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ARE CEOS DIFFERENT? CHARACTERISTICS OF TOP MANAGERS

Steven N. Kaplan
Morten Sorensen

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ABSTRACT

We use a dataset of over 2,600 executive assessments to study thirty individual characteristics of candidates for top executive positions – CEO, CFO, COO and others. We classify the thirty candidate characteristics with four primary factors: general ability, execution vs. interpersonal, charisma vs. analytic, and strategic vs. managerial. CEO candidates tend to score higher on these factors; CFO candidates score lower. Conditional on being a candidate, executives with greater interpersonal skills are more likely to be hired, suggesting that such skills are important in the selection process. Scores on the four factors also predict future career progression. Non-CEO candidates who score higher on the four factors are subsequently more likely to become CEOs. The patterns are qualitatively similar for public, private equity and venture capital owned companies. We do not find economically large differences in the four factors for men and women. Women, however, are subsequently less likely to become CEOs, holding the four factors constant.

Steven N. Kaplan
Booth School of Business
The University of Chicago
5807 South Woodlawn Avenue
Chicago, IL 60637
and NBER
steven.kaplan@chicagobooth.edu

Morten Sorensen
Copenhagen Business School
Solbjerg Plads 3
2000 Frederiksberg
Denmark
mso.fi@cbs.dk

Large management, popular and anecdotal literatures describe the traits, skills and abilities that characterize CEOs and other leaders. These literatures imply that CEOs differ from other executives. They implicitly, and often explicitly, suggest what types of activities aspiring CEOs should undertake in order to increase their chances of becoming a CEO. For example, Collins (2001) argues that great CEOs have unwavering resolve and are compellingly modest. George et al. (2007) argues that leaders should “demonstrate a passion for their purpose, ... establish long-term, meaningful relationships and have the self-discipline to get results.” Waldman and Yammarino (1999) argue that CEOs need to be charismatic. Ones and Dilchert (2009) summarize the industrial psychology literature as finding that successful executives have high cognitive ability, conscientiousness / achievement and extraversion / assertiveness. Pfeffer (2015 and 2016), on the other hand, generally criticizes these kinds of suggestions as “leadership BS,” not describing what leaders and CEOs actually are like, and he argues that “leadership is not about winning popularity contests or being the most beloved person in a social organization.”

Because it is difficult to obtain detailed systematic information on a meaningful sample of CEOs, there are few empirical studies of this topic. The management literature generally relies on publicly observable measures, such as job tenure, college attended and career path (see Hambrick 2007) or studies smaller, specific samples of CEOs (e.g., 95 credit union CEOs in Colbert et al. 2014, or 32 technology firms in O’Reilly et al. 2014).¹

Adams et al. (2016), Kaplan, Klebanov and Sorensen (2012) (henceforth “KKS”), Palaiou and Furnham (2015) and Green et al. (2015) are recent exceptions. Adams et al. use cognitive and non-cognitive test data measured at age 18 on a large sample of Swedish men.

¹ For other work Bandiera et al. (2015), Benmelech and Frydman (2015), Bennedsen et al. (2008), Bertrand and Schoar (2003), Colbert et al. (2014), Falato et al. (forthcoming), Malmendier and Tate (2005 and 2009), Mintzberg (2013), Ulrich et al. (2009), and Yammarino et al. (2005).

They find that CEOs score higher on the cognitive and particularly non-cognitive tests than other high-caliber professionals – doctors and lawyers. Furthermore, larger companies hire the more talented CEOs. KKS (2012) use detailed personality assessments to study 316 candidates for CEO roles in venture capital and private equity-funded companies. Using this data, they classify the candidates by two factors: the first factor captures each candidate’s general ability; the second factor describes the candidate as being either more execution oriented or having greater interpersonal skills. In their sample, they find that CEOs with greater general ability and, particularly, more execution-oriented characteristics tend to be more successful CEOs. Palaiou and Furnham (2015) study the (self-reported) personality scores of 138 CEOs and almost 8,000 other employees of UK companies administered by a psychological consulting firm. They find that CEOs are more extraverted, more agreeable, and, particularly, less neurotic and more conscientiousness than other employees. Green et al. (2015) use linguistic algorithms to measure the extraversion of company executives during earnings conference calls. They find that extraverted CFOs and CEOs earn higher salaries and extraverted CFOs are more likely to be promoted to CEOs.

This study extends KKS (2012) by expanding the dataset to more than 2,600 assessments, including assessments for positions other than CEO. The assessments are based on four-hour structured interviews performed by ghSMART.² After each interview, ghSMART produces an assessment report with a detailed description of the candidate’s background and characteristics, including ratings of thirty specific characteristics and abilities (see Table A-1). Most of the assessments were completed when the candidates were considered for CEO, COO, CFO or other top executive positions. The firms requesting the assessments include companies governed

² Botelho et al. (forthcoming) also use the ghSMART data to study the determinants of CEO success.

under different ownership forms, including venture capital, private equity-owned (as in KKS), other privately owned, and publicly traded companies. We also track the candidates' subsequent career paths, both to determine whether they were hired for the positions for which they were assessed as well as whether they ultimately became top executives, particularly CEOs, of the assessing companies or any other companies.

The dataset allows us to investigate several questions. First, to identify the main dimensions of variation in managerial characteristics, we use factor analysis — a traditional empirical approach in studies of personality traits (see Fabrigar et al. 1999, and Borghans et al. 2008). We find four factors that have intuitive interpretations: general ability, execution vs. interpersonal, charisma vs. analytic, and strategic vs. managerial details. The first two factors are similar to those found in KKS (2012).

The first factor loads positively on all assessed characteristics and appears to represent a candidate's overall talent. This factor can be interpreted as analogous to the general measure of managerial talent and ability assumed by theorists such as Rosen (1981).

The second factor loads positively on Respect, Open to Criticism, Listening Skills, and Teamwork, which reflect communication and interpersonal abilities, and it loads negatively on Fast, Efficiency, Aggressive, Persistence, and Proactive, which describe capabilities related to resoluteness and execution skills. Thus, this factor classifies candidates as having either greater interpersonal or greater execution skills.

The third factor loads positively on Analytical Skills, Organization and Attention to Detail. It loads negatively on Enthusiasm, Persuasion, Aggressive and Proactive. Hence, we interpret this factor as classifying candidates as being either more analytical or having stronger charisma.

The fourth factor loads positively on Strategic Vision, Brainpower and Creative while loading negatively on Attention to Detail, Holds People Accountable, and Organization. We interpret this factor as classifying candidates as having a broader and more strategic perspective versus focusing more narrowly on details pertaining to the organization and people management. In short, the fourth factor describes candidates as either strategic or focused on managerial details.

Second, using the factor decomposition, we find that CEO candidates tend to have greater general talent, greater execution ability, more charisma, and greater strategic ability. In contrast, CFO candidates tend to have lower general talent, less charisma, and be more analytical and with a focus on managerial details. In short, according to our classification, the characteristics of CEO and CFO candidates are opposites.

Third, we investigate who among the assessed candidates are hired. For each type of position (CEO, CFO, etc.), hired candidates have greater interpersonal skills than the average assessed candidates, suggesting that such skills are important in the selection process.

Fourth, we pursue an out of sample analysis that considers who ultimately becomes a CEO. To do this, we follow the executives who were considered for positions other than the CEO position at the time of the assessment and see whether they subsequently become CEOs. Among these non-CEO candidates, those who have greater general ability and more execution, charisma, and strategic abilities are more likely to subsequently become CEOs. This result provides external validity for our other findings. It confirms that the differences in personalities across different positions continue to hold more generally for executive who are hired or promoted without the involvement of ghSMART and for other companies than those in our initial sample.

Fifth, our results are qualitatively similar for candidates in the three primary types of ownership structures – public, private equity and venture capital owned – suggesting that the results in KKS (2012) generalize from private equity-funded companies.

Sixth, we compare female and male executives. We find that there are no meaningful differences in the four factors for men and women. Women, however, are subsequently less likely to become CEOs, holding the four factors constant.

The paper proceeds as follows. Section I describes our data and sample. Section II explores the main dimensions of variation in the directly measured executive characteristics and their relation to subjective classifications. Section III considers the relation of the executive characteristics to the executive positions. We also measure how the candidates who were actually hired differ from all of those who were interviewed. Section IV studies the relationship between executive characteristics and subsequent career positions. Section V concludes with a discussion of how our results relate to the economics, management and popular literatures.

I. Data

A. Assessments

Like KKS (2012), we rely on a proprietary data set containing detailed assessments performed by ghSMART, a consulting firm that focuses on assessing top management candidates. Investors, company boards or company management teams engage ghSMART to assess candidates both for new and existing roles. The majority of the executives are candidates for management positions at companies funded by venture capital, growth equity, or buyout firms. We combine growth equity and buyout funded companies into a group we call private equity funded companies. The assessments in our sample (and interviews on which they are

based) were completed primarily between 2001 and 2011. With a few exceptions, the candidates were employed and interviewing for positions in the United States and Canada.

Unlike the sample of venture capital and private equity-backed firms in KKS (2012), this sample also contains a large number of candidates for publicly-traded and other private companies. More importantly, the sample includes candidates evaluated for non-CEO positions. In most of the analysis, we focus on the candidates assessed for CEO, CFO, and COO positions, although this constitutes only about half the sample. The other half contains candidates for a number of other executive positions. We use CXO to denote CEO, CFO, or COO positions (i.e., the number of CXO candidates is the union of candidates assessed for CEO, CFO, and COO positions). We use ALL to denote all the candidates in the sample, including candidates for positions that are neither CEO, CFO, or COO positions. Some candidates are considered for several positions (e.g., either CEO or CFO). These candidates are included in all the categories they are interviewed for, so the sum of CEO, CFO, and COO candidates sometimes exceeds the number of CXO candidates.

ghSMART is not an executive recruiting firm and, therefore, does not suggest which candidate(s) to interview for a given position. ghSMART only assesses the specific candidate(s) under consideration. ghSMART does not receive a fee contingent on whether or not a candidate is hired. It has no apparent incentives to deliver biased assessments. According to ghSMART, its main objective is to provide accurate assessments to sustain its reputation and generate repeat business. No candidate has ever refused to participate in an interview or suggested that it presented an unreasonable burden or intrusion into the candidate's privacy.

ghSMART's assessments are based on four-hour structured interviews. During the

interview, the interviewer³ asks for specific examples of the candidate's actions and behavior at every previous job and life stage, starting with the candidate's childhood and progressing through the candidate's education and subsequent career path. The interviewer then summarizes the candidate's history and behavior in a 20 to 40-page report. The report is effectively a mini-biography of the candidate.

In addition to the narrative, each report includes scores or ratings on thirty specific characteristics in five general areas. These areas, defined by ghSMART, are Leadership, Personal, Intellectual, Motivational, and Interpersonal. Table A-1 repeats Table I from KKS (2012) and shows an excerpt from ghSMART's internal guidelines that describe the thirty characteristics along with the behaviors that determine their scoring.⁴

The reports also include information about the candidates' educational and family backgrounds. Reports sometimes include scores of other characteristics that are specific to the particular company or situation. Because these characteristics are not consistently and systematically reported, we do not include them in our analyses.

For each of the thirty characteristics, the report scores the candidate with a letter grade from D (lowest) to A+ (highest), reflecting the extent to which the candidate's past behavior reflects the nature of the particular characteristic. We convert these letter grades to numerical scores as follows. We code all grades of B or below as 1 (we combine these grades because there are relatively few of them). We code grades of A and A+ as 4, as there are relatively few A+'s. We code grades of B+ as 2 and grades of A- as 3. Our results are qualitatively similar under different coding schemes.

³ The ghSMART interviewers generally hold doctoral degrees or degrees from top MBA programs, and have worked at consulting firms (such as McKinsey & Co., Bain, and Boston Consulting Group). ghSMART reports a high degree of consistency of assessments across interviewers. When we include interviewer fixed effects, as indicated in the tables, the magnitude and statistical significance of the main coefficients are largely unchanged.

⁴ Smart and Street (2008) provide additional information and detail about ghSMART's interviewing methodology.

An important concern is whether it is possible for the candidates to “game” or “fake” the interviews by providing answers that they believe will help them be hired, even if they do not reflect their actual personalities. As discussed in KKS (2012), there are a number of reasons why we believe the ghSMART analyses and ratings are reliable. The assessments are formed using the best practices from organizational psychology, including using external interviewers not self-assessments, and using extensive structured interviews rather than shorter questionnaires. In organizational psychology, these practices have been found to produce valid assessments, which are consistent across tests and robust to gaming and faking by the test subjects. ghSMART charges at least \$20,000 per assessment and has seen its business grow substantially, suggesting that ghSMART customers find the assessments useful.⁵ Moreover, at the time the assessments were conducted, ghSMART and the candidates would not have been aware of the factor structure we document. Finally, it is difficult to reconcile the empirical results with significant faking. If the assessments were uninformative, there would not be a relationship between the assessments and subsequent career trajectory that we document in the out-of-sample analysis.

For each candidate, we code several additional variables. We note whether the candidate is an internal candidate or an outside candidate. We note the gender of the candidate. We consider the industry of the company and the candidate’s previous experience in this industry. When possible, we include the size of the company. Because many of the companies are private, it is not possible to measure size precisely. Instead, we categorize companies as either start-up, companies with sales below \$100 million, with sales between \$100 million and \$1 billion, and with sales above \$1 billion.

⁵ Additionally, albeit anecdotally, several PE firms told us that they do not make any investments without a CEO assessment of the type ghSMART provides. While economic theory suggests that it may be rational for candidates to attempt to misrepresent their types, economic theory also prescribes that it would be irrational for investors to rely on such assessments if they were uninformative. Assessments also are costly: in addition to the fee charged by ghSMART, assessments require at least four hours of a candidate’s time.

Research assistants performed much of the coding of the assessments. The research assistants read the assessments and transcribed the ratings directly from the reports. After reading the assessments, we also asked the research assistants to provide their subjective ratings of each candidate based on the description or mini-biography in the assessments. The research assistants rated whether the candidate appeared to be a “nice person,” “a risk taker,” an “outgoing person” (versus a reserved one), “good at sales,” and whether the candidate had a “narrow or broad career path.” For these ratings, we did not provide the research assistants with any more precise guidelines or definitions.

B. Hiring Decisions and Subsequent Career Trajectory

We code the candidate’s subsequent career path following the interview, including whether the candidate was hired for the position for which he or she was assessed and the candidate’s subsequent managerial positions. We determine the subsequent career path primarily from public sources. We rely on LinkedIn, which has extremely good coverage of corporate executives. We also use CapitalIQ, Zoominfo.com, LexisNexis, and general internet searches. In a few cases, we use information from KKS (2012) obtained from surveying some of the buyout and venture capital firms that engaged ghSMART to assess CEO candidates.

C. Sample Descriptive Statistics

Table 1 shows the distribution of candidates in the sample. Panel A shows that the sample contains more than 2,600 assessments, taking place between 2000 and 2013, with over 2,400 occurring between 2001 and 2011.

Panel B presents additional information about the candidates. About 10% of the candidates are female. Roughly 5% of CEO candidates, 8% of CFO candidates, and 8% of COO candidates are female.

The average candidate has worked for his or her current company for an average of 4.9 years out of an average career of 23.5 years. Almost 60% of the candidates are outsiders, i.e., they did not work for the company for which they were being assessed. The average candidate has worked for 4.6 companies during his or her career up to the time of the assessment. Almost 60% of the assessed candidates were subsequently hired for or retained the position for which they were assessed.

Table 2 presents more information on the assessed candidates. Panel A presents the distribution of positions and types of ownership. The executives in our sample are assessed for a diverse set of positions. Roughly half of the sample is assessed for CEO, CFO or COO positions. About 31% of the candidates are assessed for CEO positions; 13% for CFO; and 6% for COO. Almost 1,000 candidates were assessed for jobs that can be considered functional level jobs. About 40% of these were financial jobs such as controller or vice president of finance. Slightly more than 25% were in operations, while slightly fewer than 25% were in marketing.

The sample candidates were assessed for companies that had a range of ownership forms. We characterize ownership status as VC-funded, growth equity-funded, buyout-funded, public, other private and investor. Almost half of the sample comes from buyout and growth equity funded companies (classified as private equity funded companies below). An additional 15% come from venture capital funded companies. Unlike KKS (2012), this sample also includes executives from publicly owned companies who constitute 11% of the sample.

Panel B presents the relationship of hiring outcomes to whether the candidate is an insider, i.e., currently works for the company. In many cases, the insider is also the incumbent for the position. Roughly 59% of the assessed executives are hired for the position. Insiders are substantially more likely to be hired (or retained) than outsiders.

Panel A of Table 3 reports the research assistants' subjective assessments by position. They rated 78% as nice persons, 58% as risk takers, 74% as having outgoing personalities, 65% as being good at sales, and 35% as having broad past careers. These ratings provide background and perspective for our interpretation of the factor scores, as discussed below. CEOs are significantly more likely, and CFOs significantly less likely, to be perceived as risk takers, as having outgoing personalities, and as being good at sales.

Panel B of Table 3 reports the subjective assessments of all candidates by the ownership status of the assessing company. VC-funded firms are more likely to assess risk takers while public companies are less likely to assess outgoing candidates and candidates with broad career paths.

Panel C reports the subjective assessments of CEOs by the ownership status of the assessing company. Perhaps surprisingly, private equity-owned firms seem less likely to consider risk takers and more likely to consider nice persons for their CEO positions than are public companies.

These subjective ratings and comparisons are intended to be suggestive. In the next section, we show how they relate to the factors we estimate in the data.

II. Characteristics and the Four Factors of Managerial Personalities

Table 4 presents the average scores for the thirty characteristics. The average scores for each position are similar, with the exception of CFOs who score lower overall.

The scores are highly correlated across characteristics, as also documented in KKS (2012), making it difficult to infer the effects of individual characteristics. E.g., it is not feasible to include all thirty characteristics as explanatory variables in a multivariate regression due to multi-collinearity. Therefore, like KKS (2012), we use a factor analysis to isolate the main dimensions of variation in the characteristics.

For some executives, ratings for one of the thirty characteristics are missing. Rather than discarding those executives from the sample, we augment the data by estimating the expected value of the missing rating using an OLS regression with the other characteristics as explanatory variables.

A. *Factor Scores*

Panels A and B of Table 5 show the results of the factor analysis.⁶ Panel B shows the eigenvalues and the fraction of the total variation in the characteristics that are explained by the first six factors. An eigenvalue exceeding one suggests that the factor is valid. Based on these eigenvalues, we focus on the first four factors from the factor analysis that combined explain 51.2% of the total variation in the candidates' characteristics.

⁶ In the literature, the term factor analysis is used to describe a range of statistical procedures, including procedures that are sometimes known as principal component analysis (PCA). Our estimates are produced using Stata's "factor" command with the "ml" and "altdivisor" options, and all presented factors are non-rotated. The Kaiser-Meyer-Olkin measure of sampling adequacy is 0.94, suggesting that the data are very suited for factor analysis.

For the four factors, the factor loadings for the individual characteristics are shown in Panel A.⁷ All four factors have natural interpretations. The first two factors are similar to those found in KKS (2012), which used a much smaller sample (of 316 CEOs), and therefore did not have sufficient statistical power to recover factors three and four.

Panel B of Table 5 shows that the first factor captures 32.2% of the total variation. Panel A shows that this first factor has positive loadings on all the individual characteristics, ranging from a loading of 0.29 on Integrity to a loading of 0.74 on Proactive. We therefore interpret this factor as a measure of the candidates' general ability.⁸ The structure of this first factor is commonly encountered in factor analysis, and it reflects the general empirical tendency of characteristics to all move together.

The second factor explains 9.9% of the variation in the characteristics and has two distinct sets of loadings. The more positive loadings, in decreasing order, are for the characteristics: Respect, Open to Criticism, Listening Skills and Teamwork. These characteristics appear to capture a candidate's interpersonal skills, and they also arguably reflect the Big Five personality trait of agreeableness. In contrast, the more negative loadings are on the characteristics: Aggressive, Fast, Proactive, Holds People Accountable and Removes Underperformers. These characteristics arguably reflect a candidate's execution ability.

The second factor, therefore, appears to sort candidates into those with better interpersonal skills (and agreeableness) versus those with greater execution ability. It assigns positive scores to candidates with greater interpersonal skills and negative scores to candidates

⁷ Note that the sign and magnitude of factor loadings are unidentified and cannot be interpreted. Mathematically, a factor is a vector that is only identified up to scale and sign. It classifies characteristics that tend to vary together and defines a scale that measures this covariation, but the scale itself is arbitrary. If one were to, say, reverse the signs and double the magnitudes of all the individual loadings of a factor, this would change the scale but the statistical inference about the effects of all factors would remain unchanged.

⁸ The pattern is also consistent with individual interviewers generally rating candidates higher or lower. The results are largely unchanged when we include interviewer fixed effects.

with greater execution ability. The importance of this factor is consistent with the models in Rotemberg and Saloner (1993) and Bolton, Brunnermeier, and Veldkamp (2013) that contrast resoluteness and overconfidence with empathy and interpersonal skills in their models of CEO types.

The third factor explains 5.2% of the total variation in the characteristics. Panel A shows that its more negative loadings are for: Enthusiasm, Persuasion, Aggressive, Proactive, and Fast. These characteristics seem to describe more charismatic candidates. In contrast, the more positive loadings are on: Analytical Skills, Attention to Detail, Organization and Brainpower, characteristics that describe candidates with stronger analytical skills.

We thus interpret the third factor as sorting candidates into those with more charismatic personalities, who have a negative score on this factor, and candidates who have more analytical skills, who have a positive score on this factor. This factor appears to be negatively related to the Big Five personality trait of extraversion and positively related to the Big Five personality trait of conscientiousness.⁹

Finally, the fourth factor explains 3.9% of the variation in the characteristics. The more positive loadings are on: Strategic Vision, Brainpower, Analytical Skills, and Creative; the more negative loadings are on: Holds People Accountable, Efficiency, Attention to Detail, and Organization. This factor appears to sort candidates into those who focus on the bigger picture and have a more strategic focus versus those who have more managerial approach with a narrower focus on details. The fourth factor thus sorts candidates into those with a big-picture and strategic focus versus those with a narrower attention to managerial details.

⁹ See also Gow et al. (2016) who use a cluster analysis on CEOs and relate them to the Big Five factors.

Overall, the results are consistent with the factor analysis in KKS (2012) performed on a smaller sample of 316 candidates for CEO positions. The first two factors are qualitatively similar. The candidates vary in their general level of ability as well as in their tilt towards either interpersonal or execution-related characteristics. The larger sample used here further allows us to identify the third and fourth factors. Candidates vary in their level of charisma (versus analytical) and their focus on strategic issues (versus managerial details).

B. Factors Scores and Subjective Ratings

Panel C of Table 5 shows pairwise correlations between the four factors, the five subjective ratings, and gender. Candidates whom the research assistants subjectively rated as nice persons score significantly higher on general ability (Factor 1), interpersonal (positive Factor 2), and charisma (negative Factor 3). The relationship is particularly strong for Factor 2, which is consistent with our interpretation of the factor as measuring interpersonal skills. The concomitant implication, that candidates with stronger execution skills are less likely to be perceived as nice persons, is also consistent with Pfeffer (2015).

Executives perceived as greater risk-takers score significantly higher on general ability (Factor 1), execution (negative Factor 2), charisma (negative Factor 3) and strategic focus (positive Factor 4).

Executives perceived as outgoing score significantly higher on general ability (Factor 1), charisma (negative Factor 3) and strategic focus (positive Factor 4). The correlation with (negative) Factor 3 is particularly strong, which is consistent with our interpretation of the factor as measuring charisma.

Executives perceived to be good at sales score higher on general ability (Factor 1), execution (negative Factor 2) and charisma (negative Factor 3). The strongest correlations are with the general ability and charisma factors.

Finally, we note that the correlations between factor scores and gender are small, both economically and statistically. None of the correlations between gender and the factor scores are statistically significant.

Overall, the correlations in Panel C of Table 5 indicate that the subjective evaluations of the assessments by our research assistants are strongly consistent with our interpretation of the factors generated by the factor analysis.

III. Executive characteristics and executive positions

A. Factor Scores for candidates for different positions

Panel A of Table 6 reports the average factor scores across positions, and Figure 1 presents these data graphically. It is apparent that CEOs and CFOs receive diametrically opposed scores. For each of the four factors, the average scores of CEO and CFO candidates have opposite signs. CEO candidates score highest on general ability (Factor 1), execution (negative Factor 2), charisma (negative Factor 3) and strategic focus (positive Factor 4). CFO candidates, on the other hand, have lower scores on general ability, and score higher on interpersonal (positive Factor 2), analytical (positive Factor 3), and focus on managerial details (negative Factor 4). These patterns show in Figure 1, where CEOs are in the upper left quadrant while CFOs are in the lower right quadrant.

Panel A also lists factor scores for candidates for COO, CXO (either CEO, CFO or COO) and ALL candidates in the sample. COO candidates tend to have factor scores between CEO

and CFO candidates (except for Factor 4, suggesting that COOs have a stronger focus on managerial details). These results suggest that CEOs are substantially different from other executives in intuitive ways.

The results are consistent with those in Graham, Harvey and Puri (2013) who also find that CEOs are different from CFOs. In their survey-based data, they find that CEOs are more optimistic and more risk-tolerant than CFOs.

Although not reported in the table, the sample also contains thirty-three founders. They score extremely high on charisma (negative Factor 3). We believe that this, too, is consistent with our interpretation and the validity of these measures.

When interpreting the scores above, it is important to acknowledge that they are relative scores within the sample. While the CFOs may score lower on some of these factors than CEOs, that does not mean they are low relative to the average person. The results in Adams et al. (2016) suggest that top executives as a group have above average ability. Moreover, when CEOs are found to score higher than CFOs on general ability, execution, charisma, and strategic focus, these scores should also be interpreted relative to the sample averages. Figure 1 shows that the factor scores are constructed such that the average factor scores in the sample are mechanically zero. It is thus important that a substantial part of the sample consists of Other candidates (i.e., non-CXO candidates). These Other candidates provide a control group that allows us to interpret the factors scores of the CEO, CFO, and COO candidates relative to this control group. In contrast, if the sample consisted of just CEO and CFO candidates, then mechanically for every factor where CEOs were above zero, on average, CFOs would be below zero and vice versa.

Panel B of Table 6 reports the average factor scores by company ownership – venture capital, private equity and public. The relative factor scores of CEOs relative to other managers

are qualitatively similar across the different types of ownership. CEO candidates have greater general ability, stronger execution skills, and a more strategic focus. For all three groups, CEOs have more charisma than CFOs; only for public companies, do CEOs not have the most charisma of any group. Across all three groups, CFOs are substantially more analytical than the other candidates. Across all types of positions, public company candidates have substantially greater general ability and are more analytical (Factor 3) than candidates for venture capital and private equity. Finally, CEOs for venture capital-backed companies are substantially more charismatic (as opposed to analytical) and have greater strategic focus (as opposed to focusing on managerial detail) than other CEO candidates.

B. Factor scores for candidates who are hired

The average factor scores for candidates who are hired are shown in Panel C of Table 6 and illustrated by the arrows in Figure 1. Table 6 and Figure 1 show that hired candidates score higher on general ability (Factor 1) than the average assessed candidate. In addition, hired executives have better interpersonal skills and worse execution skills (Factor 2).

Panel A of Table 7 presents probit estimates of these differences. The reported coefficients are marginal effects. A coefficient of one means no effect. A coefficient above one gives the increase in the marginal probability of being hired arising from a one standard deviation-increase in this factor. The first set of regressions includes controls for industry and year-fixed effects. The second set of regressions also includes controls for the number of years the executive has worked in the assessing company's industry, an indicator for whether the executive is an insider, and an indicator for the candidate's gender (female is coded as one).

Panel A of Table 7 shows that, except for COOs, hired candidates score significantly higher on general ability. The coefficient for COOs is also positive but not significant (COOs have fewer observations and weaker statistical power). For example, the coefficients in Specification 6 show that for candidates for CEO positions, a one standard deviation increase in general ability is associated with a 24.8% increase in the likelihood that the candidate is hired.

In most specifications, hired candidates also have significantly better interpersonal skills (versus execution skills). Specification 6 indicates that a one standard deviation increase in interpersonal is associated with a 17.9% increase in the probability of being hired, suggesting that interpersonal skills are valued differently in the ultimate hiring decision than when identifying the pool of considered candidates. This is particularly interesting for CEOs, because CEO candidates are distinguished by their execution skills, and because KKS (2012) find that execution skills are more strongly correlated with CEOs' success.

Candidates who are hired score significantly higher on charisma (negative Factor 3) than the average candidate. When we include controls for the number of years in the industry, insider, and gender, however, only the coefficient on COOs remains significant. This may be a consequence of insiders tending to be perceived as more charismatic and less analytical than outsiders.

Generally, the coefficients on the fourth factor are insignificant and with varying signs, suggesting that a strategic focus versus a focus on managerial details does not affect the hiring decision. Alternatively, Factor 4 captures the smallest amount of variation in the candidates' characteristics and the sample may not have sufficient statistical power to capture the effect of this factor.

The results indicate that greater ability and, particularly, greater interpersonal skills help candidates land the jobs for which they are being considered. Consistent with this, in the forthcoming book by two senior ghSMART executives, Botelho and Powell (2018) rely on this result and their experiences with assessments to recommend that executives work hard to present themselves as likeable when interviewing for a job.

The estimates of the effects of two of the control variables are also interesting. First, insider candidates are significantly more likely to be hired across all positions. Second, gender is insignificant for all positions. However, while insignificant, the estimated coefficients on gender imply that female CEO candidates are 28% less likely to be hired while female CFO candidates are 42% more likely to be hired. The insignificant coefficients are likely a result of the low number of female candidates in the sample and the resulting weak statistical power.

Panel B of Table 7 shows estimates of the probit model after dividing the sample into insiders and outsiders. The results are largely similar to those for the combined sample. One difference between insiders and outsider is that talent appears to be more important for outside candidates.

Panel C of Table 7 further includes controls for the candidate's number of years in the industry and the subjective ratings: nice person, risk taker, personality, good at sales and career path. The estimated coefficients remain qualitatively similar to those in Panel B. Like interpersonal skills (positive Factor 2), the rating on nice person is associated with an increased likelihood of being hired, although it is not always significant. CEO candidates, particularly outside candidates, also are more likely to be hired when they are rated as greater risk-takers.

Panel D of Table 7 repeats the analysis from Panel A for companies of different size. Small companies are defined as companies with revenues less than \$100 million; large

companies have revenues exceeding \$1 billion; medium companies have revenues in between the small and large cutoffs. (Note that the number of observations for the size subsamples do not add up to the total number of observations because we could not obtain revenue estimates for all companies.) Overall, the results are qualitatively similar for companies of all sizes.

Finally, Panel E of Table 7 repeats the analysis for companies with different ownership structures – venture capital backed, private equity backed, and public. For all three structures, executives with greater general ability are significantly more likely to be hired. Executives with greater interpersonal skills are significantly more likely to be hired by PE firms and more likely to be hired by public companies (although this difference is not statistically significant). The results are qualitatively similar for CEOs of private equity backed companies. We do not have enough observations to estimate the regressions separately for public company CEOs.

IV. Executive Characteristics And Subsequent Careers

The previous results indicate that candidates for different positions have different characteristics and skills. In this section, we consider whether those particular characteristics and skills are predictive of the candidates' future career progression.

While this analysis is inherently interesting, it also provides an implicit “out-of-sample” test of the previous results. The assessments and hiring decisions of the candidates in our sample may not be representative of these decisions more generally. For example, ghSMART's interviewers might rate CEO candidates higher on certain characteristics, because they expect CEO candidates to have these characteristics or because this bias is inherent in ghSMART's assessment methodology. Alternatively, the characteristics and factor scores may be specific to ghSMART's assessment methodology and lose their validity outside of this assessment setting.

One way to assess the general validity of the assessments and factor structure is to see whether they predict the candidates' subsequent career progression. We are particularly interested in whether the characteristics of non-CEO candidates, i.e. candidates that were considered for a position other than a CEO position when assessed by ghSMART, can predict whether these candidates subsequently become CEOs.

Note that these subsequent promotions or job changes occur without the involvement of ghSMART. They may involve other recruiting or assessment firms, or they may occur internally in firms, following the firms' HR practices. Either way, the finding that the assessments in our data remain able to predict these career progressions would suggest that our results are not specific to the particular setting involving ghSMART, and it would confirm that different positions require candidates with different characteristics and skills.

For each of the candidates in our sample, we used LinkedIn, CapitalIQ and other internet searches to determine their subsequent career path and whether the candidate subsequently becomes a CEO, COO or CFO. For each position, for a given title, Table 8 reports the fraction of candidates who eventually end up with this title. For example, Panel A reports whether candidates eventually become CEOs based on whether the candidates interviewed for a CEO position in our sample. Over 78% of the candidates who interviewed for CEO jobs, ultimately became CEOs. More importantly, slightly over 10% of the candidates who did not interview for CEO positions in our sample eventually became CEOs. The other panels report similar results for CFOs, COOs, and CFOs. Panel D shows that just 4.5% of CFO candidates ultimately become CEOs.

A. *Average Factor Scores*

Panel A of Table 9 reports the average factor scores of candidates who eventually obtain a management position, but did not interview for such a position. Candidates who were not considered for a CEO position, but nevertheless ultimately become CEOs, have higher scores on general ability, execution, charisma, and strategic focus. This pattern mirrors our earlier results on different executive characteristics across different positions, and it supports our finding that this pattern is specific to CEOs. More formally, in the next section, we use probit analyses to estimate statistical significance and to control for other variables that might be driving these results.

B. *Probit Analysis*

In the probit regressions in Panels B and C of Table 9, the dependent variable is an indicator for whether the candidate eventually achieves the indicated executive position (CEO, COO or CFO), and the explanatory variables include the candidate's observed characteristics at the time of the interview, including the factor scores. For each specification, the sample is restricted to candidates who are assessed for positions other than the indicated executive position eventually reached.

Panel B of Table 9 shows results for the entire sample, with the first three specifications containing industry and year fixed effects. Specification 1 in Panel B shows that the likelihood of becoming a CEO is significantly related to the four factors in exactly the same direction as they are related to CEO characteristics. The likelihood of an executive subsequently becoming a CEO increases with general ability (Factor 1), execution (negative Factor 2), charisma (negative Factor 3) and strategic focus (positive Factor 4). A one standard deviation change in these four

factors is associated, respectively, with a 19.8%, 16.5%, 13.5% and 16.7% increase in the likelihood of becoming a CEO.

Specification 2 suggests that candidates who are more analytical (and less charismatic) are significantly more likely to become CFOs. Specification 3 indicates that candidates with more general ability and more focus on managerial details are more likely to become COOs.

Panel C repeats Specifications 1 to 3 for venture capital, private equity and publicly owned companies. While the results are not always statistically significant, likely due to a decline in the statistical power from the smaller sample sizes, the qualitative patterns remain similar for all three groups for CEOs. Executives rated higher in general ability, execution, charisma, and strategic focus are more likely to become CEOs for all three types of companies. Across all three groups, the coefficients on execution and strategic focus are particularly large.

Specifications 4 to 6 of Panel B of Table 9 include the three additional control variables: years in industry, insider and female. The results are qualitatively similar to those in the first three regressions.

Specifications 7 to 9 of Panel B of Table 9 further include the five subjective ratings, and the results are qualitatively similar to those in the previous specifications. For CEOs, the results for the factors are similar, but only Factor 4 (strategic focus) remains statistically significant. The reduced significance of Factor 2 is likely driven by its correlation with the rating for nice person. Like executives with high scores on Factor 2 (low execution but high interpersonal), executives with a higher rating on nice person are also less likely to become CEOs. Again, these results support Pfeffer (2015) who says that CEOs cannot be particularly nice people. Similarly, the reduced significance of Factor 3 (charisma) is likely driven by its correlation with being a risk taker and good at sales, both of which are also significantly related to becoming a CEO.

These results also are strongly consistent with those in Green et al. (2015) that more extraverted CFOs are more likely to become CEOs.

Overall, these “out-of-sample” results support the validity of the assessments and our earlier results about managerial characteristics. CEOs tend to be more talented, more execution-oriented, more charismatic and with a greater strategic focus. Non-CEOs with those characteristics are more likely to become CEOs than other non-CEOs. The different results for CFOs (versus CEOs) provide additional support for the validity of the assessments. The results strongly support the hypothesis that different characteristics and factors are important for different managerial positions. The results are also predictive for which candidates are more likely to ultimately become CEOs.

Finally, the results on gender in Specifications 4 to 9 of Panel B in Table 9 are notable. Holding talent and skills constant, female candidates are significantly less likely to become CEOs and COOs. (They also appear to be less likely to become CFOs, but the coefficient is not statistically significant).

V. Summary and Discussion

Using a data set containing more than 2,600 assessments of candidates for top managerial positions – including CEOs, CFOs, and COOs – we can classify the candidate’s characteristics by four factors: general ability, execution versus interpersonal, charisma versus analytical, and having a strategic focus versus a focus on managerial details. The first two factors are similar to the factors identified in a smaller sample of just CEO candidates in KKS (2012).

CEO candidates typically have higher scores on general ability, execution, charisma, and a strategic focus. CFOs, on the other hand, have lower scores on general ability, and tend to be

more interpersonal, analytical, and with a focus on managerial details. According to our classification, these two types are diametrically opposite. These results are consistent with those in Graham et al. (2013) who also find that CEOs differ from CFOs in being more optimistic and less risk averse. In our data, risk taking is positively correlated with execution and charisma.

We also find that candidates considered by public and larger companies score higher than candidates from private and smaller companies. This is consistent with the results in Adams et al. (2016) who find that CEOs are more (cognitively and non-cognitively) talented on average, and that larger companies hire more talented CEOs.

Scores on the four factors predict the candidates' future career progression. Non-CEO candidates who have more CEO-like personalities are more likely to subsequently become CEOs. This "out-of-sample" test provides strong evidence that our assessments provide valid measures of the candidates' personalities. It also provides strong evidence that these personalities and skills can be assessed, that they are persistent, and that the distribution of personality across positions and hiring decisions documented here remain valid in other hiring situations, including promotion and hiring situations that involve firms other than those in our sample and do not rely on ghSMART.

We do not find any substantial differences in the four factors for men and women. We do find, however, that women are less likely to become CEOs and COOs, controlling for these factors.

Finally, hired candidates generally have greater interpersonal skills than the assessed candidates. This suggests that interpersonal skills are valued differently when used in the hiring decision than when used to identifying a pool of candidates. This is particularly interesting for CEOs, given that CEO candidates are especially distinguished by their execution skills, that

executions skills predict whether candidates subsequently become CEOs, and that the result in KKS (2012) show that execution skills are strongly correlated with success.

We believe these results both complement existing academic research and are potentially relevant for boards choosing CEOs as well as for candidates aspiring to become CEOs.

First, our results are relevant to previous academic work. The finding that CEOs are different from and more talented than other executives is consistent with the results in Adams et al. (2016) and Graham et al. (2013). The strong CEO loadings on the execution factor (versus interpersonal) and charisma are arguably consistent with Pfeffer (2016). The finding that CEOs are strong in charisma is consistent with the findings in Green et al. (2015) and Palaiou and Funrham (2015) that CEOs are more extraverted.

Second, the results in this paper and KKS (2012), taken together, suggest that boards should focus more on execution skills when choosing a CEO. While we do not consider subsequent performance in this paper, KKS (2012) study the performance of a subset of our sample and find that the execution factor is highly correlated with subsequent CEO success for private-equity funded companies. The results in this paper complement those in KKS (2012) by finding that the execution factor is important for distinguishing CEO candidates and for determining whether an executive ultimately becomes a CEO. The fact that the results in this paper are qualitatively similar for public company and private company CEOs suggests that the results in KKS (2012) are not specific to private equity.

Third, the result that hired CEO candidates score lower on execution skills (and higher on interpersonal skills) than interviewed candidates on average makes it natural to think that boards and shareholders overweight interpersonal skills in their hiring decisions. This seems possible, given that interpersonal skills are correlated with our research assistants' classification of

candidates as nice persons. This also is consistent with Barrick et al. (2012) who find that interviewers' first impressions and rapport with a candidate affects their evaluation of the candidate. This seems to be a productive avenue for future research.

Finally, the results potentially provide some guidance to those who aspire to be CEOs. Executives who score higher on execution, charisma and have a strategic focus are more likely to become CEOs. An important question is whether it is possible for a candidate to improve those factors or skills. It seems plausible that executives can improve execution skills by being more persistent, efficient and proactive. In fact, Drucker (1967) recommends precisely these actions to become an effective executive. It is less clear whether executives can improve their charisma and their strategic focus. This, too, is an interesting question for future research.

References

- Adams, Renee, Heitor Almeida, and Daniel Ferreira, 2005, Powerful CEOs and their impact on corporate performance, *Review of Financial Studies* 18, 1403–1432.
- Adams, R., Keloharju, M., and S. Knupfer, 2014, Match made at birth? What traits of a millions Swedes tell us about CEOs. Working paper, University of New South Wales.
- Bandiera, Oriana, Luigi Guiso, Andrea Prat, and Raffaella Sadun, 2014, Matching Firms, Managers, and Incentives, *Journal of Labor Economics*, forthcoming.
- Bandiera, Oriana, Stephen Hansen, Andrea Prat, and Raffaella Sadun, 2015, CEO Behavior and Firm Performance, Working paper, LSE.
- Barrick, M., Susan Dustin, Tamara Giluk, Greg Stewart, Jonathan Shaffer and Brian Swider, 2012, Candidate characteristics driving initial impressions during rapport building: Implications for employment interview validity, *Journal of Occupational and Organizational Psychology* 85, 330–352.
- Ben-David, Itzhak, Campbell Harvey, and John Graham, 2008, Managerial overconfidence and corporate policies, Working paper, Duke University.
- Benmelech, Efraim and Carola Frydman, 2015, Military CEOs, *Journal of Financial Economics*, 117: 43-59.
- Bennedsen, Morten, Francisco Pérez-González, and Daniel Wolfenzon, 2008, Do CEOs Matter? Working paper, Columbia University.
- Bertrand, Marianne, and Antoinette Schoar, 2003, Managing with style: The effect of managers on firm policies, *Quarterly Journal of Economics* 118, 1169–1208.
- Bolton, Patrick, Markus Brunnermeier, and Laura Veldkamp, 2013, Leadership, Coordination and Mission-Driven Management, *Review of Economic Studies* 80, 512-537.
- Borghams, Lex, Angela L. Duckworth, James J. Heckman, and Bas ter Weel, 2008, The economics and psychology of personality traits, NBER Working paper 13810.
- Botelho, Elena, Kim Powell, Stephen Kincaid and Dina Wang, 2017, What Sets Successful CEOs Apart, *Harvard Business Review*, May-June.
- Botelho, Elena and Kim Powell, 2018, *The CEO Next Door: What It Takes to Get to the Top and Succeed*. Dickens Books.
- Chevalier, Judith, and Glenn Ellison, 1999, Are some mutual fund managers better than others? Cross-sectional patterns in behavior and performance, *The Journal of Finance* 54, 875–899.

Colbert, Amy, Murray Barrick and Bret Bradley, 2014, Personality And Leadership Composition In Top Management Teams: Implications For Organizational Effectiveness, *Personnel Psychology* 67, 351–387

Collins, Jim, 2001, *Good to great: Why Some Companies Make the Leap and Others Don't* (Harper Business, New York).

Custodio, C., Ferreira, M.A., & Matos, P. 2013. Generalists vs. Specialists: Life time work experience and chief executive officer pay. *Journal of Financial Economics*, 108: 471-492

Drucker, Peter, 1967, *The Effective Executive* (Harper Collins, New York).

Fabrigar, Leandre, Duane Wegener, Robert MacCallum, and Erin Strahan, 1999, Evaluating the use of exploratory factor analysis in psychological research, *Psychological Methods* 4, 272–299.

Falato, Antonio, Dan Li, and Todd Milbourn, forthcoming, Which Skills Matter in the Market for CEOs? Evidence from Pay for CEO Credentials, *Management Science*

Gabaix, Xavier, and Augustin Landier, 2008, Why has CEO pay increased so much? *Quarterly Journal of Economics* 123, 49–100.

George, Bill, 2003, *Authentic Leadership*, (Jossey-Bass, San Francisco).

Gervais, Simon, and Itay Goldstein, 2007, The positive effects of biased self-perceptions in firms, *Review of Finance* 11, 453–496.

Gervais, Simon, J.B. Heaton, and Terrance Odean, 2009, Overconfidence, compensation contracts, and labor markets, Working paper, Duke University.

Gow, Ian D., Steven N. Kaplan, David F. Larcker and Anastasia A. Zakolyukina, 2016, CEO Personality and Firm Policies, working paper, Chicago Booth.

Graham, John R., Campbell Harvey, and Manju Puri, 2013, Managerial Attitudes and Corporate Actions, *Journal of Financial Economics* 109(1), 103–121.

Green, T. Clifton, Russell E. Jame, and Brandon Lock, 2015, It Pays to be Extraverted: Executive Personality and Career Outcomes, working paper, Emory University.

Hambrick, D.C., & Mason, P.A. 1984. Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review* 9 (2): 193–206.

Hambrick, D.C. 2007. Upper echelons theory - An update. *Academy of Management Review*, 32 (2): 334-343

- Heaton, J. B. 2002, Managerial optimism and corporate finance, *Financial Management* 3, 33–45.
- Hellmann, Thomas, and Manju Puri, 2002, Venture capital and the professionalization of start-up firms: Empirical evidence, *The Journal of Finance* 57, 169–197.
- Hochberg, Yael, Alexander Ljungqvist, and Yang Lu, 2007, Venture capital networks and investment performance, *Journal of Finance* 62, 251–301.
- Hough, Leaetta, Marvin Dunette, Newell Eaton, and John Kamp, 1990, Criterion-related validities of personality constructs and the effect of response distortion on those validities, *Journal of Applied Psychology*, 75, 581-595.
- Judge TA, Bono JE, Ilies R, Gerhardt MW, 2002, Personality and leadership: A qualitative and quantitative review, *Journal of Applied Psychology* 87, 765–780.
- Kaplan, Steven, Mark Klebanov, and Morten Sorensen, 2012, Which CEO Characteristics and Abilities Matter? *Journal of Finance* 67(3), 973–1007.
- Kaplan, Steven, Berk Sensoy, and Per Stromberg, 2009, What are firms? Evolution from early business plans to public companies, *The Journal of Finance* 64, 75–115.
- Khurana, Rakesh, 2002, *Searching for a Corporate Savior: The Irrational Quest for Charismatic CEOs* (Princeton University Press, Princeton, NJ).
- Malmendier, Ulrike, and Geoffrey Tate, 2005, CEO overconfidence and corporate investment, *The Journal of Finance* 60, 2661–2700.
- Malmendier, Ulrike, and Geoffrey Tate, 2009, Superstar CEOs, *Quarterly Journal of Economics*, 124, 1593–1638.
- Malmendier, U., Tate, G., & Yan, J. 2011. Overconfidence and early-life experiences: The effects of managerial traits on corporate financial policies. *Journal of Finance* 66: 1687-1733
- McClelland, David C., 1998, Identifying competencies with behavioral event interviews, *Psychological Science* 9, 331–339.
- Mintzberg, Henry, 2013, *Simply Managing*, (Berrett-Koehler, San Francisco, CA).
- Murphy, Kevin J., and Jan Zabojsnik, 2004, CEO pay and turnover: A market-based explanation for recent trends, *American Economic Review Papers and Proceedings* 94, 192–196.
- Ones, Deniz, and Chockalingam Viswesvaran, 1998, The effects of social desirability and faking on personality and integrity assessment for personnel selection, *Human Performance* 11, 245–269.

O'Reilly, C., Caldwell, D., Chatman, J., & Doerr, B., 2014, The promise and problems of organizational culture: CEO personality, culture, and firm performance, *Group and Organization Management*, 39 (6): 595–625.

Palaiou, K., Furnham, A., 2014. Are bosses unique? Personality facet differences between CEOs and staff in five work sectors. *Consulting Psychology Journal: Practice and Research* 66 (3), 173.

Pfeffer, Jeffery, 2015, *Leadership BS*, (HarperBusiness).

Pfeffer, Jeffery, 2016, Getting beyond the BS of leadership literature, *McKinsey Quarterly*, January.

Rosen, Sherwin, 1981, The Economics of superstars, *American Economic Review* 71, 845–858.

Rotemberg Julio, and Garth Saloner, 1993, Leadership style and incentives, *Management Science* 39, 1299–1318.

Schoar, Antoinette and Luo Zuo, 2015, “Shaped by Booms and Busts: How the Economy Impacts CEO Careers and Management Styles,” NBER Working Paper No. w17590.

Smart, Geoff and Randy Street, 2008, *Who* (Ballantine Books, New York).

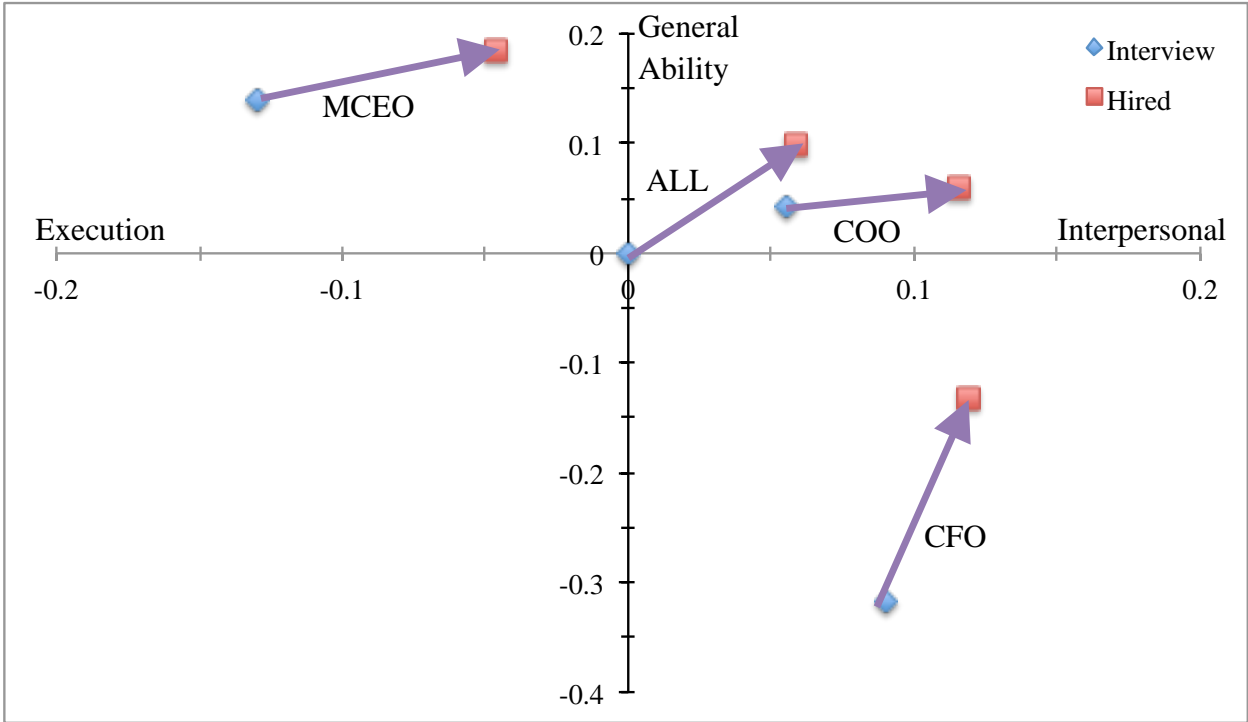
Ulrich, Dave, Norm Smallwood, and Kate Sweetman, 2009, *Leadership Code: Five Rules to Lead By* (Harvard Business School Press, Boston).

Waldman, DA and FJ Yammarino, 1999), “CEO charismatic leadership: Levels-of-management and levels-of-analysis effects,” *Academy of Management Review* 24, 266–285.

Yammarino, Francis J., Shelley D. Dionne, Jae U. Chun, and Fred Dansereau, 2005, Leadership and levels of analysis: A state-of-the-science review, *Leadership Quarterly* 16, 879–919.

Figure 1: Interviewed versus Hired Panels A and B depict the average scores for ALL candidates as well as candidates assessed for CEO, CFO and COO positions. Panel A shows average scores on factors 1 (general ability) and 2 (execution versus interpersonal). Panel B shows average scores on factors 3 (charisma vs. analytic) and 4 (strategic vs. managerial details). An arrow's starting point shows the average scores of all the candidates that are assessed for a given position and the ending point shows the average scores of the hired candidates. Numerical values are reported in Table 6.

Panel A: Factor 1 (General Ability) and Factor 2 (Execution vs. Interpersonal)



Panel B: Factor 3 (Charisma vs. Analytic) and Factor 4 (Strategic Focus vs. Managerial Details)

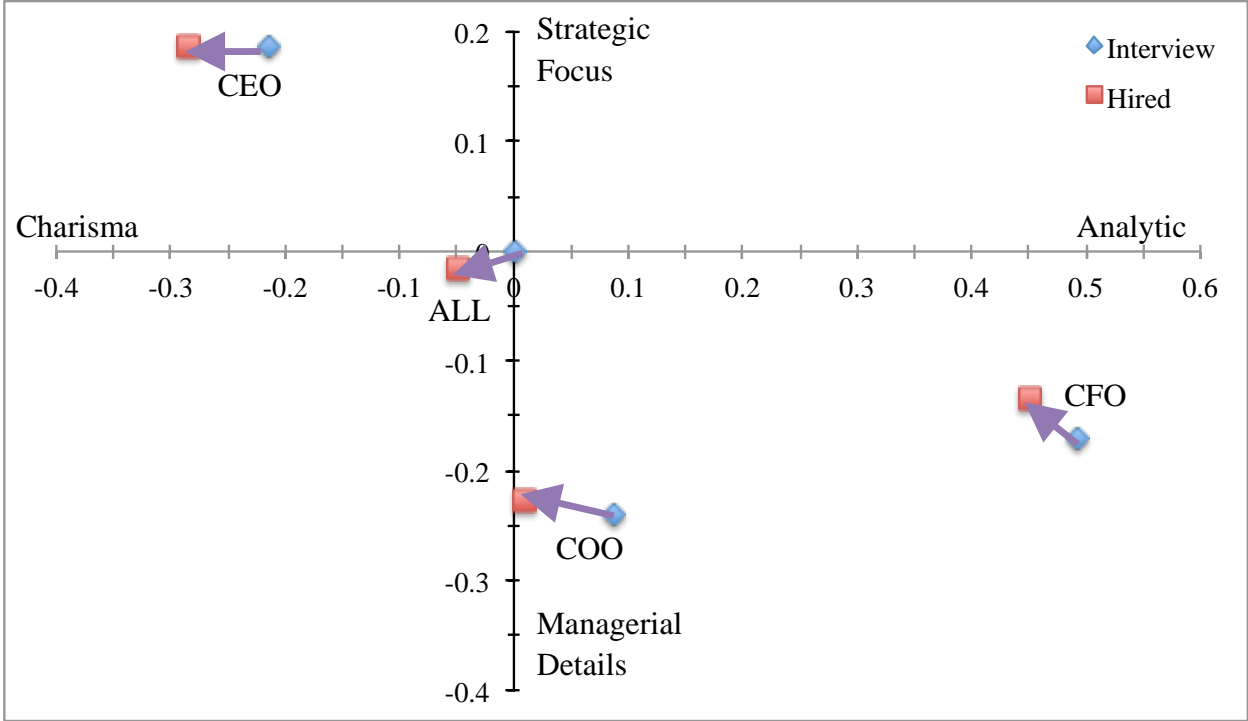


Table 1: Descriptive Statistics Panel A shows the number of candidates that are assessed for different position in each year. Panel B shows average values and number of observations for some observed characteristics. CXO indicates the union of candidates assessed for CEO, CFO, and CEO positions. ALL indicates all candidates in the sample. Some candidates are assessed for multiple positions, so the sum of candidates assessed for CEO, CFO, and CEO may exceed the number of candidates assessed for CXO positions.

Panel A: Candidates interviewed per year

Year	CEO	CFO	COO	CXO	ALL
2000	5	0	0	5	5
2001	35	14	10	59	95
2002	62	31	14	107	198
2003	72	21	13	106	223
2004	91	22	16	125	216
2005	80	34	16	130	238
2006	71	39	19	128	290
2007	94	49	18	160	333
2008	85	38	12	134	244
2009	70	28	9	106	225
2010	73	29	16	117	244
2011	73	33	22	126	268
2012	1	0	0	1	1
2013	0	0	0	0	6
N/A	5	0	0	5	17
Total	817	338	165	1,309	2,603

Panel B: Averages and number of observations for some observed characteristics.

	CEO		CFO		COO		CXO		ALL	
	Mean	N	Mean	N	Mean	N	Mean	N	Mean	N
Yrs. Working	24.8	(793)	23.5	(332)	23.8	(159)	24.4	(1274)	23.5	(2511)
Yrs. Current Co.	5.1	(770)	3.4	(322)	4.1	(155)	4.6	(1237)	4.9	(2449)
Number of Co's	4.7	(797)	4.9	(331)	4.8	(159)	4.8	(1277)	4.6	(2515)
Female	5.0%	(816)	8.3%	(338)	7.9%	(165)	6.3%	(1308)	10.1%	(2601)
Military	10.7%	(801)	5.4%	(332)	11.3%	(159)	9.5%	(1282)	9.3%	(2524)
Insider	44.8%	(801)	27.9%	(333)	52.5%	(162)	41.5%	(1286)	41.3%	(2562)
Hired	60.0%	(785)	54.3%	(328)	71.7%	(159)	59.9%	(1262)	59.5%	(2422)

Table 2: Descriptive Statistics Panel A the number of assessments by position across different ownership types. Panel B shows number of insider and outsider candidates that are subsequently hired or not.

Panel A: Distribution of positions and ownership

	CEO		CFO		COO		CXO		ALL
VC	47%	188	11%	42	6%	22	63%	251	396
Growth Equity	31%	99	18%	57	13%	41	60%	194	324
Buyout	37%	432	16%	191	6%	73	58%	690	1,180
Public	12%	36	3%	10	4%	13	20%	59	289
Other Private	23%	48	13%	27	7%	14	42%	88	211
Investor	6%	12	6%	11	1%	2	13%	25	198
N/A	40%	2	0%	0	0%	0	40%	2	5
Total	31%	817	13%	338	6%	165	50%	1309	2,603

Panel B: Insiders and outsiders versus hired

	Not Hired	Hired	N/A	Total
Outsider	795	607	103	1,505
Insider	175	815	67	1,057
N/A	12	18	11	41
Total	982	1,440	181	2,603

Table 3: Distribution of Subjective Ratings by Position For each job title, the tables shows the subjective ratings of *nice person* (“yes” coded as one and “no” coded as zero), *risk taker*, *personality* (“outgoing” coded as one and “reserved” coded as zero), *good at sales*, and *career path* (“broad” coded as one and “narrow” coded as zero).

Panel A: Subjective Ratings by Title

	CEO	CFO	COO	CXO	ALL
Nice Person	77%	76%	79%	77%	78%
Risk Taker	64%	49%	59%	60%	58%
Personality	79%	68%	73%	76%	74%
Good at Sales	79%	33%	62%	67%	65%
Career Path	40%	32%	38%	38%	35%

Panel B: Subjective Ratings by Ownership Type

	VC	PE	Public	ALL
Nice Person	76%	80%	79%	78%
Risk Taker	64%	58%	55%	58%
Personality	72%	77%	64%	74%
Good at Sales	66%	66%	66%	65%
Career Path	44%	37%	26%	35%

Panel C: Subjective Ratings by Ownership Type of CEOs

	VC	PE	Public	ALL
Nice Person	77%	79%	69%	77%
Risk Taker	70%	62%	72%	64%
Personality	76%	81%	77%	79%
Good at Sales	77%	79%	79%	79%
Career Path	46%	39%	32%	40%

Table 4: Average Characteristics Across Positions

	CEO	CFO	COO	CXO	ALL
Hires A Players	3.28	3.21	3.33	3.27	3.27
Develops People	3.32	3.24	3.34	3.30	3.30
Removes Underperformers	3.18	3.08	3.19	3.16	3.14
Respect	3.54	3.54	3.58	3.54	3.56
Efficiency	3.55	3.49	3.62	3.55	3.56
Network	3.50	3.26	3.38	3.43	3.43
Flexible	3.45	3.37	3.41	3.43	3.43
Integrity	3.86	3.89	3.91	3.87	3.88
Organization	3.52	3.60	3.65	3.55	3.55
Calm	3.62	3.52	3.57	3.59	3.57
Aggressive	3.62	3.35	3.52	3.54	3.52
Fast	3.60	3.40	3.56	3.54	3.53
Commitments	3.72	3.64	3.72	3.70	3.72
Brainpower	3.60	3.55	3.57	3.58	3.57
Analytical Skills	3.51	3.60	3.51	3.53	3.51
Strategic Vision	3.42	3.15	3.18	3.33	3.29
Creative	3.53	3.18	3.34	3.42	3.43
Attention to Detail	3.39	3.56	3.57	3.45	3.46
Enthusiasm	3.60	3.28	3.52	3.51	3.51
Persistence	3.77	3.59	3.72	3.71	3.72
Proactive	3.72	3.45	3.66	3.65	3.63
Work Ethic	3.84	3.73	3.87	3.81	3.81
High Standards	3.62	3.50	3.61	3.59	3.61
Listening Skill	3.45	3.41	3.50	3.44	3.47
Open to Criticism	3.31	3.38	3.41	3.34	3.37
Oral Communication	3.58	3.36	3.48	3.51	3.50
Teamwork	3.49	3.45	3.52	3.48	3.49
Persuasion	3.57	3.22	3.42	3.46	3.44
Holds People Accountable	3.46	3.34	3.43	3.43	3.41
Average	3.54	3.43	3.52	3.51	3.51

Table 5: Factor Loadings Panel A gives the factor loadings on the four first factors for all interviewed candidates. Loadings less than 0.15 in absolute value are blank. Panel B gives the eigenvalues and the proportion of variation that is explained by the four factors. Panel C shows pairwise correlations across candidates between the loadings on the four factors, gender, as well as the subjective ratings of *nice person*, *risk taker*, *personality*, *good at sales* and career path (coded as described in Table 3). In Panel C, the four factors are orthogonal by construction, so their individual correlations are omitted. Statistical significance at the 5% level is indicated with a star.

Panel A: Factor loadings (loadings < 0.15 are blank)

	Factor 1	Factor 2	Factor 3	Factor 4
Hires A Players	0.59			
Develops People	0.56	0.25		
Removes Underperformers	0.53	-0.18		-0.22
Respect	0.32	0.73		
Efficiency	0.71			-0.22
Network	0.64			
Flexible	0.54	0.38		
Integrity	0.29	0.31		
Organization	0.50		0.44	-0.23
Calm	0.44	0.33		
Aggressive	0.68	-0.43	-0.26	
Fast	0.69	-0.37	-0.18	
Commitments	0.70			-0.21
Brainpower	0.52		0.33	0.43
Analytical Skills	0.54		0.56	0.25
Strategic Vision	0.58	-0.17		0.46
Creative	0.52			0.39
Attention to Detail	0.40		0.46	-0.27
Enthusiasm	0.55	0.24	-0.44	
Persistence	0.66	-0.16		
Proactive	0.74	-0.26	-0.20	
Work Ethic	0.57			
High Standards	0.73	-0.17		
Listening Skill	0.39	0.62		
Open to Criticism	0.41	0.65		
Oral Communication	0.49	0.16	-0.16	0.19
Teamwork	0.48	0.61		
Persuasion	0.60		-0.37	0.18
Holds People Accountable	0.66	-0.21		-0.27

Panel B: Eigenvalues and variance explained by first six factors

	Eigenvalue	Proportion	Cumulative
Factor 1	9.32	32.2%	32.2%
Factor 2	2.88	9.9%	42.1%
Factor 3	1.52	5.2%	47.3%
Factor 4	1.12	3.9%	51.2%
Factor 5	0.85	2.9%	54.1%
Factor 6	0.42	1.4%	55.5%

Panel C: Pair-wise correlation coefficients

	Nice Person	Risk taker	Personality	Good at Sales	Career Path	Female
Nice Person	1.0000					
Risk taker	-0.1733*	1.0000				
Personality	0.0097	0.1511*	1.0000			
Good at Sales	0.0409	0.1141*	0.1643*	1.0000		
Career Path	-0.0481*	0.0995*	0.0396	0.0043	1.0000	
Female	0.0305	-0.0408*	-0.0282	-0.0664*	-0.0052	1.0000
Factor 1 (+Ability)	0.1687*	0.1800*	0.1000*	0.2900*	0.0094	0.0222
Factor 2 (-Execution)	0.5470*	-0.2395*	-0.0184	-0.0511*	-0.0492*	0.0289
Factor 3 (-Charisma)	-0.0568*	-0.1645*	-0.2055*	-0.2639*	-0.0610*	-0.2200
Factor 4 (+Strategic)	0.0001	0.0692*	0.0516*	0.1206*	0.0377	-0.0775

Table 6: Factor Loadings by Position This table shows average factor scores for candidates interviewed (Panel A), interviewed by type of ownership (Panel B), and hired (Panel C) for indicated positions. The averages in Panels A and C are show graphically in Figure 1.

Panel A: Average factor scores for interviewed candidates

	CEO	CFO	COO	CXO	ALL
Factor 1 (+Ability)	0.139	-0.317	0.042	0.011	0.000
Factor 2 (-Execution)	-0.130	0.090	0.055	-0.053	0.000
Factor 3 (-Charisma)	-0.214	0.493	0.087	0.002	0.000
Factor 4 (+Strategic)	0.187	-0.171	-0.239	0.047	0.000

Panel B: Average factor scores for interviewed candidates by ownership

1. Venture Capital	CEO	CFO	COO	CXO	ALL
Factor 1 (+Ability)	0.029	-0.301	0.004	-0.032	-0.025
Factor 2 (-Execution)	-0.202	-0.076	0.184	-0.152	-0.106
Factor 3 (-Charisma)	-0.338	0.642	0.250	-0.124	-0.138
Factor 4 (+Strategic)	0.441	-0.211	-0.236	0.271	0.185
2. Private Equity	CEO	CFO	COO	CXO	ALL
Factor 1 (+Ability)	0.178	-0.329	0.066	0.027	-0.046
Factor 2 (-Execution)	-0.079	0.112	0.092	-0.005	0.034
Factor 3 (-Charisma)	-0.217	0.464	-0.035	-0.009	-0.072
Factor 4 (+Strategic)	0.087	-0.186	-0.305	-0.031	-0.065
3. Public	CEO	CFO	COO	CXO	ALL
Factor 1 (+Ability)	0.457	0.293	0.246	0.382	0.370
Factor 2 (-Execution)	-0.205	0.096	-0.075	-0.126	-0.017
Factor 3 (-Charisma)	0.384	0.677	0.264	0.407	0.301
Factor 4 (+Strategic)	0.061	-0.180	-0.250	-0.048	-0.079

Panel C: Average factor scores of hired candidates

	CEO	CFO	COO	CXO	ALL
Factor 1 (+Ability)	0.185	-0.131	0.061	0.095	0.099
Factor 2 (-Execution)	-0.046	0.119	0.116	0.011	0.059
Factor 3 (-Charisma)	-0.285	0.451	0.009	-0.073	-0.049
Factor 4 (+Strategic)	0.186	-0.133	-0.226	0.055	-0.016

Table 7: Probit Estimates of Hired for Position This table shows marginal effects from a probit model where the dependent variable is an indicator for whether a given candidate is hired. Standard errors are in parentheses. Due to the low number of observations relative to the number of explanatory variables, Panels B and C omit incumbent CFO and COOs due to a low number of observations. Panel D defines company size according to revenue, with *Small* companies having less than \$100m, *Medium* ones having between \$100m and \$1b, and *Large* companies having more than \$1m in annual revenue.

Panel A: Probit Estimates of Hiring

	(1) CEO	(2) CFO	(3) COO	(4) CXO	(5) ALL	(6) CEO	(7) CFO	(8) COO	(9) CXO	(10) ALL
Factor 1 (+Ability)	1.100* (0.056)	1.246*** (0.081)	1.083 (0.125)	1.145*** (0.042)	1.195*** (0.032)	1.248*** (0.071)	1.503*** (0.120)	1.240 (0.182)	1.296*** (0.054)	1.333*** (0.040)
Factor 2 (-Exec.)	1.160*** (0.059)	1.071 (0.081)	1.275** (0.155)	1.122*** (0.043)	1.124*** (0.031)	1.179*** (0.067)	0.993 (0.088)	1.176 (0.180)	1.132*** (0.049)	1.134*** (0.035)
Factor 3 (-Charis.)	0.867*** (0.047)	0.914 (0.099)	0.724** (0.107)	0.866*** (0.037)	0.910*** (0.027)	0.959 (0.059)	0.865 (0.108)	0.671** (0.136)	0.965 (0.048)	1.000 (0.034)
Factor 4 (+Strat.)	1.018 (0.059)	1.089 (0.109)	1.005 (0.144)	1.022 (0.046)	0.993 (0.031)	0.954 (0.063)	1.045 (0.122)	0.935 (0.166)	0.942 (0.048)	0.927** (0.032)
Yrs. in Ind.						1.004 (0.005)	1.012 (0.010)	0.991 (0.014)	1.004 (0.004)	1.005* (0.003)
Insider						3.342*** (0.381)	5.389*** (1.211)	7.935*** (3.059)	3.771*** (0.348)	3.406*** (0.224)
Female						0.714 (0.173)	1.424 (0.440)	2.121 (1.774)	1.012 (0.173)	0.931 (0.091)
Constant	1.141 (0.187)	1.086 (0.225)	1.924* (0.673)	1.2 (0.140)	1.163** (0.077)	0.615** (0.120)	0.647* (0.164)	0.384* (0.196)	0.622*** (0.088)	0.688*** (0.056)
Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	769	326	147	1,243	2,397	735	317	140	1,194	2,290

Panel B: Probit Estimates of Hiring

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Insider				Outsider		
	CEO	CXO	ALL	CEO	CFO	COO	CXO	ALL
Factor 1	1.135	1.053	1.147***	1.309***	1.767***	2.041***	1.460***	1.504***
(+Ability)	(0.099)	(0.069)	(0.052)	(0.097)	(0.181)	(0.559)	(0.080)	(0.061)
Factor 2	1.211**	1.145**	1.114**	1.156*	1.002	1.628**	1.129**	1.148***
(-Exec.)	(0.096)	(0.072)	(0.050)	(0.092)	(0.103)	(0.376)	(0.066)	(0.048)
Factor 3	0.840**	0.910	1.007	1.008	0.994	0.424**	0.982	0.980
(-Charis.)	(0.072)	(0.063)	(0.047)	(0.087)	(0.153)	(0.154)	(0.066)	(0.046)
Factor 4	0.840*	0.880*	0.939	1.026	0.999	0.675	0.979	0.934
(+Strat.)	(0.075)	(0.065)	(0.046)	(0.095)	(0.136)	(0.172)	(0.067)	(0.044)
Constant	2.152***	2.600***	2.304***	0.650*	0.696	0.583	0.647***	0.740***
	(0.587)	(0.559)	(0.288)	(0.152)	(0.177)	(0.462)	(0.105)	(0.064)
Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	359	535	1,013	410	232	70	708	1,384

Panel C: Probit Estimates of Hiring

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Insider			Outsider				
	CEO	CXO	ALL	CEO	CFO	COO	CXO	ALL
Factor 1 (+Ability)	1.120 (0.120)	1.055 (0.085)	1.088 (0.062)	1.187** (0.103)	2.012*** (0.280)	3.012** (1.293)	1.440*** (0.096)	1.504*** (0.074)
Factor 2 (-Exec.)	1.200* (0.131)	1.196** (0.108)	1.162** (0.076)	1.204* (0.121)	0.889 (0.149)	1.733* (0.551)	1.092 (0.085)	1.078 (0.059)
Factor 3 (-Charis.)	0.875 (0.091)	0.907 (0.078)	1.005 (0.059)	1.031 (0.103)	0.897 (0.178)	0.278** (0.144)	0.962 (0.077)	0.972 (0.054)
Factor 4 (+Strat.)	0.849 (0.088)	0.865* (0.074)	0.883** (0.051)	1.037 (0.103)	1.118 (0.180)	0.368** (0.165)	1.011 (0.078)	0.942 (0.050)
Yrs in Ind	1.009 (0.011)	1.003 (0.009)	1.002 (0.006)	0.999 (0.007)	1.002 (0.012)	1.017 (0.029)	1.001 (0.005)	1.004 (0.004)
Nice Person	1.410 (0.364)	1.144 (0.256)	1.010 (0.159)	1.219 (0.240)	1.041 (0.379)	1.240 (0.816)	1.183 (0.187)	1.257** (0.144)
Risk taker	1.122 (0.222)	0.974 (0.161)	1.081 (0.127)	1.396** (0.216)	1.143 (0.282)	0.622 (0.330)	1.228* (0.145)	1.087 (0.092)
Personality	1.441* (0.292)	1.204 (0.203)	1.148 (0.139)	1.013 (0.178)	1.243 (0.309)	0.715 (0.443)	1.050 (0.137)	1.088 (0.101)
Good at Sales	0.918 (0.207)	0.942 (0.166)	0.957 (0.120)	1.215 (0.245)	0.873 (0.208)	0.515 (0.309)	0.982 (0.127)	1.032 (0.094)
Career path	1.049 (0.198)	0.947 (0.150)	0.870 (0.099)	0.964 (0.142)	1.154 (0.284)	2.659* (1.534)	1.091 (0.126)	1.041 (0.088)
Constant	0.869 (0.421)	1.782 (0.663)	2.007*** (0.486)	0.427** (0.167)	0.480 (0.245)	1.336 (1.668)	0.479*** (0.131)	0.545*** (0.092)
Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	314	450	818	368	178	61	603	1,147

Panel D: Probit Estimates of Hiring (with company size)

	(1) ALL All	(2) ALL Small	(3) ALL Medium	(4) ALL Large	(5) CEO All	(6) CEO Small	(7) CEO Medium	(8) CEO Large
Factor 1 (+Ability)	1.333*** (0.040)	1.242*** (0.056)	1.207** (0.097)	2.348*** (0.257)	1.248*** (0.071)	1.230** (0.108)	0.956 (0.208)	2.694*** (0.790)
Factor 2 (-Exec.)	1.134*** (0.035)	1.109** (0.053)	1.168** (0.090)	1.211** (0.116)	1.179*** (0.067)	1.168* (0.099)	1.709*** (0.351)	1.026 (0.297)
Factor 3 (-Charis.)	1.000 (0.034)	0.983 (0.051)	1.141 (0.100)	1.083 (0.115)	0.959 (0.059)	1.034 (0.100)	0.983 (0.206)	1.123 (0.285)
Factor 4 (+Strat.)	0.927** (0.032)	0.930 (0.051)	0.960 (0.085)	0.882 (0.089)	0.954 (0.063)	0.975 (0.101)	0.990 (0.213)	0.943 (0.278)
Yrs Ind	1.005* (0.003)	1.007 (0.005)	0.998 (0.007)	1.009 (0.007)	1.004 (0.005)	1.010 (0.008)	0.954*** (0.016)	1.042** (0.019)
Incumbent	3.406*** (0.224)	2.851*** (0.303)	4.691*** (0.861)	4.560*** (0.869)	3.342*** (0.381)	3.274*** (0.589)	3.577*** (1.652)	3.680*** (1.665)
Female	0.931 (0.091)	1.181 (0.191)	0.651* (0.166)	1.085 (0.234)	0.714 (0.173)	1.074 (0.400)	0.266 (0.308)	0.684 (0.684)
Constant	0.688*** (0.056)	0.943 (0.159)	0.751 (0.204)	0.309*** (0.071)	0.615** (0.120)	0.862 (0.312)	153.162 37,836.427	0.105*** (0.069)
Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2,290	886	393	399	735	318	104	75

Panel E: Probit Estimates of Hiring (with ownership type)

	(1) ALL VC	(2) ALL PE	(3) ALL Public	(4) CEO VC	(5) CEO PE
Factor 1 (+Ability)	1.217** (0.104)	1.294*** (0.049)	2.228*** (0.411)	0.897 (0.134)	1.290*** (0.090)
Factor 2 (-Exec.)	0.991 (0.075)	1.192*** (0.049)	1.119 (0.154)	1.108 (0.137)	1.225*** (0.089)
Factor 3 (-Charis.)	0.935 (0.078)	1.028 (0.045)	1.167 (0.183)	1.113 (0.154)	0.938 (0.074)
Factor 4 (+Strat.)	0.941 (0.079)	0.909** (0.042)	0.804 (0.110)	0.782 (0.123)	0.976 (0.079)
Yrs Ind	0.992 (0.008)	1.008** (0.004)	0.986 (0.011)	0.992 (0.013)	1.006 (0.006)
Insider	2.608*** (0.417)	3.229*** (0.281)	8.830*** (2.707)	2.510*** (0.631)	3.506*** (0.506)
Female	0.859 (0.253)	(0.943) (0.130)	1.270 (0.391)	0.838 (0.384)	0.584 (0.201)
Constant	2.009* (0.721)	0.636*** (0.087)	0.438** (0.153)	2.302 (1.281)	0.555** (0.153)
Ind. FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Obs.	351	1341	237	167	492

Table 8: Descriptive statistics for career paths The four panels show the candidates divided by whether or not they are assessed for a position with a given title, and by those who eventually obtain a position with this title.

Panel A:

Interviews for CEO position	Eventually becomes CEO		Total	
	0	1		
0	1,584	184	1,768	
	89.6%	10.4%	100.0%	
1	629	173	802	
	78.4%	21.6%	100.0%	
Total	2,213	357	2,570	
	86.1%	13.9%	100.0%	

Panel B:

Interviews for CFO position	Eventually becomes CFO		Total	
	0	1		
0	2,198	36	2,234	
	98.4%	1.6%	100.0%	
1	290	46	336	
	86.3%	13.7%	100.0%	
Total	2,488	82	2,570	
	96.8%	3.2%	100.0%	

Panel C:

Interviews for COO position	Eventually becomes COO		Total	
	0	1		
0	2,308	100	2,408	
	95.9%	4.2%	100.0%	
1	143	19	162	
	88.3%	11.7%	100.0%	
Total	2,451	119	2,570	
	95.4%	4.6%	100.0%	

Panel D:

Interviews for CFO position	Eventually becomes CEO		Total	
	0	1		
0	1,892	342	2,234	
	84.7%	15.3%	100.0%	
1	321	15	336	
	95.5%	4.5%	100.0%	
Total	2,213	357	2,570	
	86.1%	13.9%	100.0%	

Table 9: Who eventually become executives? Panel A shows average factor scores of candidates that are not assessed for the indicated position but eventually obtain it. Panels B and C show estimated marginal effects using a probit model where the depending variable is an indicator for whether the candidate eventually achieves an executive position as indicated (CEO, COO, or CFO), depending on the candidate’s observed characteristics at the time of the interview. The sample is restricted to candidates with titles, at the time of the interview, that are *not* the indicated executive position eventually reached. Standard errors are in parentheses.

Panel A: Average factor scores of candidates that are not interviewed for the indicated position but eventually obtain it

	CEO	CFO	COO
Factor 1 (+Ability)	0.160	0.006	0.117
Factor 2 (-Exec.)	-0.156	0.093	-0.056
Factor 3 (-Charis.)	-0.090	0.364	0.002
Factor 4 (+Strat.)	0.050	-0.049	-0.182

Panel B:

	(1) CEO	(2) CFO	(3) COO	(4) CEO	(5) CFO	(6) COO
Factor 1 (+Ability)	1.198*** (0.055)	1.007 (0.074)	1.133** (0.060)	1.187*** (0.057)	0.990 (0.077)	1.138** (0.063)
Factor 2 (-Exec.)	0.835*** (0.039)	0.928 (0.068)	0.935 (0.047)	0.838*** (0.040)	0.908 (0.070)	0.939 (0.049)
Factor 3 (-Charis.)	0.865*** (0.042)	1.274*** (0.110)	0.977 (0.053)	0.864*** (0.043)	1.199** (0.109)	0.942 (0.054)
Factor 4 (+Strat.)	1.167*** (0.058)	0.903 (0.075)	0.906* (0.050)	1.171*** (0.060)	0.913 (0.082)	0.901* (0.053)
Yrs in Ind				1.004 (0.004)	0.986* (0.008)	0.985*** (0.005)
Insider				0.937 (0.091)	0.774 (0.131)	0.970 (0.104)
Female				0.684** (0.109)	0.687 (0.207)	0.546** (0.130)
Constant	0.263*** (0.026)	0.130*** (0.020)	0.148*** (0.019)	0.265*** (0.031)	0.178*** (0.032)	0.191*** (0.027)
Ind. FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,666	2,165	2,331	1,586	2,053	2,215

Panel B (cont.)

	(7)	(8)	(9)
	CEO	CFO	COO
Factor 1	1.089	1.065	1.125*
(+Ability)	(0.060)	(0.110)	(0.073)
Factor 2	0.915	0.841	0.952
(-Exec.)	(0.060)	(0.097)	(0.067)
Factor 3	0.906	1.074	0.916
(-Charis.)	(0.054)	(0.122)	(0.062)
Factor 4	1.137**	0.971	0.912
(+Strat.)	(0.066)	(0.103)	(0.058)
Yrs in Ind	1.007	0.994	0.981***
	(0.005)	(0.010)	(0.006)
Insider	0.924	0.745	0.927
	(0.099)	(0.147)	(0.108)
Female	0.742*	0.608	0.600**
	(0.131)	(0.248)	(0.150)
Nice Person	0.860	0.941	1.080
	(0.120)	(0.221)	(0.172)
Risk taker	1.229*	1.130	1.069
	(0.131)	(0.218)	(0.124)
Personality	0.949	0.839	0.932
	(0.106)	(0.159)	(0.114)
Good at Sales	1.239*	0.553***	0.931
	(0.138)	(0.108)	(0.115)
Career path	1.104	1.052	0.986
	(0.114)	(0.195)	(0.110)
Constant	0.220***	0.203***	0.197***
	(0.046)	(0.072)	(0.047)
Ind. FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Obs.	1,302	1,786	1,897

Panel C:

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	VC	VC	VC	PE	PE	PE	Public	Public	Public
	CEO	CFO	COO	CEO	CFO	COO	CEO	CFO	COO
Factor 1	1.220	0.122	1.093	1.210***	1.009	1.110	1.023	1.007	2.348**
(+Ability)	0.170	0.236	0.160	0.073	0.113	0.073	0.193	0.283	0.960
Factor 2	0.663***	1.317	0.887	0.897*	0.887	0.905	0.762	1.070	0.967
(-Exec.)	0.087	0.816	0.116	0.057	0.101	0.059	0.131	0.300	0.232
Factor 3	0.831	6.412	1.358**	0.899*	1.414***	0.927	0.980	1.076	0.685
(-Charis.)	0.105	10.258	0.197	0.058	0.187	0.064	0.185	0.317	0.190
Factor 4	1.200	1.113	0.988	1.151**	0.826	0.920	1.745***	0.951	0.738
(+Strat.)	0.155	0.740	0.141	0.078	0.100	0.065	0.311	0.255	0.199
Constant	0.153***	0.001	0.123***	0.295***	0.080***	0.162***	0.244***	0.103***	0.098***
	0.100	0.529	0.065	0.049	0.031	0.033	0.081	0.054	0.056
Observations	185	67	332	902	977	1,286	216	256	233
Ind FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A-1: Descriptions of Individual Characteristics Information from ghSMART internal guidelines.

Characteristics	Description	Behavior Associated with High Score	Behavior Associated with Low Score
<u>Leadership</u>			
Hires A Players	Sources, recruits, and 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.
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	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	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.
<u>Personal</u>			
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	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	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	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.
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.
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.
<u>Intellectual</u>			
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	Cites multiple examples of problem	Rarely solves problems through analysis.

	quantitative data and draws conclusions.	solving skills.	Heavy reliance on gut.
Strategic Vision	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	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.
<u>Motivational</u>			
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	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.
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.
<u>Interpersonal</u>			
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	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.