

Preliminary

# Are CEOs Different? Characteristics of Top Managers

Steven N. Kaplan\* and Morten Sorensen\*\*

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## ABSTRACT

We use a data set of over 2,600 executive assessments to study thirty individual characteristics of candidates for top executive positions – CEO, CFO, COO and others. Candidate characteristics can be classified by four primary factors: general ability, execution skills, charisma and strategic skills. CEO candidates tend to score higher on all four of these factors; CFO candidates score lower. Hired candidates score higher than all assessed candidates on interpersonal skills (for each job category) 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 ultimately less likely to become CEOs holding the four factors constant.

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Large management, popular and anecdotal literatures describe what traits, skills and abilities 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) argue 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, criticizes some of these and other works as “leadership BS,” not describing what leaders and CEOs actually are like, and 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 information on a meaningful sample of CEOs, there is little large sample systematic work on this topic. Work in the management literature generally uses publicly observable measures such as job tenure, college attended and career path (see Hambrick 2007) or studies a small, specific sample of CEOs (95 credit union CEOs in Colbert et al. 2014, or 32 technology firms in O’Reilly et al. 2014).<sup>1</sup>

Adams et al. (2014), Kaplan, Klebanov, 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. They find

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<sup>1</sup> 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).

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) study 316 CEO candidates for venture capital and private equity-funded companies using detailed assessments of the CEOs and find that CEOs characteristics are best explained by two primary factors – overall talent and execution skills (versus team or interpersonal skills). Subsequent success of the CEOs in their sample is related to execution skills and talent. 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 CEO.

This study extends KKS (2012) by expanding the dataset to over 2,600 assessments of CEOs, COOs, CFOs and other top executives considered for positions in a wide variety of firms. The assessments, based on four-hour structured interviews, were performed by ghSMART, a firm that specializes in assessing top executives. Each interview resulted in a report with a detailed description of the candidate’s background and characteristics. The reports include ratings of thirty specific characteristics and abilities (see Table A-1). As in KKS (2012), most of the assessments were completed at the time the executives were candidates for managerial positions. The assessing firms include companies governed under different ownership forms – venture capital owned and private equity owned (as in KKS), as well as publicly traded and other privately owned companies. We also track the candidates’ subsequent career paths including

whether they were hired for the positions for which they were considered and whether they ultimately became top executives, particularly CEOs, of any company.

The dataset allows us to investigate a number of questions. First, we study and document the characteristics and attributes of candidates considered for various positions. 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 dominant factors that have intuitive interpretations – general talent, execution oriented, charismatic and strategic. The first two factors are similar to those in KKS (2012).

The first factor loads positively<sup>2</sup> on all 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 loads negatively on Fast, Efficiency, Aggressive, Persistence, and Proactive, characteristics describing capabilities that appear to be related to resoluteness and execution skills. We interpret this factor as measuring (negatively) execution.

The third factor loads negatively on Enthusiasm, Persuasion, Aggressive and Proactive while loading positively on Analytical Skills, Organization and Attention to Detail. We interpret this factor as measuring (negatively) charisma.

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<sup>2</sup> Note that the sign and magnitude of factor loadings are unidentified and cannot be interpreted. Formally, 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 is arbitrary. If one were to, say, reverse the signs and double the magnitudes of all the individual loadings in one factor, this would change the scale yet lead to identical statistical inference about the effects of all factors.

The fourth factor loads positively on Strategic Vision, Brainpower and Creativity while loading negatively on Attention to Detail, Holds People Accountable, and Organization. We interpret this factor as measuring strategic ability and creativity. CEOs tend to have high scores on talent, execution ability, charisma and strategic ability while CFOs tend to have low scores.

Second, we investigate who of the assessed candidates are hired. Hired candidates score higher than assessed candidates on interpersonal skills for each type of position (CEO, CFO, etc.), suggesting that such skills are of great importance in the selection process.

Third, we consider whether it is possible to predict who ultimately becomes a CEO. In our subsequent out-of-sample analysis, we analyze the pool of executives who were not CEO candidates in our sample. Non-CEO candidates who score higher on the four factors – are more talented, more execution-oriented, more charismatic and more strategic – are more likely to ultimately become CEOs. This result provides external / out-of-sample validity to the first two sets of results. The 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.

Fourth, we evaluate differences and similarities between female and male executives. We do not find economically large differences in the four factors for men and women. Women, however, are ultimately 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 of 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 roles and for their existing roles. The majority of the executives are candidates for jobs 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.

Unlike the sample of venture capital and private equity-backed firms in KKS (2012), this sample includes a large number of candidates for publicly-traded and private companies. More importantly, the sample also includes candidates evaluated for various non-CEO positions. In most of the analysis, we focus on the subset of candidates assessed for CEO, CFO, and COO 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, nor COO. Some candidates are considered for several potential positions (i.e., either CEO or CFO), and these candidates are included in all the categories they are interviewed for, so the total sum of CEO, CFO, and COOs exceeds the number of CXO candidates.

ghSMART is not an executive recruiting firm. ghSMART does not suggest which candidate(s) to interview for a given position but assesses the specific candidate(s) under consideration. ghSMART does not receive a fee contingent on whether 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 time burden or intrusion into the candidate's privacy.

The assessments are based on four-hour structured interviews, resulting in a 20- to 40-page report. During the interview, the interviewer<sup>3</sup> 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 extracts a range of qualitative and quantitative information from this actual past behavior. In particular, the candidate is scored on thirty specific characteristics in five general areas, defined by ghSMART as Leadership, Personal, Intellectual, Motivational, and Interpersonal. Table A-1 repeats table I from KKS (2012) and presents an excerpt from ghSMART's internal guidelines that describes the thirty characteristics along with the actual behaviors that determine their scoring.<sup>4</sup>

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

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<sup>3</sup> 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.

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

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, not whether the characteristic is desirable. In our analysis, we convert the letter grades to numerical scores. We code 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 assumptions.

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. We address this concern in KKS (2012). In particular, 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. Moreover, it is difficult to reconcile the results in KKS (2012) with significant faking. If the assessments were uninformative, there would be no relationship between the assessments and subsequent performance. In fact, KKS (2012) find strong relationships between the assessments and subsequent performance.<sup>5</sup> The out-of-sample analysis in this paper also suggests that the assessments provide reliable information.

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

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<sup>5</sup> 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: they require at least four hours of a candidate's time and a monetary payment by the investor that exceeds \$10,000.

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.

We also asked the research assistants who coded the assessments to provide their subjective assessment of the candidates based on just the qualitative descriptions of the candidates' past behavior from the reports. The assistants rated the candidates on five subjective characteristics: whether the executive came across as a nice person, a risk taker, having an outgoing personality (versus a reserved one), being good at sales, and whether the executive's career path was narrow or broad.

*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. We obtain the subsequent career primarily from public sources. We rely first 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 on 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 (the median number of years is three). 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 in his or her career. 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 ½ the sample is being assessed for the position of CEO, CFO or COO. 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 also varies by ownership form. We characterize ownership status as VC-funded, growth equity-funded, buyout-funded, public, other private and investor. Just over 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 subjective assessments by position. As mentioned, we asked the research assistants to provide subjective assessments of the candidates, and they classified 78% as nice persons, 58% as risk takers, 74% as have outgoing personalities, 65% as being good at sales, and 35% as having broad past careers. These subjective characteristics provide some general 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 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. Private-equity owned firms seem less likely to assess risk takers.

These comparisons are intended to be suggestive. In the next section, we show how these perceptions compare to the ghSMART ratings and the factors we uncover 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 roughly equal, with the exception of CFOs who score lower overall. The similar averages for each position suggest that the interviewers rate candidates on a similar scale within each job type. This potentially makes it more difficult for the analysis to find differences across job types.

The scores are highly correlated across characteristics, as 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 estimate 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. Panel B shows the eigenvalues of 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.

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

Panel B of Table 5 shows that the first factor captures 57.9% of the variation (out of the total variation explained by the first six factors). Panel A indicates 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 general measure of the candidates' ability or skill.<sup>6</sup> This structure of the first factor is commonly encountered in factor analysis, and it reflects the general empirical tendency of characteristics to move together.

The second factor, capturing 17.9% of the variation in the characteristics, has two distinct sets of loadings. The most positive loadings, in decreasing order, are for the characteristics Treats People With Respect, Open to Criticism, Listening Skills and Teamwork. These characteristics appear to capture a candidate's interpersonal skills. They also arguably reflect the Big Five personality trait of agreeableness. In contrast, the most negative loadings are on the characteristics Aggressive, Moves Fast, Proactive, Holds People Accountable and Removes Underperformers, characteristics that arguably reflect execution ability.

The second factor, therefore, appears to sort candidates into those with more interpersonal skills (agreeableness) versus those with greater execution ability. It assigns positive scores to candidates with greater interpersonal abilities and negative scores to candidates with greater resoluteness and execution abilities. The importance of this factor is consistent with the analysis in Bolton, Brunnermeier, and Veldkamp (2013) that contrasts resoluteness and overconfidence with teamwork and interpersonal skills in their model of CEO types.

The third factor explains 9.4% of the variation in the characteristics. Panel A shows that the most negative loadings on this factor are Enthusiasm, Persuasion, Aggressive, Proactive, and Moves Fast. We interpret these characteristics as being consistent with more charismatic

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<sup>6</sup> 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.

candidates. In contrast, the most positive loadings – Analytical Skills, Attention to Detail, Organization and Brainpower – are characteristics that are associated with candidates with stronger bureaucratic and administrative skills.

We thus interpret the third factor as sorting candidates between those with more charismatic personalities, who have a negative score on this factor, and candidates who are more bureaucratic and administrative 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 (see also Gow et al. (2016) who use a cluster analysis on CEOs and relate them to the Big Five factors).

Finally, the fourth factor explains 6.9% of the variation in characteristics. The most positive loadings are on the characteristics Strategic, Brainpower, Analytic and Creative while the most negative loadings are on the characteristics Holds People Accountable, Efficient, Attention to Detail, and Organized. This factor appears to sort candidates into those who have stronger creative and strategic characteristics versus those who have a more managerial and organizational focus. This factor appears positively related to the Big Five personality trait of openness / intellect and negatively to the trait of conscientiousness.

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 and skills as well as in their tilt towards either interpersonal or execution-related characteristics as captured by the first two factors. The new and much larger sample used here also allows us to distinguish the third and fourth factors; we find that the candidates vary in their level of charisma (versus analytical) and their ability to be strategic and creative (versus managerial).

*B. Factors Scores and Subjective Ratings*

Panel C of Table 5 shows pairwise correlations of the four factors with the five subjective ratings and with gender. Overall, these correlations show that our interpretation of the factors is consistent with the subjective ratings.

Executives perceived as nice persons score significantly higher on talent (Factor 1), interpersonal (Factor 2) and charisma (negative Factor 3). The subjective rating of a candidate as a nice person is particularly strongly related to the candidate's score on Factor 2. The correlation coefficient of 0.55 indicates that candidates with strong "interpersonal" characteristics are very likely to be perceived as nice persons, consistent with our interpretation of the factor. The finding that candidates with strong "execution" characteristics are significantly less likely to be perceived as nice persons is also consistent with Pfeffer (2015).

Executives perceived as greater risk-takers score significantly higher on talent (Factor 1), execution (negative Factor 2), charisma (negative Factor 3) and strategic / creative (Factor 4).

Executives perceived as outgoing score significantly higher on talent (Factor 1), charisma (negative Factor 3) and strategic / creative (Factor 4). The correlation with charisma is economically large at -0.21. Again, this strong correlation is consistent with our interpretation of the charisma factor.

Executives perceived to be good at sales score significantly higher on talent (Factor 1), execution (negative Factor 2) and charisma (negative Factor 3). The correlations with talent and charisma are economically large.

Finally, we find that the correlations between the factor scores and gender are small, both economically and statistically, and none of the correlations is statistically significant.

### **III. Executive characteristics and executive positions**

#### *A. Factor Scores for different positions*

Panel A of Table 6 reports the average factor scores. Figure 1 presents these data graphically. Panel A of figure 1 shows the average scores on Factors 1 and 2 for the different executive positions; panel B presents the average scores on Factors 3 and 4.

It is clear 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 talent (Factor 1), execution (negative Factor 2), charisma (negative Factor 3) and strategic / creative (Factor 4). CFO candidates, on the other hand, have low scores on talent, execution, creative / strategic and, particularly, charisma. These patterns are clear in the two graphs 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 a COO position, those who are candidates for CXO (either CEO, CFO or COO) and all (denoted ALL) candidates in the sample. COO candidates tend to have factor scores intermediate between the CEOs and the CFOs (except for Factor 4). These results are consistent with CEOs as being different from other executives in economically intuitive ways.

Although not reported in the table, the relatively few (33) founders assessed score extremely high on charisma (negative Factor 3). We believe that this, too, is consistent with our interpretation and the validity of these measures.

Panel B reports the average factor scores by company ownership – venture capital, private equity and public. The relative skills / characteristics for CEOs versus other groups are

qualitatively similar for all type of ownership. For all three groups, the CEO candidates are the most talented, have the strongest execution skills and are the most strategic. For all three groups, CEOs have more charisma than CFOs. Only for public companies, do CEOs not have the most charisma of any group.

Public company candidates tend to score higher than venture capital and private equity candidates. This finding is consistent with the results in Adams et al. (2014) and is likely related to public companies being larger and larger companies having more talented executives.

*B. Factor scores for candidates who are hired*

The average factor scores for candidates who are hired are given in panel C of table 6 and illustrated in figure 1. Table 6 and figure 1 show that hired executives score higher on talent (Factor 1) than the averaged assessed candidate. In addition, hired executives score higher on interpersonal skills / lower on execution skills (Factor 2) than the average assessed candidate.

Panel A of table 7 presents probit regressions and statistical significance levels for the differences. The coefficients are marginal effects. A value of 1.0 means no marginal effect. A value above 1.0 gives the increase in the probability of being hired from a one standard deviation increase in the factor. The first set of regressions includes industry and year fixed effects. The second set of regressions also includes the number of years the executive has worked in the interviewing company's industry, an indicator for whether the executive is an insider, and an indicator for the candidate's gender (female coded as one).

Except for COOs, hired candidates score significantly higher on general talent than all interviewed candidates. The coefficient for COOs is also positive but not significant. For

example, specification 6 indicates that a one standard deviation increase in general talent is associated with a 24.8% increase in the likelihood a candidate for a CEO position is hired.

Except for CFOs, candidates who are hired also have significantly higher interpersonal skills (versus execution skills) than all who are interviewed. Specification 6 indicates that a one standard deviation decrease (increase) in execution (interpersonal) is associated with a 17.9% increase in hiring the candidate for a CEO position. This suggests that interpersonal skills are valued differently in the hiring decision from their value in identifying 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 strongly correlated with success for buyout-funded company CEOs.

Except for CFOs, candidates who are hired score significantly higher on charisma (more negatively) than the average candidate interviewed without the additional three controls. When including the number of years in the industry, insider, and gender, only the coefficient on COOs remains significant. This may be a consequence of insiders tending to be perceived as more charismatic and less managerial than outsiders.

None of the coefficients for any of the executive groups is significant for the fourth factor, which may suggest that greater strategic and creative ability does not affect hiring once a candidate is considered for a job and which may also be due to Factor 4 capturing a smaller amount of variation in the candidates' characteristics.

These results indicate that greater talent and, particularly, greater interpersonal skills help candidates land the jobs for which they are being considered. It also is worth pointing out the results for two of the control variables. First, assessed inside candidates are significantly more likely to be hired for all positions. Second, gender is insignificant for all candidates and all

positions. However, while insignificant, the point estimate for CEO positions implies women candidates are 28% less likely to be hired.

Panel B of table 7 divides the executives into insiders and outsiders. The results are qualitatively similar to those for the combined sample. The one difference perhaps, is that talent appears to be more important for outside hires.

Panel C of table 7 further includes the explanatory variables years in industry, nice person, risk taker, (outgoing) personality, good at sales and broad career path. The patterns for the factors remain qualitatively the same as in panel B. Like Factor 2, nice person, tends to be associated with an increased likelihood of being hired, although it is not always significant. The lack of significance is likely due to its correlation with Factor 2. CEO candidates also are more likely to be hired when they are perceived as risk-takers, particularly outside CEO candidates.

Panel D of table 7 repeats the analysis in panel A for companies of different size. Small companies have revenues less than \$100 million; large companies have revenues exceeding \$1 billion; medium companies have revenues in between the small and large cutoffs. The results are qualitatively similar for companies of all sizes. 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.

Finally, panel E of table 7 repeats the analysis in panel A for companies with different ownership structures – venture capital backed, private equity backed and public. For all three groups, more talented executives 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 executives in different positions have different characteristics and skills. In this section, we consider whether those particular characteristics and skills are predictive of future career progression.

While this analysis is inherently interesting, it also provides an implicit test of the results in the previous section. An assessment of a candidate may be biased towards the characteristics associated with the particular positions. For example, interviewers might rate CEO candidates higher on certain characteristics, because they expect CEO candidates to have these characteristics. One way to assess the general validity of the assessments is to see whether the assessed characteristics predict that a candidate will obtain a different job in the future. We are particularly interested in understanding whether the characteristics of non-CEO candidates can predict if a candidate will subsequently become a CEO. This also is important in practice, because it can confirm that different positions really do 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 note 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 a position 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 under 5% of CFO candidates ultimately become CEOs.

*A. Average Factor Scores*

Panel A of table 9 reports the average factor scores of executives who eventually obtain a position, but did not interview for it. Candidates who were not assessed for a CEO position but ultimately become CEOs have higher scores on talent, execution skills, charisma and strategy. These patterns are consistent with our earlier results on executive characteristics and support the validity of the assessments. 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 an executive position as indicated (CEO, COO, or CFO), and the explanatory variables include the candidate's observed characteristics at the time of the interview. In each specification, the sample is restricted to candidates who are assessed for positions other than the indicated executive position eventually reached. In the first three regressions, we include industry and year fixed effects. In the second three regressions, we further include years in industry and indicators for gender and whether the candidate is an insider.

Panel B of table 9 presents results for the entire sample. 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 talent (Factor 1), execution (negative Factor 2), charisma (negative Factor 3) and strategic / creative (Factor 4). A one standard deviation increase in the factor is associated, respectively, with a 19.8%, 16.5%, 13.5% and 16.7% increase in the likelihood of becoming a CEO.

Specification 2 indicates that candidates who are less charismatic (and more bureaucratic) are significantly more likely to become CFOs. Specification 3 indicates that more talented and less strategic executives 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, the qualitative patterns are similar for all three groups for CEOs. Executives rated higher in talent, higher in execution skills, higher in charisma and higher in strategy are more likely to become CEOs in all three types of companies. The coefficients on execution and strategy are particularly large economically for all three groups.

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 add the five subjective characteristics. The results are qualitatively similar to those in the first three regressions. For CEOs, the results for the factors are qualitatively similar, but only Factor 4 (creative / strategic) remains significant. The reduced significance of Factor 2 is likely driven by its correlation with nice person. Like

executives with high scores on Factor 2 (low on execution and high on interpersonal), nice executives are less likely to become CEOs. Again, these results appear to support Pfeffer (2015).

Similarly, the reduced significance of Factor 3 is likely driven by its correlation with being a risk taker and good at sales, both of which are significantly related to becoming a CEO. These results are strongly consistent with those in Green et al. (2015) that more extraverted CFOs are more likely to become CEOs.

Overall, these results support the validity of the assessments and our earlier results on executive characteristics. CEOs tend to be more talented, more execution-oriented, more charismatic and more strategic. Non-CEOs with those characteristics are more likely to become CEOs. The different results for CFOs (versus CEOs) provide additional support for the validity of the assessments. The results strongly suggest that different characteristics and factors are relevant for different positions. These results also suggest that it is possible to predict which executives are more likely to succeed in the future.

The results on gender in regressions 4 to 6 of panel B are also notable. Holding talent and skills constant, women are significantly less likely to become CEOs and COOs. They also are less likely to become CFOs, but the coefficient is not significant.

## **V. Summary and Discussion**

Using a data set of over 2,600 executive assessments for top executive jobs – CEO, CFO, COO, and others – we find that candidate characteristics can be classified by four primary factors: general ability and skills, execution skills (versus interpersonal skills), charisma and strategic skills. This suggests that executive skills / characteristics can be measured and

classified. The first two factors are similar to those for a smaller sample of CEO candidates in KKS (2012).

CEO candidates tend to score higher on all four factors while CFO candidates score lower. This suggests that CEOs are, indeed, stronger on all of these factors. We also find that public company and larger company candidates score higher than those from private and smaller company candidates. This is consistent with the results in Adams et al. (2014) who find that CEOs are more (cognitively and non-cognitively) talented on average, and larger companies hire the more talented CEOs.

Scores on the four factors also predict future career progression. In particular, non-CEO candidates who score higher on the four factors are subsequently more likely to become CEOs. This provides strong evidence that the assessments we use provide valid measures of talent. It also provides strong evidence that executive talents and skills can be assessed and that they are persistent.

We do not find economically large differences in the four factors for men and women. We do find, however, that women are ultimately less likely to become CEOs and COOs, holding the factors constant.

Finally, hired candidates of all types score higher than assessed candidates on interpersonal skills. This suggests that interpersonal skills are valued differently in the hiring decision from their value in identifying candidates. This is particularly interesting for CEOs given that CEO candidates are distinguished by execution skills, that execution skills predict future CEOs and the result in KKS (2012) 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 and for aspiring 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. (2014). 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 on execution skills in choosing a CEO. While we do not follow subsequent performance in this paper, KKS (2012) follow performance for 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 in distinguishing CEO candidates and in 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, related to the previous paragraph, the result that hired CEO candidates score lower on execution skills (and higher on interpersonal skills) than interviewed candidates leads us to speculate that boards and shareholders overweight interpersonal skills in making 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 strategic factors are more likely to become CEOs. The question is whether it is possible to improve on those factors or skills. It seems plausible that executives can improve execution skills – being more persistent, efficient and proactive. In fact, Drucker (1967) recommends precisely these actions to be an effective executive. It is less clear whether executives can improve their charisma and their ability to be strategic and creative. This, too, is an interesting question for future research.

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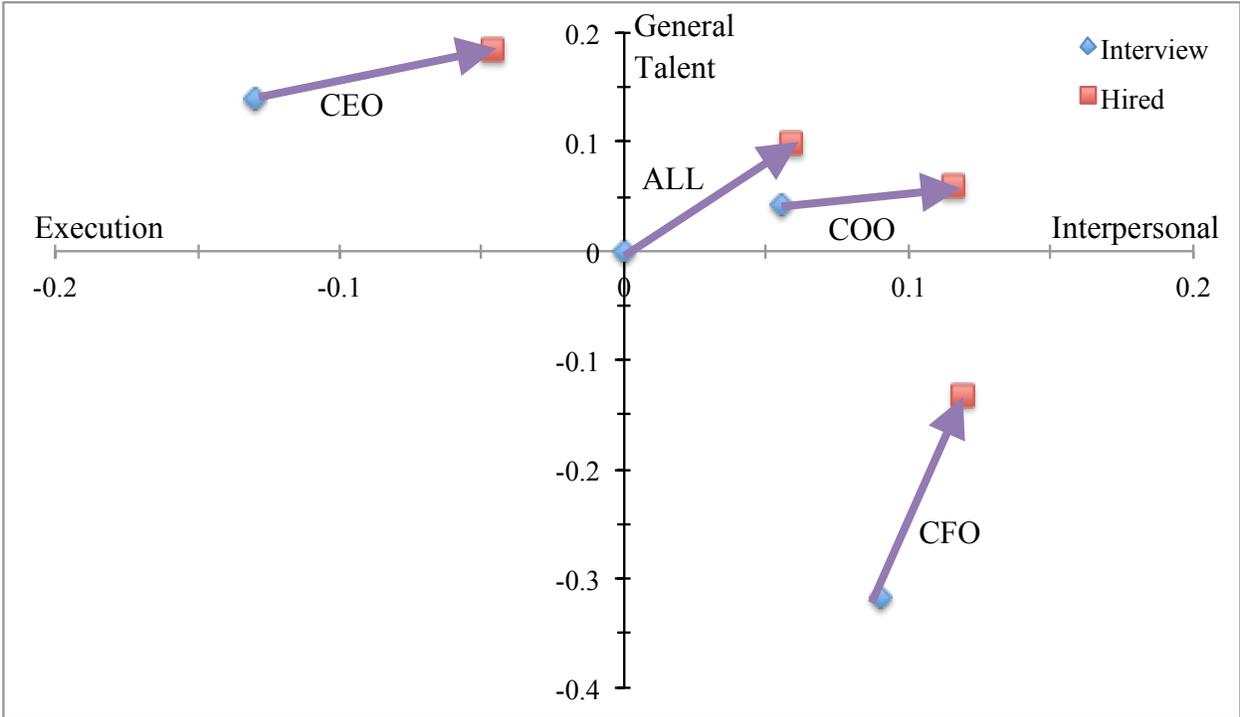
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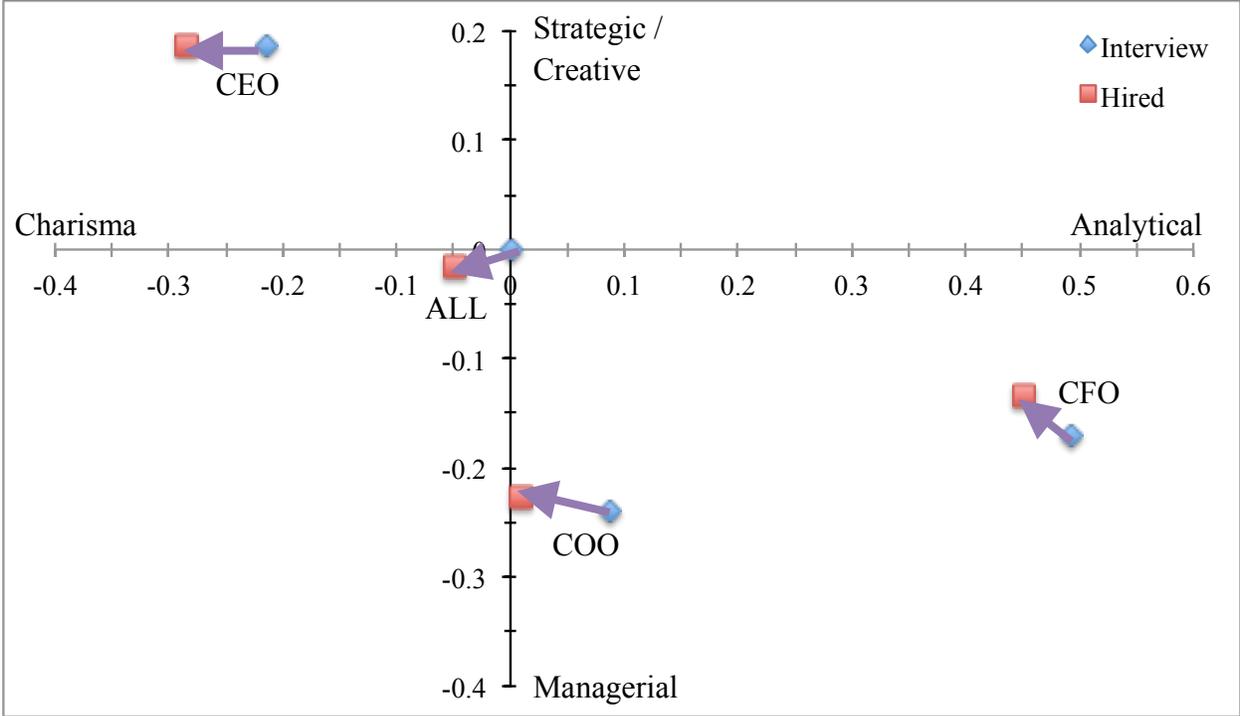
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**Figure 1: Interviewed versus Hired** Panels A and B depict the average scores for ALL candidates as well as candidates assessed for CEO, CFO and COO positions. Panel A shows average scores on factors 1 (general talent) and 2 (execution versus interpersonal). Panel B shows average scores on factors 3 (charisma vs. analytical) and 4 (managerial vs. strategic / creative). 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 just the hired candidates. The numerical values are reported in Table 6.

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



Panel B: Factor 3 (Charisma vs. Analytical) and Factor 4 (Managerial vs. Strategic / Creative)



**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 Traits by Position** For each job title, the tables shows the subjective traits *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 Traits 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 Traits 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 Traits by Ownership Type for just 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** This table shows factor loadings for all interviewed candidates. Panel A gives the factor loadings on the four first factors. 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 traits *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 correlations are omitted, and in this panel 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 for first six factors

	Eigenvalue	Proportion	Cumulative
Factor1	9.32	57.9%	57.9%
Factor2	2.88	17.9%	75.8%
Factor3	1.52	9.4%	85.2%
Factor4	1.12	6.9%	92.2%
Factor5	0.85	5.3%	97.4%
Factor6	0.42	2.6%	100.0%

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 (+Talent)	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 (+Talent)	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 (+Talent)	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 (+Talent)	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 (+Talent)	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 (+Talent)	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 (+Talent)	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. Insider						1.004 (0.005)	1.012 (0.010)	0.991 (0.014)	1.004 (0.004)	1.005* (0.003)
						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)
	CEO	Insider CXO	ALL	CEO	CFO	Outsider COO	CXO	ALL
Factor 1 (+Talent)	1.135 (0.099)	1.053 (0.069)	1.147*** (0.052)	1.309*** (0.097)	1.767*** (0.181)	2.041*** (0.559)	1.460*** (0.080)	1.504*** (0.061)
Factor 2 (-Exec.)	1.211** (0.096)	1.145** (0.072)	1.114** (0.050)	1.156* (0.092)	1.002 (0.103)	1.628** (0.376)	1.129** (0.066)	1.148*** (0.048)
Factor 3 (-Charis.)	0.840** (0.072)	0.910 (0.063)	1.007 (0.047)	1.008 (0.087)	0.994 (0.153)	0.424** (0.154)	0.982 (0.066)	0.980 (0.046)
Factor 4 (+Strat.)	0.840* (0.075)	0.880* (0.065)	0.939 (0.046)	1.026 (0.095)	0.999 (0.136)	0.675 (0.172)	0.979 (0.067)	0.934 (0.044)
Constant	2.152*** (0.587)	2.600*** (0.559)	2.304*** (0.288)	0.650* (0.152)	0.696 (0.177)	0.583 (0.462)	0.647*** (0.105)	0.740*** (0.064)
Ind. FE	Yes							
Time FE	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)
	CEO	Insider CXO	ALL	CEO	CFO	Outsider COO	CXO	ALL
Factor 1 (+Talent)	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 (+Talent)	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)	(2)	(3)	(4)	(5)
	ALL	ALL	ALL	CEO	CEO
	VC	PE	Public	VC	PE
Factor 1 (+Talent)	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 (+Talent)	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 (+Talent)	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) CEO	(8) CFO	(9) COO
Factor 1 (+Talent)	1.089 (0.060)	1.065 (0.110)	1.125* (0.073)
Factor 2 (-Exec.)	0.915 (0.060)	0.841 (0.097)	0.952 (0.067)
Factor 3 (-Charis.)	0.906 (0.054)	1.074 (0.122)	0.916 (0.062)
Factor 4 (+Strat.)	1.137** (0.066)	0.971 (0.103)	0.912 (0.058)
Yrs in Ind	1.007 (0.005)	0.994 (0.010)	0.981*** (0.006)
Insider	0.924 (0.099)	0.745 (0.147)	0.927 (0.108)
Female	0.742* (0.131)	0.608 (0.248)	0.600** (0.150)
Nice Person	0.860 (0.120)	0.941 (0.221)	1.080 (0.172)
Risk taker	1.229* (0.131)	1.130 (0.218)	1.069 (0.124)
Personality	0.949 (0.106)	0.839 (0.159)	0.932 (0.114)
Good at Sales	1.239* (0.138)	0.553*** (0.108)	0.931 (0.115)
Career path	1.104 (0.114)	1.052 (0.195)	0.986 (0.110)
Constant	0.220*** (0.046)	0.203*** (0.072)	0.197*** (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**
(+Talent)	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
<b><u>Leadership</u></b>			
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.
<b><u>Personal</u></b>			
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.
<b><u>Intellectual</u></b>			
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.
<b><u>Motivational</u></b>			
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.
<b><u>Interpersonal</u></b>			
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.