[65]	0.411	0.020 **
Attention to Details	2.338	[68]	2.494	[79]	-0.155	0.437	1.960	[100]	1.923	[65]	0.037	0.831
Enthusiasm	3.188	[69]	3.038	[79]	0.150	0.390	2.931	[101]	2.938	[64]	-0.007	0.969
Persistence	3.708	[65]	3.474	[76]	0.234	0.078 *	3.330	[94]	3.203	[59]	0.126	0.444
Proactive	3.426	[68]	3.455	[77]	-0.028	0.859	3.374	[99]	3.125	[64]	0.249	0.133
Work Ethics	3.507	[67]	3.671	[79]	-0.163	0.221	3.530	[100]	3.545	[66]	-0.015	0.902
High Standards	2.912	[68]	3.177	[79]	-0.265	0.142	2.840	[100]	2.938	[64]	-0.098	0.587
Listening Skills	2.667	[69]	2.722	[79]	-0.055	0.780	2.356	[101]	2.438	[64]	-0.081	0.679
Open to Criticism	2.309	[68]	2.597	[77]	-0.289	0.142	2.131	[99]	2.127	[63]	0.004	0.982
Written Communication	2.456	[57]	2.771	[70]	-0.315	0.126	2.849	[73]	2.500	[44]	0.349	0.151
Oral Communication	2.794	[68]	3.114	[79]	-0.320	0.054 *	2.881	[101]	3.079	[63]	-0.198	0.247
Teamwork	2.735	[68]	2.872	[78]	-0.137	0.482	2.634	[101]	2.594	[64]	0.040	0.839
Persuasion	3.029	[69]	2.987	[79]	0.042	0.817	2.931	[101]	2.875	[64]	0.056	0.754
Accountable	2.388	[67]	2.872	[78]	-0.484	0.014 **	2.343	[99]	2.625	[64]	-0.282	0.140

TABLE 4 Panel A presents factors loadings on the four main factors based on 30 characteristics for 316 CEO candidates assessed by ghSMART. Panel B presents factors loadings on the two concentrated factors after an oblique quartimin rotation. Loadings with absolute values less than 0.1 are left blank.

Panel A: Factor Loadings for Individual Characteristics

	Factor 1	Factor 2	Factor 3	Factor 4
Hires A Players	0.552		0.206	-0.108
Develops People	0.512	0.274		-0.180
Removes Underperformers	0.452	-0.135	0.244	-0.236
Respect	0.355	0.651	-0.179	
Efficiency	0.683	-0.135		-0.104
Network	0.582			
Flexibility	0.535	0.246	-0.108	0.110
Integrity	0.329	0.322		
Organization	0.516		0.427	-0.117
Calm	0.373	0.258		
Aggressive	0.482	-0.481	-0.231	
Fast	0.504	-0.535	-0.241	
Commitments	0.629	-0.125		-0.213
Brainpower	0.483	-0.182	0.260	0.434
Analysis	0.461	-0.106	0.503	0.251
Strategic	0.529	-0.199	0.110	0.474
Creative	0.468	-0.133		0.386
Attention to Details	0.341	0.149	0.351	-0.231
Enthusiasm	0.440	0.156	-0.463	
Persistence	0.564	-0.347	-0.288	
Proactive	0.657	-0.332	-0.273	
Work Ethics	0.430	-0.278		
High Standards	0.664	-0.267		-0.252
Listening Skills	0.450	0.599		
Open to Criticism	0.441	0.616		
Written Communication	0.444	0.139	0.306	0.316
Oral Communication	0.521	0.237	-0.124	0.156
Teamwork	0.514	0.519	-0.145	
Persuasion	0.553		-0.405	0.123
Accountable	0.548	-0.218	0.291	-0.385

Panel B: Factor loadings for Concentrated Factors

	Alt. Factor 1	Alt. Factor 2
Fast	0.780	
Aggressive	0.731	
Persistence	0.706	
Efficiency	0.594	
Proactive	0.771	
High Standards	0.636	
Respect		0.734
Open to Criticism		0.774
Listening Skills		0.761
Teamwork		0.720

TABLE 5 Characteristics and Hiring Decisions. Mean ratings of hired and non-hired candidates from 316 CEO candidates assessed by ghSMART.
Panel A: Comparison of Hired and Non-hired Candidates.

	Hired		Not Hired		Diff. means	P-value
	Mean	Obs.	Mean	Obs.		
Hires A Players	2.221	[222]	2.152	[92]	0.069	0.628
Develops People	2.287	[223]	2.152	[92]	0.135	0.340
Removes Underperformers	1.955	[222]	1.815	[92]	0.140	0.320
Respect	2.950	[219]	2.813	[91]	0.137	0.375
Efficiency	2.900	[219]	2.793	[92]	0.106	0.462
Network	2.602	[221]	2.659	[91]	-0.058	0.700
Flexibility	2.626	[219]	2.549	[91]	0.076	0.615
Integrity	3.648	[219]	3.461	[89]	0.188	0.079 *
Organization	2.795	[219]	2.652	[92]	0.142	0.334
Calm	3.196	[219]	3.167	[90]	0.030	0.823
Aggressive	3.226	[217]	2.923	[91]	0.303	0.019 **
Fast	3.100	[219]	2.833	[90]	0.267	0.056 *
Committments	3.437	[222]	3.100	[90]	0.337	0.005 ***
Brainpower	2.914	[220]	2.750	[92]	0.164	0.233
Analysis	2.568	[220]	2.604	[91]	-0.036	0.815
Strategic	2.624	[221]	2.413	[92]	0.211	0.165
Creative	2.765	[221]	2.446	[92]	0.319	0.024 **
Attention to Details	2.227	[220]	2.033	[92]	0.195	0.178
Enthusiasm	3.131	[222]	2.736	[91]	0.394	0.003 ***
Persistence	3.502	[209]	3.235	[85]	0.267	0.022 **
Proactive	3.426	[216]	3.185	[92]	0.241	0.051 *
Work Ethics	3.586	[220]	3.511	[92]	0.075	0.445
High Standards	2.995	[220]	2.879	[91]	0.116	0.400
Listening Skills	2.563	[222]	2.462	[91]	0.102	0.503
Open to Criticism	2.359	[217]	2.111	[90]	0.248	0.097 *
Written Communication	2.766	[167]	2.468	[77]	0.299	0.073 *
Oral Communication	2.991	[221]	2.889	[90]	0.102	0.431
Teamwork	2.795	[220]	2.495	[91]	0.301	0.044 **
Persuasion	3.036	[222]	2.758	[91]	0.278	0.042 **
Accountable	2.537	[218]	2.567	[90]	-0.030	0.841

Panel B: Comparison of Hired and Non-hired Candidates for Buyout and Venture Capital deals.

	Buyout						Venture Capital					
	Hired		Non-Hired		Means	P-value	Hired		Non-Hired		Means	P-value
	Mean	Obs.	Mean	Obs.			Mean	Obs.	Mean	Obs.		
Hires A Players	2.112	[98]	2.204	[49]	-0.092	0.638	2.306	[124]	2.093	[43]	0.213	0.302
Develops People	2.273	[99]	2.224	[49]	0.048	0.814	2.298	[124]	2.070	[43]	0.229	0.248
Removes Underperformers	1.969	[98]	1.857	[49]	0.112	0.571	1.944	[124]	1.767	[43]	0.176	0.384
Respect	3.163	[98]	2.918	[49]	0.245	0.222	2.777	[121]	2.690	[42]	0.086	0.710
Efficiency	2.825	[97]	2.776	[49]	0.049	0.802	2.959	[122]	2.814	[43]	0.145	0.495
Network	2.653	[98]	2.694	[49]	-0.041	0.850	2.561	[123]	2.619	[42]	-0.058	0.782
Flexibility	2.845	[97]	2.551	[49]	0.294	0.163	2.451	[122]	2.548	[42]	-0.097	0.656
Integrity	3.660	[97]	3.625	[48]	0.035	0.803	3.639	[122]	3.268	[41]	0.371	0.023 **
Organization	2.753	[97]	2.796	[49]	-0.043	0.833	2.828	[122]	2.488	[43]	0.339	0.111
Calm	3.124	[97]	3.062	[48]	0.061	0.738	3.254	[122]	3.286	[42]	-0.032	0.870
Aggressive	3.227	[97]	2.898	[49]	0.329	0.071 *	3.225	[120]	2.952	[42]	0.273	0.143
Fast	3.135	[96]	2.776	[49]	0.360	0.077 *	3.073	[123]	2.902	[41]	0.171	0.381
Commitments	3.636	[99]	3.167	[48]	0.470	0.003 ***	3.276	[123]	3.024	[42]	0.253	0.160
Brainpower	2.714	[98]	2.837	[49]	-0.122	0.536	3.074	[122]	2.651	[43]	0.423	0.026 **
Analysis	2.385	[96]	2.771	[48]	-0.385	0.080 *	2.710	[124]	2.419	[43]	0.291	0.183
Strategic	2.449	[98]	2.367	[49]	0.082	0.696	2.764	[123]	2.465	[43]	0.299	0.177
Creative	2.755	[98]	2.469	[49]	0.286	0.167	2.772	[123]	2.419	[43]	0.354	0.072 *
Attention to Details	2.541	[98]	2.184	[49]	0.357	0.090 *	1.975	[122]	1.860	[43]	0.115	0.549
Enthusiasm	3.303	[99]	2.714	[49]	0.589	0.001 ***	2.992	[123]	2.762	[42]	0.230	0.241
Persistence	3.713	[94]	3.319	[47]	0.394	0.005 ***	3.330	[115]	3.132	[38]	0.199	0.284
Proactive	3.542	[96]	3.245	[49]	0.297	0.073 *	3.333	[120]	3.116	[43]	0.217	0.238
Work Ethics	3.639	[97]	3.510	[49]	0.129	0.360	3.545	[123]	3.512	[43]	0.033	0.814
High Standards	3.102	[98]	2.959	[49]	0.143	0.456	2.910	[122]	2.786	[42]	0.124	0.536
Listening Skills	2.737	[99]	2.612	[49]	0.125	0.548	2.423	[123]	2.286	[42]	0.137	0.532
Open to Criticism	2.577	[97]	2.229	[48]	0.348	0.094 *	2.183	[120]	1.976	[42]	0.207	0.331
Written Communication	2.634	[82]	2.622	[45]	0.012	0.956	2.894	[85]	2.250	[32]	0.644	0.014 **
Oral Communication	2.990	[98]	2.918	[49]	0.071	0.685	2.992	[123]	2.854	[41]	0.138	0.473
Teamwork	2.928	[97]	2.571	[49]	0.356	0.081 *	2.691	[123]	2.405	[42]	0.286	0.193
Persuasion	3.111	[99]	2.796	[49]	0.315	0.096 *	2.976	[123]	2.714	[42]	0.261	0.188
Accountable	2.619	[97]	2.708	[48]	-0.090	0.670	2.471	[121]	2.405	[42]	0.066	0.756

Panel C: Comparison of Hired and Non-Hired Candidates for Incumbents and Outsiders.

	Incumbent						Outsider					
	Hired		Non-Hired		Means	P-value	Hired		Non-Hired		Means	P-value
	Mean	Obs.	Mean	Obs.			Mean	Obs.	Mean	Obs.		
Hires A Players	2.057	[157]	1.417	[12]	0.641	0.064 *	2.615	[65]	2.263	[80]	0.353	0.051 *
Develops People	2.089	[158]	2.083	[12]	0.005	0.988	2.769	[65]	2.163	[80]	0.607	0.001 ***
Removes Underperformers	1.885	[157]	1.167	[12]	0.719	0.030 **	2.123	[65]	1.913	[80]	0.211	0.275
Respect	2.917	[157]	3.083	[12]	-0.166	0.658	3.032	[62]	2.772	[79]	0.260	0.210
Efficiency	2.752	[157]	2.583	[12]	0.168	0.651	3.274	[62]	2.825	[80]	0.449	0.010 ***
Network	2.490	[157]	2.583	[12]	-0.093	0.804	2.875	[64]	2.671	[79]	0.204	0.282
Flexibility	2.506	[156]	2.667	[12]	-0.160	0.661	2.921	[63]	2.532	[79]	0.389	0.056 *
Integrity	3.584	[154]	3.636	[11]	-0.052	0.849	3.800	[65]	3.436	[78]	0.364	0.009 ***
Organization	2.641	[156]	2.333	[12]	0.308	0.406	3.175	[63]	2.700	[80]	0.475	0.010 ***
Calm	3.121	[157]	3.364	[11]	-0.243	0.495	3.387	[62]	3.139	[79]	0.248	0.124
Aggressive	3.226	[155]	3.167	[12]	0.059	0.851	3.226	[62]	2.886	[79]	0.340	0.050 **
Fast	3.064	[156]	3.000	[12]	0.064	0.850	3.190	[63]	2.808	[78]	0.383	0.040 **
Commitments	3.342	[158]	3.000	[11]	0.342	0.267	3.672	[64]	3.114	[79]	0.558	0.000 ***
Brainpower	2.955	[156]	2.667	[12]	0.288	0.388	2.812	[64]	2.763	[80]	0.050	0.786
Analysis	2.503	[157]	1.917	[12]	0.587	0.113	2.730	[63]	2.709	[79]	0.021	0.919
Strategic	2.646	[158]	2.250	[12]	0.396	0.294	2.571	[63]	2.438	[80]	0.134	0.507
Creative	2.745	[157]	3.250	[12]	-0.505	0.135	2.812	[64]	2.325	[80]	0.487	0.011 **
Attention to Details	2.109	[156]	2.167	[12]	-0.058	0.873	2.516	[64]	2.013	[80]	0.503	0.007 ***
Enthusiasm	3.044	[158]	2.917	[12]	0.128	0.695	3.344	[64]	2.709	[79]	0.635	0.000 ***
Persistence	3.480	[148]	3.545	[11]	-0.066	0.803	3.557	[61]	3.189	[74]	0.368	0.029 **
Proactive	3.406	[155]	3.250	[12]	0.156	0.601	3.475	[61]	3.175	[80]	0.300	0.075 *
Work Ethics	3.535	[155]	3.333	[12]	0.202	0.429	3.708	[65]	3.538	[80]	0.170	0.162
High Standards	2.891	[156]	2.583	[12]	0.308	0.382	3.250	[64]	2.924	[79]	0.326	0.057 *
Listening Skills	2.500	[158]	2.250	[12]	0.250	0.496	2.719	[64]	2.494	[79]	0.225	0.269
Open to Criticism	2.194	[155]	2.333	[12]	-0.140	0.693	2.774	[62]	2.077	[78]	0.697	0.001 ***
Written Communication	2.713	[122]	2.125	[8]	0.588	0.215	2.911	[45]	2.507	[69]	0.404	0.057 *
Oral Communication	2.854	[157]	2.750	[12]	0.104	0.749	3.328	[64]	2.910	[78]	0.418	0.010 ***
Teamwork	2.682	[157]	2.583	[12]	0.098	0.789	3.079	[63]	2.481	[79]	0.598	0.002 ***
Persuasion	2.968	[158]	3.000	[12]	-0.032	0.927	3.203	[64]	2.722	[79]	0.482	0.006 ***
Accountable	2.377	[154]	2.167	[12]	0.210	0.570	2.922	[64]	2.628	[78]	0.294	0.117

Panel D: Comparison of Hired and Non-Hired candidates for companies assessing more than one candidate.

	Hired		Non-Hired		Diff.	
	Mean	Obs.	Mean	Obs.	Means	P-value
Hires A Players	2.310	[42]	2.204	[54]	0.106	0.650
Develops People	2.524	[42]	2.222	[54]	0.302	0.201
Removes Underperformers	2.214	[42]	1.907	[54]	0.307	0.214
Respect	3.195	[41]	2.981	[53]	0.214	0.384
Efficiency	3.381	[42]	2.796	[54]	0.585	0.007 ***
Network	2.810	[42]	2.755	[53]	0.055	0.819
Flexibility	3.024	[42]	2.547	[53]	0.477	0.043 **
Integrity	3.810	[42]	3.547	[53]	0.262	0.110
Organization	2.929	[42]	2.667	[54]	0.262	0.283
Calm	3.375	[40]	3.208	[53]	0.167	0.419
Aggressive	3.585	[41]	3.019	[53]	0.566	0.004 ***
Fast	3.381	[42]	2.865	[52]	0.516	0.019 **
Commitments	3.732	[41]	3.075	[53]	0.656	0.000 ***
Brainpower	2.929	[42]	2.630	[54]	0.299	0.211
Analysis	2.619	[42]	2.685	[54]	-0.066	0.799
Strategic	2.561	[41]	2.333	[54]	0.228	0.359
Creative	2.927	[41]	2.315	[54]	0.612	0.009 ***
Attention to Details	2.548	[42]	1.963	[54]	0.585	0.010 ***
Enthusiasm	3.390	[41]	2.679	[53]	0.711	0.001 ***
Persistence	3.821	[39]	3.137	[51]	0.683	0.001 ***
Proactive	3.488	[41]	3.167	[54]	0.321	0.126
Work Ethics	3.833	[42]	3.481	[54]	0.352	0.025 **
High Standards	3.268	[41]	2.811	[53]	0.457	0.034 **
Listening Skills	2.268	[41]	2.491	[53]	-0.222	0.394
Open to Criticism	2.659	[41]	2.115	[52]	0.543	0.033 **
Written Communication	2.688	[32]	2.295	[44]	0.392	0.174
Oral Communication	3.244	[41]	3.019	[53]	0.225	0.294
Teamwork	2.976	[42]	2.774	[53]	0.203	0.402
Persuasion	3.415	[41]	2.736	[53]	0.679	0.002 ***
Accountable	2.951	[41]	2.491	[53]	0.461	0.055 *

TABLE 6: This table presents marginal effects of probit estimates of hiring decisions for 316 CEO candidates assessed by ghSMART. The endogenous variable is one if the candidate is hired and zero if not. Independent variables include three main factors from factor analysis and two alternative factors from concentrated factor analysis described in table 4. P-values are reported in parentheses. Statistical significance at the 1, 5, and 10% levels is indicated by ***, **, and *, respectively. All standard errors are robust.

	Full Sample		Only invested deals					
			Outsider	Buyout	VC	Outsider	Buyout	VC
Incumbent	0.503 *** (0.000)	0.487 *** (0.000)		0.295 *** (0.001)	0.444 *** (0.000)		0.289 *** (0.001)	0.426 *** (0.000)
Factor 1	0.099 *** (0.000)		0.186 *** (0.001)	0.149 *** (0.002)	0.102 ** (0.015)			
Factor 2	0.004 (0.864)		0.004 (0.941)	0.014 (0.739)	-0.030 (0.430)			
Factor 3	-0.006 (0.849)		-0.106 * (0.082)	-0.090 * (0.087)	0.036 (0.438)			
Alt. Factor 1		0.074 *** (0.004)				0.166 *** (0.003)	0.136 *** (0.003)	0.078 * (0.069)
Alt. Factor 2		0.045 (0.120)				0.081 (0.150)	0.098 ** (0.044)	0.011 (0.824)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	316	316	116	114	120	116	114	120

TABLE 7, Panel A: Characteristics and Investment Decisions. Mean ratings of invested and non-invested candidates for the CEO candidates assessed by ghSMART. Only candidates assessed before the PE invests are included.

	Full Sample						Incumbents Only					
	Invest		Non-Invest		Means	P-value	Invest		Non-Invest		Means	P-value
	Mean	Obs.	Mean	Obs.			Mean	Obs.	Mean	Obs.		
Hires A Players	2.109	[128]	2.123	[81]	-0.014	0.931	1.969	[98]	2.154	[52]	-0.184	0.356
Develops People	2.225	[129]	2.037	[81]	0.188	0.251	2.121	[99]	2.058	[52]	0.064	0.744
Removes Underperformers	1.844	[128]	1.815	[81]	0.029	0.854	1.837	[98]	1.846	[52]	-0.009	0.961
Respect	2.976	[126]	2.827	[81]	0.149	0.395	3.041	[98]	2.885	[52]	0.156	0.456
Efficiency	2.905	[126]	2.531	[81]	0.374	0.027**	2.847	[98]	2.500	[52]	0.347	0.102
Network	2.654	[127]	2.469	[81]	0.184	0.288	2.602	[98]	2.327	[52]	0.275	0.199
Flexibility	2.714	[126]	2.375	[80]	0.339	0.053*	2.680	[97]	2.231	[52]	0.450	0.030**
Integrity	3.675	[126]	3.392	[79]	0.282	0.025**	3.646	[96]	3.440	[50]	0.206	0.183
Organization	2.730	[126]	2.712	[80]	0.018	0.917	2.612	[98]	2.745	[51]	-0.133	0.531
Calm	3.256	[125]	3.123	[81]	0.133	0.381	3.247	[97]	3.135	[52]	0.113	0.550
Aggressive	3.145	[124]	3.099	[81]	0.046	0.766	3.146	[96]	3.269	[52]	-0.123	0.503
Fast	3.047	[128]	2.937	[79]	0.110	0.502	3.041	[98]	2.961	[51]	0.080	0.684
Commitments	3.477	[128]	3.123	[81]	0.353	0.010***	3.459	[98]	3.173	[52]	0.286	0.081*
Brainpower	2.952	[126]	2.852	[81]	0.101	0.523	2.990	[97]	2.731	[52]	0.259	0.182
Analysis	2.504	[127]	2.456	[79]	0.048	0.786	2.520	[98]	2.250	[52]	0.270	0.198
Strategic	2.519	[129]	2.575	[80]	-0.056	0.751	2.535	[99]	2.615	[52]	-0.080	0.710
Creative	2.727	[128]	2.642	[81]	0.085	0.604	2.724	[98]	2.750	[52]	-0.026	0.898
Attention to Details	2.236	[127]	2.025	[80]	0.211	0.217	2.204	[98]	2.059	[51]	0.145	0.487
Enthusiasm	3.140	[129]	2.864	[81]	0.275	0.071*	3.101	[99]	2.923	[52]	0.178	0.339
Persistence	3.525	[118]	3.325	[77]	0.201	0.117	3.533	[92]	3.347	[49]	0.186	0.222
Proactive	3.424	[125]	3.190	[79]	0.234	0.111	3.443	[97]	3.176	[51]	0.267	0.134
Work Ethics	3.583	[127]	3.388	[80]	0.195	0.107	3.577	[97]	3.314	[51]	0.264	0.085*
High Standards	2.969	[128]	2.788	[80]	0.181	0.269	2.949	[98]	2.686	[51]	0.263	0.200
Listening Skills	2.643	[129]	2.407	[81]	0.236	0.174	2.636	[99]	2.365	[52]	0.271	0.188
Open to Criticism	2.370	[127]	2.205	[78]	0.165	0.337	2.296	[98]	2.180	[50]	0.116	0.569
Written Communication	2.628	[94]	2.794	[63]	-0.166	0.412	2.541	[74]	2.821	[39]	-0.280	0.279
Oral Communication	2.914	[128]	2.864	[81]	0.050	0.737	2.786	[98]	2.885	[52]	-0.099	0.596
Teamwork	2.891	[128]	2.380	[79]	0.511	0.003***	2.848	[99]	2.431	[51]	0.417	0.046**
Persuasion	3.000	[129]	2.864	[81]	0.136	0.390	2.970	[99]	2.904	[52]	0.066	0.738
Accountable	2.484	[126]	2.329	[79]	0.155	0.361	2.448	[96]	2.216	[51]	0.232	0.272

Panel B: Comparison of Investments and Non-Investments for Buyout and Venture Capital deals.

	Buyouts						Venture Capital					
	Invest		Non-Invest		Means	P-value	Invest		Non-Invest		Means	P-value
	Mean	Obs.	Mean	Obs.			Mean	Obs.	Mean	Obs.		
Hires A Players	1.955	[67]	2.088	[34]	-0.133	0.560	2.279	[61]	2.149	[47]	0.130	0.573
Develops People	2.221	[68]	2.059	[34]	0.162	0.528	2.230	[61]	2.021	[47]	0.208	0.331
Removes Underperformers	1.836	[67]	1.676	[34]	0.159	0.491	1.852	[61]	1.915	[47]	-0.062	0.775
Respect	3.090	[67]	3.147	[34]	-0.058	0.812	2.847	[59]	2.596	[47]	0.252	0.318
Efficiency	2.970	[67]	2.382	[34]	0.588	0.015**	2.831	[59]	2.638	[47]	0.192	0.423
Network	2.687	[67]	2.500	[34]	0.187	0.486	2.617	[60]	2.447	[47]	0.170	0.461
Flexibility	2.746	[67]	2.394	[33]	0.352	0.182	2.678	[59]	2.362	[47]	0.316	0.186
Integrity	3.833	[66]	3.333	[33]	0.500	0.001***	3.500	[60]	3.435	[46]	0.065	0.738
Organization	2.742	[66]	2.912	[34]	-0.169	0.503	2.717	[60]	2.565	[46]	0.151	0.515
Calm	3.123	[65]	3.176	[34]	-0.053	0.812	3.400	[60]	3.085	[47]	0.315	0.130
Aggressive	3.182	[66]	3.029	[34]	0.152	0.510	3.103	[58]	3.149	[47]	-0.045	0.833
Fast	3.060	[67]	2.970	[33]	0.090	0.713	3.033	[61]	2.913	[46]	0.120	0.596
Commitments	3.716	[67]	3.294	[34]	0.422	0.025**	3.213	[61]	3.000	[47]	0.213	0.271
Brainpower	2.701	[67]	2.794	[34]	-0.093	0.704	3.237	[59]	2.894	[47]	0.344	0.089*
Analysis	2.318	[66]	2.469	[32]	-0.151	0.564	2.705	[61]	2.447	[47]	0.258	0.291
Strategic	2.426	[68]	2.333	[33]	0.093	0.711	2.623	[61]	2.745	[47]	-0.122	0.623
Creative	2.701	[67]	2.471	[34]	0.231	0.370	2.754	[61]	2.766	[47]	-0.012	0.955
Attention to Details	2.522	[67]	2.294	[34]	0.228	0.383	1.917	[60]	1.826	[46]	0.091	0.674
Enthusiasm	3.221	[68]	3.029	[34]	0.191	0.393	3.049	[61]	2.745	[47]	0.304	0.150
Persistence	3.719	[64]	3.471	[34]	0.248	0.106	3.296	[54]	3.209	[43]	0.087	0.664
Proactive	3.470	[66]	3.364	[33]	0.106	0.611	3.373	[59]	3.065	[46]	0.308	0.141
Work Ethics	3.545	[66]	3.412	[34]	0.134	0.481	3.623	[61]	3.370	[46]	0.253	0.107
High Standards	3.104	[67]	2.765	[34]	0.340	0.150	2.820	[61]	2.804	[46]	0.015	0.947
Listening Skills	2.794	[68]	2.676	[34]	0.118	0.640	2.475	[61]	2.213	[47]	0.263	0.272
Open to Criticism	2.493	[67]	2.333	[33]	0.159	0.533	2.233	[60]	2.111	[45]	0.122	0.603
Written Communication	2.527	[55]	2.828	[29]	-0.300	0.274	2.769	[39]	2.765	[34]	0.005	0.988
Oral Communication	2.925	[67]	2.882	[34]	0.043	0.841	2.902	[61]	2.851	[47]	0.051	0.810
Teamwork	2.956	[68]	2.469	[32]	0.487	0.054*	2.817	[60]	2.319	[47]	0.498	0.036**
Persuasion	3.088	[68]	2.971	[34]	0.118	0.605	2.902	[61]	2.787	[47]	0.114	0.608
Accountable	2.636	[66]	2.333	[33]	0.303	0.234	2.317	[60]	2.326	[46]	-0.009	0.967

TABLE 8: Marginal effects of probit estimates for investment decisions for 316 CEO candidates assessed by ghSMART. The endogenous variable is whether the private equity firm invested or not. Independent variables include three main factors from factor analysis and two alternative factors from concentrated factor analysis described in table 4. P-values are reported in parentheses. Statistical significance at the 1, 5, and 10% levels is indicated by ***, **, and *, respectively. All standard errors are robust.

	(1) Full sample	(2) Buyout	(3) Venture Capital	(4) Full sample	(5) Buyout	(6) Venture Capital
Incumbent	0.174 ** (0.027)	0.218 ** (0.037)	0.196 (0.136)	0.170 ** (0.029)	0.203 ** (0.041)	0.183 (0.169)
Factor 1	0.085 ** (0.019)	0.091 (0.117)	0.124 ** (0.014)			
Factor 2	0.034 (0.372)	0.032 (0.568)	0.016 (0.776)			
Factor 3	-0.027 (0.471)	0.000 (0.997)	-0.046 (0.461)			
Alt. Factor 1				0.051 (0.167)	0.051 (0.339)	0.092 * (0.097)
Alt. Factor 2				0.081 ** (0.042)	0.071 (0.252)	0.088 (0.117)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	211	102	106	211	102	106

TABLE 9 Comparison of successful and non-successful CEOs hired from 316 CEO candidates assessed by ghSMART. PE success measure is based on responses from PE firms. Public success measure supplements PE measure with public information on CEO and company outcomes. Broad public success measure supplements public measure with public information on CEO and company progress.

Panel A: Comparison of successful and non-successful candidates for Public and PE success measures

	PE Success Measure						Public Success Measure					
	Success		Non-Success		Diff.		Success		Non-Success		Diff.	
	Mean	Obs.	Mean	Obs.	Means	P-val	Mean	Obs.	Mean	Obs.	Means	P-val
Hires A Players	2.514	[37]	2.033	[30]	0.480	0.135	2.333	[54]	2.104	[67]	0.229	0.311
Develops People	2.351	[37]	2.633	[30]	-0.282	0.357	2.389	[54]	2.313	[67]	0.075	0.727
Rem Underperformers	2.324	[37]	1.833	[30]	0.491	0.116	2.185	[54]	1.985	[67]	0.200	0.372
Respect	2.972	[36]	3.367	[30]	-0.394	0.153	3.038	[53]	3.179	[67]	-0.141	0.518
Efficiency	3.054	[37]	3.067	[30]	-0.013	0.965	3.074	[54]	2.925	[67]	0.149	0.490
Network	2.703	[37]	2.567	[30]	0.136	0.679	2.722	[54]	2.597	[67]	0.125	0.592
Flexibility	2.432	[37]	2.931	[29]	-0.499	0.121	2.593	[54]	2.742	[66]	-0.150	0.502
Integrity	3.865	[37]	3.867	[30]	-0.002	0.983	3.778	[54]	3.682	[66]	0.096	0.456
Organization	2.892	[37]	2.833	[30]	0.059	0.836	2.889	[54]	2.642	[67]	0.247	0.256
Calm	3.139	[36]	3.267	[30]	-0.128	0.650	3.113	[53]	3.209	[67]	-0.096	0.654
Aggressive	3.389	[36]	3.167	[30]	0.222	0.360	3.377	[53]	3.239	[67]	0.139	0.446
Fast	3.278	[36]	3.033	[30]	0.244	0.355	3.358	[53]	3.106	[66]	0.252	0.214
Commitments	3.500	[36]	3.467	[30]	0.033	0.884	3.585	[53]	3.493	[67]	0.092	0.547
Brainpower	3.108	[37]	2.931	[29]	0.177	0.502	3.241	[54]	2.924	[66]	0.316	0.111
Analysis	2.703	[37]	2.600	[30]	0.103	0.746	2.741	[54]	2.552	[67]	0.189	0.420
Strategic	2.694	[36]	2.700	[30]	-0.006	0.986	2.755	[53]	2.612	[67]	0.143	0.535
Creative	2.917	[36]	2.833	[30]	0.083	0.753	3.000	[53]	2.716	[67]	0.284	0.165
Attention to Details	2.324	[37]	2.233	[30]	0.091	0.763	2.241	[54]	2.167	[66]	0.074	0.732
Enthusiasm	3.111	[36]	3.267	[30]	-0.156	0.523	3.189	[53]	3.209	[67]	-0.020	0.913
Persistence	3.697	[33]	3.500	[30]	0.197	0.303	3.760	[50]	3.530	[66]	0.230	0.093
Proactive	3.750	[36]	3.367	[30]	0.383	0.053	3.736	[53]	3.364	[66]	0.372	0.015
Work Ethics	3.757	[37]	3.567	[30]	0.190	0.227	3.759	[54]	3.652	[66]	0.108	0.363
High Standards	3.222	[36]	2.867	[30]	0.356	0.213	3.208	[53]	2.985	[66]	0.223	0.285
Listening Skills	2.500	[36]	2.767	[30]	-0.267	0.397	2.491	[53]	2.552	[67]	-0.062	0.786
Open to Criticism	2.472	[36]	2.500	[30]	-0.028	0.930	2.434	[53]	2.303	[66]	0.131	0.571
Written Comm.	3.040	[25]	2.929	[28]	0.111	0.729	3.000	[40]	2.625	[56]	0.375	0.148
Oral Communication	2.972	[36]	3.300	[30]	-0.328	0.194	2.849	[53]	3.045	[67]	-0.196	0.304
Teamwork	2.649	[37]	3.333	[30]	-0.685	0.016	2.741	[54]	2.955	[67]	-0.214	0.330
Persuasion	3.000	[36]	3.133	[30]	-0.133	0.634	3.151	[53]	3.075	[67]	0.076	0.693
Accountable	2.694	[36]	2.667	[30]	0.028	0.930	2.635	[52]	2.591	[66]	0.044	0.851

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Panel B: Comparison of successful and non-successful candidates for Buyout and VC deals using PE success measure.

	Buyout						Venture Capital					
	Success		Non-Success		Means	P-value	Success		Non-Success		Means	P-value
	Mean	Obs.	Mean	Obs.			Mean	Obs.	Mean	Obs.		
Hires A Players	2.667	[21]	1.875	[8]	0.792	0.145	2.312	[16]	2.091	[22]	0.222	0.614
Develops People	2.571	[21]	2.375	[8]	0.196	0.711	2.062	[16]	2.727	[22]	-0.665	0.105
Removes Underperformers	2.381	[21]	1.875	[8]	0.506	0.358	2.250	[16]	1.818	[22]	0.432	0.300
Respect	3.190	[21]	3.250	[8]	-0.060	0.894	2.667	[15]	3.409	[22]	-0.742	0.058 *
Efficiency	3.476	[21]	2.500	[8]	0.976	0.017 **	2.500	[16]	3.273	[22]	-0.773	0.064 *
Network	2.952	[21]	2.125	[8]	0.827	0.146	2.375	[16]	2.727	[22]	-0.352	0.420
Flexibility	2.905	[21]	3.250	[8]	-0.345	0.497	1.812	[16]	2.810	[21]	-0.997	0.021 **
Integrity	3.905	[21]	3.875	[8]	0.030	0.822	3.812	[16]	3.864	[22]	-0.051	0.680
Organization	3.143	[21]	2.125	[8]	1.018	0.042 **	2.562	[16]	3.091	[22]	-0.528	0.144
Calm	3.333	[21]	2.750	[8]	0.583	0.209	2.867	[15]	3.455	[22]	-0.588	0.131
Aggressive	3.571	[21]	3.000	[8]	0.571	0.132	3.133	[15]	3.227	[22]	-0.094	0.788
Fast	3.500	[20]	3.000	[8]	0.500	0.215	3.000	[16]	3.045	[22]	-0.045	0.904
Commitments	3.905	[21]	3.375	[8]	0.530	0.024 **	2.933	[15]	3.500	[22]	-0.567	0.115
Brainpower	3.190	[21]	2.500	[8]	0.690	0.122	3.000	[16]	3.095	[21]	-0.095	0.789
Analysis	2.905	[21]	1.750	[8]	1.155	0.033 **	2.438	[16]	2.909	[22]	-0.472	0.256
Strategic	2.857	[21]	2.625	[8]	0.232	0.652	2.467	[15]	2.727	[22]	-0.261	0.543
Creative	3.048	[21]	3.125	[8]	-0.077	0.876	2.733	[15]	2.727	[22]	0.006	0.985
Attention to Details	2.810	[21]	1.500	[8]	1.310	0.008 ***	1.688	[16]	2.500	[22]	-0.812	0.037 **
Enthusiasm	3.333	[21]	3.625	[8]	-0.292	0.404	2.800	[15]	3.136	[22]	-0.336	0.348
Persistence	4.000	[21]	3.500	[8]	0.500	0.004 ***	3.167	[12]	3.500	[22]	-0.333	0.303
Proactive	4.000	[21]	3.625	[8]	0.375	0.024 **	3.400	[15]	3.273	[22]	0.127	0.693
Work Ethics	3.905	[21]	3.625	[8]	0.280	0.271	3.562	[16]	3.545	[22]	0.017	0.937
High Standards	3.667	[21]	2.875	[8]	0.792	0.018 **	2.600	[15]	2.864	[22]	-0.264	0.545
Listening Skills	2.810	[21]	2.750	[8]	0.060	0.908	2.067	[15]	2.773	[22]	-0.706	0.107
Open to Criticism	2.857	[21]	2.375	[8]	0.482	0.363	1.933	[15]	2.545	[22]	-0.612	0.144
Written Communication	2.889	[18]	2.250	[8]	0.639	0.186	3.429	[7]	3.200	[20]	0.229	0.654
Oral Communication	2.905	[21]	3.250	[8]	-0.345	0.432	3.067	[15]	3.318	[22]	-0.252	0.462
Teamwork	3.190	[21]	3.500	[8]	-0.310	0.429	1.938	[16]	3.273	[22]	-1.335	0.001 ***
Persuasion	3.238	[21]	3.125	[8]	0.113	0.800	2.667	[15]	3.136	[22]	-0.470	0.239
Accountable	3.000	[21]	2.000	[8]	1.000	0.036 **	2.267	[15]	2.909	[22]	-0.642	0.161

Panel C: Comparison of successful and non-successful candidates for Buyout and VC deals using public success measure

	Buyout						Venture Capital					
	Success		Non-Success		Means	P-value	Success		Non-Success		Means	P-value
	Mean	Obs.	Mean	Obs.			Mean	Obs.	Mean	Obs.		
Hires A Players	2.419	[31]	1.833	[24]	0.586	0.072 *	2.217	[23]	2.256	[43]	-0.038	0.908
Develops People	2.645	[31]	2.125	[24]	0.520	0.106	2.043	[23]	2.419	[43]	-0.375	0.219
Removes Underperformers	2.290	[31]	1.958	[24]	0.332	0.310	2.043	[23]	2.000	[43]	0.043	0.894
Respect	3.258	[31]	3.375	[24]	-0.117	0.691	2.727	[22]	3.070	[43]	-0.342	0.302
Efficiency	3.484	[31]	2.458	[24]	1.026	0.000 ***	2.522	[23]	3.186	[43]	-0.664	0.042 **
Network	3.000	[31]	2.458	[24]	0.542	0.115	2.348	[23]	2.674	[43]	-0.327	0.327
Flexibility	2.968	[31]	3.167	[24]	-0.199	0.503	2.087	[23]	2.500	[42]	-0.413	0.198
Integrity	3.839	[31]	3.542	[24]	0.297	0.140	3.696	[23]	3.762	[42]	-0.066	0.705
Organization	3.000	[31]	2.042	[24]	0.958	0.003 ***	2.739	[23]	2.977	[43]	-0.238	0.423
Calm	3.226	[31]	3.000	[24]	0.226	0.465	2.955	[22]	3.326	[43]	-0.371	0.237
Aggressive	3.484	[31]	3.083	[24]	0.401	0.134	3.227	[22]	3.326	[43]	-0.098	0.710
Fast	3.433	[30]	3.125	[24]	0.308	0.299	3.261	[23]	3.095	[42]	0.166	0.573
Commitments	3.935	[31]	3.333	[24]	0.602	0.001 ***	3.091	[22]	3.581	[43]	-0.490	0.040 **
Brainpower	3.194	[31]	2.667	[24]	0.527	0.084 *	3.304	[23]	3.071	[42]	0.233	0.396
Analysis	2.806	[31]	2.208	[24]	0.598	0.088 *	2.652	[23]	2.744	[43]	-0.092	0.780
Strategic	2.806	[31]	2.375	[24]	0.431	0.180	2.682	[22]	2.744	[43]	-0.062	0.857
Creative	3.097	[31]	2.792	[24]	0.305	0.329	2.864	[22]	2.674	[43]	0.189	0.508
Attention to Details	2.548	[31]	2.042	[24]	0.507	0.122	1.826	[23]	2.238	[42]	-0.412	0.166
Enthusiasm	3.323	[31]	3.417	[24]	-0.094	0.701	3.000	[22]	3.093	[43]	-0.093	0.744
Persistence	3.935	[31]	3.609	[23]	0.327	0.007 ***	3.474	[19]	3.488	[43]	-0.015	0.952
Proactive	3.839	[31]	3.375	[24]	0.464	0.010 ***	3.591	[22]	3.357	[42]	0.234	0.349
Work Ethics	3.839	[31]	3.625	[24]	0.214	0.265	3.652	[23]	3.667	[42]	-0.014	0.926
High Standards	3.516	[31]	2.833	[24]	0.683	0.017 **	2.773	[22]	3.071	[42]	-0.299	0.335
Listening Skills	2.774	[31]	2.500	[24]	0.274	0.408	2.091	[22]	2.581	[43]	-0.490	0.135
Open to Criticism	2.839	[31]	2.333	[24]	0.505	0.140	1.864	[22]	2.286	[42]	-0.422	0.186
Written Communication	2.923	[26]	2.238	[21]	0.685	0.045 **	3.143	[14]	2.857	[35]	0.286	0.497
Oral Communication	2.871	[31]	2.833	[24]	0.038	0.892	2.818	[22]	3.163	[43]	-0.345	0.214
Teamwork	3.194	[31]	3.000	[24]	0.194	0.535	2.130	[23]	2.930	[43]	-0.800	0.010 ***
Persuasion	3.355	[31]	3.000	[24]	0.355	0.189	2.864	[22]	3.116	[43]	-0.253	0.380
Accountable	2.933	[30]	2.167	[24]	0.767	0.020 **	2.227	[22]	2.833	[42]	-0.606	0.071 *

Panel D: Comparison of successful and non-successful candidates for VC and Buyout deals using broad success measure

	Buyout						Venture Capital					
	Success		Non-Success		Means	P-value	Success		Non-Success		Means	P-value
	Mean	Obs.	Mean	Obs.			Mean	Obs.	Mean	Obs.		
Hires A Players	2.349	[43]	1.967	[30]	0.382	0.173	2.327	[49]	2.278	[54]	0.049	0.838
Develops People	2.442	[43]	2.267	[30]	0.175	0.534	2.122	[49]	2.463	[54]	-0.341	0.114
Removes Underperformers	2.233	[43]	1.867	[30]	0.366	0.193	1.980	[49]	1.981	[54]	-0.002	0.993
Respect	3.047	[43]	3.333	[30]	-0.287	0.295	2.609	[46]	2.963	[54]	-0.354	0.166
Efficiency	3.190	[42]	2.500	[30]	0.690	0.009 ***	2.809	[47]	3.204	[54]	-0.395	0.094 *
Network	2.884	[43]	2.700	[30]	0.184	0.545	2.583	[48]	2.648	[54]	-0.065	0.793
Flexibility	2.791	[43]	3.233	[30]	-0.443	0.104	2.396	[48]	2.642	[53]	-0.246	0.315
Integrity	3.744	[43]	3.633	[30]	0.111	0.542	3.551	[49]	3.774	[53]	-0.223	0.141
Organization	2.977	[43]	2.207	[29]	0.770	0.009 ***	2.604	[48]	2.963	[54]	-0.359	0.121
Calm	3.186	[43]	3.033	[30]	0.153	0.551	3.255	[47]	3.389	[54]	-0.134	0.526
Aggressive	3.349	[43]	3.100	[30]	0.249	0.283	3.244	[45]	3.315	[54]	-0.070	0.727
Fast	3.238	[42]	3.067	[30]	0.171	0.523	3.184	[49]	3.019	[53]	0.165	0.458
Commitments	3.814	[43]	3.433	[30]	0.381	0.023 **	3.104	[48]	3.556	[54]	-0.451	0.017 **
Brainpower	2.907	[43]	2.667	[30]	0.240	0.373	3.208	[48]	2.981	[53]	0.227	0.284
Analysis	2.581	[43]	2.233	[30]	0.348	0.252	2.694	[49]	2.741	[54]	-0.047	0.843
Strategic	2.558	[43]	2.300	[30]	0.258	0.356	2.792	[48]	2.778	[54]	0.014	0.957
Creative	2.884	[43]	2.667	[30]	0.217	0.423	2.917	[48]	2.685	[54]	0.231	0.284
Attention to Details	2.674	[43]	2.200	[30]	0.474	0.098 *	1.812	[48]	2.132	[53]	-0.320	0.157
Enthusiasm	3.302	[43]	3.533	[30]	-0.231	0.263	2.896	[48]	3.093	[54]	-0.197	0.357
Persistence	3.900	[40]	3.586	[29]	0.314	0.008 ***	3.341	[41]	3.426	[54]	-0.084	0.670
Proactive	3.721	[43]	3.467	[30]	0.254	0.105	3.340	[47]	3.358	[53]	-0.018	0.929
Work Ethics	3.860	[43]	3.567	[30]	0.294	0.064 *	3.429	[49]	3.642	[53]	-0.213	0.148
High Standards	3.419	[43]	2.933	[30]	0.485	0.050 **	2.812	[48]	3.000	[53]	-0.188	0.423
Listening Skills	2.721	[43]	2.700	[30]	0.021	0.944	2.208	[48]	2.667	[54]	-0.458	0.060 *
Open to Criticism	2.767	[43]	2.467	[30]	0.301	0.320	2.087	[46]	2.302	[53]	-0.215	0.368
Written Communication	2.833	[36]	2.296	[27]	0.537	0.071 *	2.933	[30]	3.000	[40]	-0.067	0.827
Oral Communication	2.907	[43]	3.033	[30]	-0.126	0.611	2.833	[48]	3.222	[54]	-0.389	0.057 *
Teamwork	3.116	[43]	2.933	[30]	0.183	0.507	2.417	[48]	2.944	[54]	-0.528	0.024 **
Persuasion	3.233	[43]	3.033	[30]	0.199	0.423	2.896	[48]	3.074	[54]	-0.178	0.414
Accountable	2.929	[42]	2.233	[30]	0.695	0.014 **	2.271	[48]	2.712	[52]	-0.441	0.076 *

TABLE 10 Coefficients from OLS regressions for success of 316 CEO candidates assessed by ghSMART. The endogenous variable is the outcome of the deal. PE success measure is based on responses from PE firms. Public success measure supplements PE measure with public information on CEO and company outcomes. Broad public success measure supplements public measure with public information on CEO and company progress. Independent variables include three main factors from factor analysis and two alternative factors from concentrated factor analysis described in table 4. P-values are reported in parentheses, and statistical significance at the 1, 5, and 10% levels are indicated by ***, **, and *, respectively. All standard errors are robust.

Panel A All hired candidates with success outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
	PE Measure	Public Measure	Broad Measure	PE Measure	Public Measure	Broad Measure
Incumbent	-0.009 (0.927)	0.120 (0.203)	0.088 (0.176)	-0.041 (0.712)	0.081 (0.398)	0.087 (0.175)
Factor 1	0.100 * (0.094)	0.106 ** (0.030)	0.042 (0.189)			
Factor 2	-0.200 *** (0.000)	-0.101 ** (0.025)	-0.067 ** (0.042)			
Factor 3	0.050 (0.376)	0.036 (0.462)	0.026 (0.461)			
Alt. Factor 1				0.189 *** (0.002)	0.147 *** (0.004)	0.079 (0.026)
Alt. Factor 2				-0.127 ** (0.019)	-0.030 (0.511)	-0.028 (0.385)
Constant	0.182 (0.124)	0.162 (0.539)	0.420 ** (0.014)	0.217 * (0.069)	0.237 (0.302)	0.428 (0.008)
Obs.	81	126	208	81	126	208
R-squared	0.339	0.165	0.080	0.301	0.155	0.074

Panel B: Factors and success measures by PE firm type

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Buyout	Buyout	Buyout	Buyout	Buyout	Buyout	VC	VC	VC	VC	VC	VC
	PE	Public	Broad	PE	Public	Broad	PE	Public	Broad	PE	Public	Broad
	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure
Incumbent	0.125 (0.407)	0.173 (0.176)	0.088 (0.353)	-0.094 (0.550)	-0.009 (0.941)	0.036 (0.703)	0.088 (0.573)	0.217 (0.103)	0.141 (0.116)	0.088 (0.571)	0.216 * (0.099)	0.148 * (0.091)
Factor 1	0.280 ** (0.050)	0.309 *** (0.001)	0.146 *** (0.005)				0.056 (0.499)	0.014 (0.861)	-0.021 (0.611)			
Factor 2	-0.212 * (0.062)	-0.064 (0.405)	-0.051 (0.340)				-0.156 ** (0.012)	-0.100 * (0.086)	-0.067 (0.115)			
Factor 3	0.125 (0.131)	0.079 (0.266)	0.069 (0.210)				0.005 (0.958)	0.008 (0.915)	0.007 (0.892)			
Alt. Factor 1				0.352 *** (0.004)	0.272 *** (0.001)	0.155 ** (0.011)				0.112 (0.184)	0.056 (0.486)	0.023 (0.618)
Alt. Factor 2				-0.132 (0.276)	0.071 (0.378)	0.034 (0.533)				-0.117 (0.118)	-0.094 * (0.088)	-0.071 * (0.086)
Constant	0.261 * (0.100)	-0.060 (0.534)	0.372 ** (0.011)	0.410 (0.297)	-0.206 *** (0.009)	0.389 ** (0.029)	0.144 (0.318)	0.083 (0.740)	0.362 * (0.055)	0.159 (0.275)	0.106 (0.650)	0.359 * (0.052)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	32	57	88	32	57	88	49	69	120	49	69	120
R-squared	0.480	0.346	0.177	0.350	0.297	0.142	0.303	0.138	0.091	0.289	0.143	0.091

Panel C: OLS Regressions with factors and success measures by incumbency

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Incumbent	Incumbent	Incumbent	Incumbent	Incumbent	Incumbent	Outsider	Outsider	Outsider	Outsider	Outsider	Outsider
	PE	Public	Broad	PE	Public	Braod	PE	Public	Broad	PE	Public	Broad
	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure	Measure
Factor 1	0.071 (0.285)	0.077 (0.163)	0.022 (0.551)	-0.094 (0.550)	-0.009 (0.941)	0.036 (0.703)	0.228 * (0.093)	0.292 ** (0.024)	0.123 (0.138)	0.088 (0.571)	0.216 * (0.099)	0.148 * (0.091)
Factor 2	-0.182 *** (0.004)	-0.119 ** (0.019)	-0.069 * (0.085)				-0.480 *** (0.002)	-0.032 (0.788)	-0.074 (0.260)			
Factor 3	0.056 (0.361)	0.043 (0.426)	0.029 (0.484)				0.034 (0.802)	-0.069 (0.570)	0.008 (0.923)			
Alt. Factor 1	0.125 (0.131)	0.079 (0.266)	0.069 (0.210)	0.154 ** (0.030)	0.126 ** (0.038)	0.060 (0.139)	0.005 (0.958)	0.008 (0.915)	0.007 (0.892)	0.452 *** (0.004)	0.234 ** (0.023)	0.153 * (0.057)
Alt. Factor 2				-0.142 ** (0.036)	-0.066 (0.209)	-0.039 (0.314)				-0.300 ** (0.039)	0.092 (0.438)	-0.002 (0.971)
Const.	0.192 (0.108)	0.271 (0.229)	0.383 ** (0.026)	0.180 * (0.084)	0.310 (0.105)	0.402 ** (0.015)	1.272 *** (0.000)	-0.141 (0.337)	0.667 *** (0.000)	1.213 *** (0.000)	-0.104 (0.257)	0.671 *** (0.000)
Year Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	56	89	144	56	89	144	25	37	64	25	37	64
R-squared	0.317	0.185	0.084	0.294	0.169	0.076	0.636	0.304	0.124	0.517	0.297	0.123