

NBER WORKING PAPER SERIES

HAVE CEOS CHANGED?

Yann Decressin
Steven N. Kaplan
Morten Sorensen

Working Paper 32854
<http://www.nber.org/papers/w32854>

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
August 2024

We thank Geoff Smart, and Randy Street of ghSMART for providing the data. We thank Mark DesJardine and Avri Ravid for helpful comments and Harrison Dong, Asser Maamoun, Neil Mauskar and Yash Srivastav for able research assistance. This research has been supported by the Fama-Miller Center and the Kessenich E.P. fund. To facilitate data analysis for this project, Decressin became a ghSMART employee. He did not receive any compensation from the firm in connection with this project. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2024 by Yann Decressin, Steven N. Kaplan, and Morten Sorensen. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

Have CEOs Changed?

Yann Decressin, Steven N. Kaplan, and Morten Sorensen

NBER Working Paper No. 32854

August 2024

JEL No. G3,J4,M5,M51

ABSTRACT

Using more than 4,900 assessments, we study changes in the characteristics and objectives of CEOs and top executives since 2001. The same four factors explain roughly half of the variation of assessed CEO characteristics in this larger sample of executive assessments as in Kaplan and Sorensen (2021). After the global financial crisis (GFC), the average interviewed CEO candidate has lower overall ability, is more execution oriented / less interpersonal, less charismatic and less creative/strategic than pre-GFC. Except for overall ability and execution oriented/interpersonal, these differences persist in hired CEOs. Interpersonal or “softer” skills do not increase over time, either for CEO candidates or hired CEOs. Pre- and post-GFC, we find a positive correlation between the ability of assessed CEOs and other C-level executives assessed at the same company, suggesting that higher-ability executives complement each other. Finally, we look at the relation between the objectives for which the CEOs are interviewed and CEO characteristics.

Yann Decressin
The University of Chicago
ydecress@uchicago.edu

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
Tuck School of Business
Dartmouth College
100 Tuck Hall
Hanover, NH 03765
and NBER
morten.sorensen@tuck.dartmouth.edu

In recent years, corporate ESG (Environmental, Social and Governance) goals have become prominent, and the so-called “Millennials” and “GenZers” have entered the labor force. There is a sense in the media and among some academics that CEOs and top executives today should focus more on softer and interpersonal skills to accommodate those changes. Deming (2017) argues that the demand for social skills has increased because jobs increasingly involve team production and trading of tasks among workers. Hansen, Sadun, Ramdas, and Fuller (2021) investigate descriptions of executive positions as part of search processes and find an increasing demand for social skills for CEOs, where social skills include motivating, persuading, listening to and empathizing with others. Pfeffer (2015 and 2022), in contrast, suggests that little has changed fundamentally: successful leaders always have “built their power bases, embraced ambiguity, eschewed popularity contests, adapted and mastered the science of influence.”

In this paper, we study trends in the characteristics and objectives of CEOs and other executives since 2001. We use a sample of over 4,900 assessments of C-level executives through 2019 to study trends in characteristics of candidates assessed for and hired into CEO and other executive positions. The sample, which substantially extends the sample of over 2,600 assessments used by Kaplan and Sorensen (2021), allows us to consider changes and trends in managerial characteristics and hiring decisions over this period.

The assessments are performed by ghSMART as part of corporate hiring or retention processes. Each assessment contains a detailed description of the candidate’s background and personality, including ratings for about thirty specific characteristics (described in Table A-1; the precise number of characteristics varies across assessments).¹ The candidates are considered for a range of positions in the hiring companies, which include both public and private companies.

¹ Botelho and Powell (2018), building on the results in KKS and preliminary results from this study, also use the ghSMART data to study the determinants of CEO success.

A typical assessment is requested by a private equity investor as part of its due diligence when evaluating a potential investment in a company. More than half of the CEOs in the sample are assessed as part of such a due diligence process.

As in Kaplan and Sorensen (2021), we use factor analysis to summarize the main variation in the characteristics (see Fabrigar et al. 1999, Borghans, Duckworth, Heckman 2008, and Adams, Akyol and Verwijmeren 2018). The same four factors – which we interpret as (1) overall ability, (2) execution vs. interpersonal, (3) charisma vs. analytical, and (4) creative / strategic vs. detail-oriented – explain roughly half the total variation in the characteristics for this larger sample of executive assessments.

We focus on changes over time. Post-GFC (assessed in or after 2009), the average potential CEO candidate has lower overall ability, is more execution-oriented and less interpersonal, more analytical and less charismatic, and more detail-oriented and less creative / strategic than pre-GFC. All of these changes are statistically significant. CEO candidates who are actually hired to become CEOs are also more analytical and less charismatic as well as more detail oriented and less creative / strategic post-GFC. At the same time, they are similar in overall ability and execution versus interpersonal orientation compared to CEOs hired pre-GFC. Post-GFC, therefore, we find no evidence that interpersonal and “softer” skills increase. Those skills are similar in the subset of hired CEOs and weaker in the larger pool of assessed CEO candidates. Overall, our evidence is more consistent with the view of Pfeffer (2015 and 2022) that little has changed fundamentally.

The dataset also allows us to study how the characteristics of CEOs are related to the characteristics of other top executives at the same company. For example, do high-ability CEOs attract other higher ability executives? The answer appears to be yes. Both pre- and post-GFC,

we find a strong positive correlation between the ability of assessed CEOs and other C-level executives assessed for positions in the same hiring company, suggesting that higher-ability executives complement each other. We do not find consistent relations between other factors for executives at the same company.

Finally, it is possible that a company's situation affects its demand for a certain type of CEO and other executives. For example, one CEO may be better at a business that wants to grow, while another may be better at a business that wants to streamline its operations. Most of the assessments include the objectives and challenges facing the hiring companies. Accordingly, we study how those objectives and challenges relate to the characteristics of the CEOs who are assessed and hired. We find an increase in demand for CEOs with skills in organic growth, operations and strategy. We find a decrease in demand for CEOs with skills in staffing. We find a modest relation between the desired objectives and the characteristics of the assessed and hired CEO candidates. Again, these results are not obviously consistent with an increase in demand for CEOs with interpersonal or social skills.

Our analyses complement Deming (2017) who documents an increasing importance of social skills in the general US economy, arguing that this is consistent with an increasing importance of workers "trading tasks" to exploit comparative advantage. Deming's analysis is based on two questions in the NLSY79 and NLSY97 surveys of 14- to 22-year-olds who report their self-assessed sociability both at the time of the survey and previously at age 6. While Deming (2017) looks at the general population, our sample focuses on the most senior employees, particularly CEO candidates. Our data contain about 30 specific characteristics that are coded after a structured assessment of the candidate, allowing a more nuanced analysis of the

candidate's social skills and personality traits. Unlike Deming (2017), we do not find any increase in the importance of interpersonal skills for the individuals in our data.

Our analyses also complement those in Hansen, Sadun, Ramdas, and Fuller (2021). As mentioned earlier, Hansen et al. (2021) investigate executive search descriptions and find an increasing demand for social skills for CEOs over time, where social skills include motivating, persuading, listening to, and empathizing with others.

In comparison to Hansen et al. (2021), we do not find an increase in the importance of interpersonal skills for hired CEOs in our data. There are three major differences between our methodology and theirs that could explain this. First, Hansen et al. (2021) use job descriptions, which more closely aligns to our scorecard section. But even here, we find that Staffing skills have become less important over time. Second, Clusters need not be opposites, but factors have opposite poles. A more apt comparison to our Factors would be to see how much more important Social Skills cluster has gotten relative to Information Skills and Monitoring clusters, which have also grown. Third, comparisons between the clusters in Hansen et al. (2021) and our factors lack clarity because they sort traits differently. Hence, we wouldn't expect the top line results to be exactly the same. Moreover, a limitation in their paper is that they do not know the results of the searches – the candidates who are considered and those who are hired. Our results suggest that the descriptions can diverge from decisions and results.

The paper proceeds as follows. Section I describes our data. Section II reports trends in CEO characteristics. Section III reports the relation of characteristics of executives considered by the same company. Section IV looks at the difference between executives who are hired and not hired in more detail. Section V describes corporate objectives, their relation to CEO characteristics and their trends over time. Section VI concludes.

I. Data

We use data from ghSMART, a consulting firm that provides detailed assessments of top executive candidates, typically in connection with hiring and retention decisions. Kaplan, Klebanov, and Sorensen (2012), Kaplan and Sorensen (2021) and Kaplan, Sorensen, and Zakolyukina (2022) use earlier versions of this dataset with a shorter sample period. In contrast to the earlier studies, our twenty-year sample period allows us to consider changes and trends in executive characteristics.

Assessments are typically done as part of the due diligence for private equity firms evaluating investments in companies and as part of executive search processes by public company boards. Consequently, most assessments are done ex-ante, before the investment, retention or hiring decision is made. Moreover, ghSMART only assesses candidates. It does not source or recommend individual candidates and, therefore, has no vested interest in whether a particular candidate is hired or a particular investment is made.

As shown in Panels A and B of Table 1, our data contain 4,939 candidates assessed for positions in 1,394 companies during the period from 2000 to 2019 with a fairly consistent annual number of assessments since 2002. The data is a random sample of all the assessments performed by ghSMART over this period with the caveat that candidates considered for publicly-traded companies are underweighted in the later part of the sample due to confidentiality concerns. We can observe whether hiring companies are publicly traded, so this underweighting should not bias our results conditional on controlling for the status of the hiring companies.

The most common position is CEO (1,299 candidates), followed by CFO (602), VP (463, not reported), and COO (274). More than half of the assessed CEO candidates are considered for

private equity portfolio companies. Venture capital and growth equity portfolio companies are the next two largest sources of candidates. Unaffiliated private and public companies each provide about 5% of the companies and candidates.

Panel C of Table 1 shows that more than 10% of all candidates but fewer than 5% of the CEO candidates are female. The column with Other candidates shows candidates who are considered for positions other than CEO and CFO positions, and the Total column contains all candidates. Panel D shows that about half of the assessed CEO candidates are hired and that the hiring rate is lower for non-CEO candidates.

A. Assessment Reports

ghSMART uses a systematic assessment process based on practices developed in industrial and personal psychology. The process is described in Smart and Street (2008) and Bothelo and Powell (2018). The central element is an extensive structured interview where the interviewer asks about the candidate's past experiences and explores the candidate's past behavior in particular situations throughout the candidate's career. The resulting report describes the candidate's history and character in detail, including educational, career and family background. The reports are written documents that are intended for the investors or boards of the hiring companies, but they are organized in a consistent format throughout the sample period. From each report, we manually code the name of the company, the position that the candidate is considered for, whether the candidate is an internal (incumbent) or external candidate, and the candidate's gender, education, and work history.

Each report contains a section where the candidate is graded on about 30 specific characteristics (the precise number varies slightly across reports), and Table A1 in the Appendix shows ghSMART's internal description of the specific characteristics and their grading scheme.

Characteristics are graded from D (lowest) to A+ (highest), reflecting the extent to which the candidate's personality exhibits the specific characteristic, and we convert the letter grades to numerical grades using the standard scale where an "A+" is coded as 4.3, an "A" is coded as 4, an "A-" is 3.7, a "B+" is 3.3, a "B" is 3, etc.

We supplement the information in each report with additional information from various public sources about the candidate's subsequent career and whether the candidate was hired for the position. We primarily rely on LinkedIn, which has good coverage of corporate executives. We also use Pitchbook, CapitalIQ, Zoominfo.com, and general internet searches.

B. Reliability

An important concern is whether candidates can manipulate the assessment process by presenting themselves more favorably. In organizational and personal psychology, this is known as "faking." ghSMART uses best practices from personnel psychology to mitigate this concern, including using external interviewers instead of self-assessments (e.g., Dohmen and Jagelka 2023), and using extensive structured interviews instead of questionnaires (Ones, Dilchert, Viswesvaran, and Judge 2007). Assessments are expensive, yet ghSMART has seen its business grow substantially, indicating that ghSMART's customers find the assessments to be valuable and informative. Finally, the statistical results in previous papers using these data confirm that the assessments are informative and have significant predictive power. For example, Kaplan and Sorensen (2021) show that candidates with assessed characteristics that are more typical for CEOs are also more likely to later become CEOs in other companies and through hiring processes that do not involve ghSMART.

C. Factor Analysis and Interpretation of Factors

The grades across specific characteristics are highly correlated, so we use factor analysis to extract the low-dimensional variation in these grades.² In factor analysis, a factor is typically considered valid when its eigenvalue exceeds one. We find four such factors. Panel A of Table 2 shows the factor loadings. The factors are not rotated, and the loadings are orthogonal by construction. Combined, the four factors capture 49.6% of the variation in the specific characteristics, as shown in Panel B of Table 2.

The four factors have natural interpretations that are consistent with prevailing theories of CEO types. The first factor loads positively on all specific characteristics, suggesting that the characteristics tend to move together. This is a common finding in personality studies, dating back to Spearman (1904). We interpret this first factor as measuring a candidate’s general ability in the spirit of Rosen (1981).

The second factor loads most positively on the characteristics: treats people with respect, open to criticism, teamwork, and listening skill. It loads most negatively on aggressive, moves fast, proactive, and holds people accountable. The second factor thus contrasts candidates with greater interpersonal skills – who have positive scores on the second factor – with candidates with greater execution skills – who have negative scores. Bolton, Brunnermeier, and Veldkamp (2013) model a tradeoff between resolute leaders (top-down information flow) and leaders who listen to and learn from their subordinates (bottom-up information flow) when aggregating information and coordinating actions in an organization. This characterization seems closely related to the distinction captured by our second factor. Positive scores on the second factor also appear to be related to the social skills cluster in Hansen et al. (2021), whereas negative scores

² The statistical analysis is done with Stata’s “factor” command with the options: “factors(4),” “ml,” “blank(0.15),” and “altdivisor.” For more details, see Kaplan and Sorensen (2021).

on the second factor appear to be most closely related to the information skills and monitoring clusters.

The third factor has the most positive loadings on analysis, attention to detail, organization, and brainpower; it has the most negative loadings on enthusiasm, persuasion, and aggressive. Arguably, the third factor contrasts candidates with greater analytical personalities – who have positive scores on this factor – with candidates having more charismatic personalities – who have negative scores. Hermalin (2023) explores a model of charismatic versus analytical managers with a tradeoff between “inspirational” and “informative” managerial communication, and he derives conditions where rational agents respond to charismatic leaders. Our third factor captures a related distinction. Enthusiasm and persuasion, negative contributors to the third factor, also appear related to the social skills cluster in Hansen et al. (2021).

The fourth factor loads most positively on strategic vision, creative, and brainpower while loading most negatively on attention to detail, holds people accountable, and organization. The fourth factor thus contrasts candidates with a more creative-strategic perspective – who have positive scores – with candidates who are more detail-oriented – and have negative scores. This fourth factor is more marginal as it explains just 3.9% of the variation. It seems related to the information skills and human resources clusters in Hansen et al. (2021).

To summarize, the factor analysis results suggest a broader characterization of managerial traits. The first dimension is the CEO’s general ability, as theorized by Rosen (1981). The second dimension is how the manager aggregates information and coordinates action, either in a resolute, top-down manner or using an interpersonal style, as described by Bolton, Brunnermeier, and Veldkamp (2013). The third dimension is communication style, either through charisma and inspiration or by being analytical and informative, as analyzed by

Hermalin (2023). Finally, the fourth dimension contrasts detail-oriented with creative-strategic candidates. The ordering of the dimensions comes from the statistical factor analysis and depends on both the variation of the latent traits in the sample and how well these latent traits are identified by the specific characteristics. The ordering does not necessarily reflect which dimensions are more important for a particular outcome.

For each candidate, the factor analysis also produces a factor score for each of the four factors. The factor score is an ordinal measure of the extent to which the candidate's specific characteristics indicate the presence or absence of the latent factor or underlying trait. We interpret a higher score on factor 1 as indicating that the candidate has more general ability. A positive score on factor 2 indicates that the candidate's specific characteristics indicate a more interpersonal and less execution-oriented personality. Conversely, a negative score on factor 2 indicates that the candidate is more execution oriented and less interpersonal. For the third factor, a positive score indicates that the candidate is more analytical and less charismatic. Finally, a positive score on the fourth factor indicates that the candidate is more creative-strategic and less detail-oriented (conversely for negative scores).

The sample average of each factor score is zero by construction. We follow the convention of normalizing the factor scores to have a standard deviation of one in the sample. Estimates can thus be interpreted in units of standard deviation within the sample.

Kaplan and Sorensen (2021) compare factor scores for candidates considered for CEO, CFO, and COO positions and find substantial differences across these positions. They find that a candidate's factor scores are statistically predictive for the candidate's subsequent career, including whether the candidate eventually becomes a CEO. These findings support the

interpretation of the factors and imply that the factors capture aspects of a candidate's personality that are, at least somewhat, persistent over time.

D. Scorecards

In addition to the information about the candidate's personality and characteristics, the reports also contain a "scorecard" section. The scorecard lists the most important objectives and challenges facing the company at the time of the assessment. A typical scorecard lists five to ten such entries ordered by importance. To illustrate, a common entry for a CEO position is to grow revenues from X to Y within Z years. The entries often contain additional details and background, such as whether the growth should be organic or through acquisitions. Other examples of common scorecard entries are to formulate a strategic plan, manage operational costs and improve efficiency. The content of the scorecard is communicated by the hiring company to ghSMART to be considered when evaluating the candidate.

We manually code and classify the scorecard entries into eight topics: Staffing, Organic Growth, Strategy, Operations, Relations, Exit, Acquisitions and Costs. Staffing are entries that relate to identifying strong performers and replacing weak performers as well as leading and building a stronger management team. Organic items focus on organic revenue growth, either through expanding operations or by increasing revenue per customer. Strategy includes developing and executing a multi-year strategic plan for the company. Operations refer to improving operational efficiency and productivity along with supply chain and inventory management. Relations are entries that describe a need for the CEO to work with private equity investors and the company's board of directors. Exit are entries that identify a need for the CEO to facilitate an exit of the company for its private equity investors, either through a public listing or a sale to a corporate acquirer or other private equity firm. Acquisitions refer to the need to

identify attractive acquisition targets and integrate them into the company. Finally, Costs are about reducing costs, typically using language such as closing plants or implementing layoffs.

Table 11 reports descriptive statistics for the scorecard topics, including whether a topic is present, an importance score from 0 to 3, and whether the topic is among the Top-3 entries. The importance score is calculated as follows: If the topic is present among the first three entries on the scorecard, it has an importance score of 3. If it is listed among the following three entries, it is 2. If it is present among any of the remaining entries, it is 1. If it is not listed, the topic is coded with an importance score of 0 on this scorecard. The Top-3 indicator equals one for topics present among the first three entries of the scorecard and is zero otherwise, regardless of whether the topic is included further down on the scorecard or not included at all. We discuss the results for scorecards in Section V.

II. Trends in Executive Characteristics

Figure 1 plots the factor scores of CEO candidates over time. Panel A shows a steady decline in the general ability of these candidates (decreasing factor 1). Panel B shows that CEO candidates become somewhat less interpersonal and more execution-oriented (decreasing factor 2) over time. Panels C and D show that candidates are increasingly analytical and less charismatic (increasing factor 3) and increasingly detail-oriented and less creative-strategic (decreasing factor 4). The trends are gradual, and there is no evidence of structural breaks or sudden changes.

To be clear, a decrease in factor 2, rather than an increase, indicates a decline in the interpersonal skills of CEO candidates over the sample period. To the extent that charisma is also considered a social skill, it has also declined (increasing factor 3).

A. Comparison of CEO Candidates in the Early and Late Periods

To statistically evaluate the trends in Figure 1, Panel A of Table 3 shows the average factor scores for the 1,299 CEO candidates and 645 hired CEOs for the early period (pre-2009) and the late period (2009 and later).

In Panel A of Table 3, the first column (All) shows that CEO candidates have higher general ability (positive factor 1) than the sample average, which is zero by construction. CEO candidates have more execution than interpersonal skills (negative factor 2), they are substantially more charismatic than analytical (negative factor 3), and they are more creative-strategic than detail-oriented (positive factor 4). This pattern is consistent with Kaplan and Sorensen (2021). It is present in both the early and late periods and in the subset of hired CEO candidates, although the statistical significance declines, possibly due to fewer observations in the subsamples.

Panel A of Table 3 also indicates the statistical significance of two-sided t -tests. The first hypothesis (“A=0”) is that the factor score equals zero, the sample average. For all factors, this hypothesis is strongly rejected, and CEO candidates are clearly different from the average candidate.

The second hypothesis (“E=L”) is that the factor scores for CEO candidates are the same in the early and late periods. The t -tests confirm that the trends from Figure 1 are statistically significant, including the decline in the general ability of assessed CEO candidates (decreasing factor 1), the move towards less interpersonal and more execution-oriented candidates (decreasing factor 2), the change towards less charismatic and more analytical candidates (increasing factor 3), and the change from more creative-strategic to more detail-oriented candidates (decreasing factor 4).

The third hypothesis (“H=N”) tests whether the factor scores for the hired CEO candidates equal the scores for the non-hired CEO candidates, providing evidence of how companies screen and choose among potential CEOs. Perhaps unsurprisingly, hired CEOs have higher general ability (higher factor 1) than non-hired CEO candidates, although this selection is concentrated in the late period. Hired CEO candidates are also less execution-oriented and more interpersonal (higher factor 2) than non-hired CEO candidates. This selection is also stronger in the late period. Further, hired CEOs are more charismatic and less analytical (lower factor 3) and more creative-strategic and less detail-oriented (higher factor 4) than the non-hired CEO candidates. These effects are all statistically significant.

The fourth hypothesis (“E=L”) is that the factor scores for the hired CEO candidates are the same in the early and late periods. While there are clear trends in the pool of potential candidates, there could also be changes in the screening and selection behavior of the hiring companies resulting in changes in the hired CEOs (which this hypothesis tests).

Interestingly, for general ability (factor 1) and interpersonal versus execution skills (factor 2), the factor scores are largely similar in the early and late periods; we see no evidence of changes in the hired CEOs for these two factors. These results are notable because these two factors changed substantially in the pool of assessed CEO candidates, and they are consistent with two concurrent trends. One trend is a decline in the supply of general ability and interpersonal skills in the pool of assessed CEO candidates. The other trend is increased screening for candidates with better general ability (higher factor 1) and more interpersonal skills (higher factor 2) when companies select among potential CEO candidates. These two effects offset, resulting in little change in the general ability (factor 1) and interpersonal skills (factor 2) of the hired CEOs. Importantly, under this interpretation, the increasing selectivity and screening

by the hiring companies is driven by a change in the supply of potential CEO candidates, not by a change in the corporate demand for a different kind of CEO.

Turning to factors 3 and 4, the last columns of Panel A of Table 3 reveal some significant changes. In the late period, hired CEOs are more analytical and less charismatic (increasing factor 3), although the hired CEOs are still more charismatic than the average candidate (negative factor 3). Hired CEOs are also less creative-strategic and more detail-oriented (decreasing factor 4), while remaining more strategic than average (positive factor 4). To interpret the changes in factors 3 and 4 for the hired CEO candidates, note that these changes largely follow the changes in the entire pool of assessed CEO candidates. Factor 3 has increased by 0.26 (from -0.38 to -0.12) for assessed CEO candidates, and it has increased by 0.31 (from -0.45 to -0.14) for the hired ones. Factor 4 has decreased by 0.23 (from 0.29 to 0.06) for the assessed CEO candidates, and it has decreased by 0.27 (from 0.37 to 0.10) for the hired ones.

Turning to CFO candidates, unlike for CEO candidates, Panel B of Table 3 shows no decline in general ability (decreasing factor 1). Like CEOs, CFO candidates have moved away from interpersonal and towards execution skills (decreasing factor 2). Unlike for CEOs, however, CFO candidates show both a slight decline in analytical skills (decreasing factor 3) and a shift away from detail-oriented skills (increasing factor 4), although CFO candidates are still more detail-oriented than the average candidate (negative factor 4).

The CFO results provide a useful baseline for evaluating the CEO results. A potential concern about the trends for CEO candidates is that they are due to changes in the sample selection or the assessment methodology rather than changes in the candidates. For factors 1, 2 and 4, however, the CFOs' average factor scores change in the opposite direction to those of the

CEOs (although they are not necessarily statistically significant), suggesting that the trends are not driven by changes in ghSMART's assessment methodology.

Panel C of Table 3 shows the results for Other candidates, i.e., the 3,039 candidates who are assessed for positions other than CEO and CFO positions. The most common Other positions are: Vice President, COO, President, Head, Senior Vice President, Director, and Managing Director. Moreover, there are many infrequent and one-off Other positions, such as Assistant Controller, Assistant Chief of Staff, Strategist, and Senior Banker. Directionally, the trends for Other candidates are similar to those for CEOs, but the magnitudes are smaller. Other candidates have seen a decline in general ability (decreasing factor 1), a move towards more execution-oriented and less interpersonal candidates (decreasing factor 2), a change towards more analytical and less charismatic candidates (increasing factor 3), and a change from more creative-strategic to more detail-oriented candidates (decreasing factor 4). The change in factor 1 is significant at the 10% level, and the other changes are significant at the 1% level.

Panel C of Table 3 shows that hired Other candidates have more general ability than non-hired Other candidates (higher factor 1). They are more interpersonal and less execution-oriented (higher factor 2) and more charismatic and less analytical (lower factor 3). These differences are highly significant. Moreover, for hired Other candidates, the general ability has increased (increasing factor 1), although general ability has decreased in the pool of assessed Other candidates (decreasing factor 1). Hired Other candidates are also increasingly execution-oriented and less interpersonal (decreasing factor 2), increasingly analytical and less charismatic (increasing factor 3), and increasingly detail-oriented and less creative-strategic (decreasing factor 4).

Panel D of Table 3 repeats the analysis for CEO candidates considered for portfolio companies of private equity and growth equity investors. The results are similar to those for CEO candidates in general, although the statistical significance is lower. Again, we see no evidence of increasing interpersonal skills in this group of CEOs. Finally, for completeness, Panel E of Table 3 shows the results for the entire sample of assessed candidates.

B. Regression Analysis of Trends

We complement the *t*-tests with multivariate regressions to control for other, potentially confounding, trends and to explore additional results. Table 4 shows OLS estimates of the factor scores with an indicator for the late subsample (*Late*) and additional controls.

Panel A of Table 4 shows estimates for all assessed CEO candidates, and the coefficients are largely consistent with the *t*-tests. In the first column, the significant coefficient -0.228 on *Late* confirms the decline in general ability (decreasing factor 1) of 0.228 standard deviations (within the sample), which is sizeable (the *t*-test shows a significant decline of 0.18). Looking across columns, the negative *Late* coefficient for factor 2 shows a 0.0949 standard-deviation shift towards more execution-oriented and less interpersonal CEO candidates (decreasing factor 2), although the coefficient is only significant at the 10% level. The positive *Late* coefficient in column three confirms a shift towards less charismatic and more analytical candidates (increasing factor 3), and column four confirms the shift towards more detail-oriented and less creative-strategic CEO candidates (decreasing factor 4). The magnitude and statistical significance of these coefficients are broadly similar to the results from the *t*-tests.

As mentioned earlier, the later part of the sample may underweight publicly-traded companies. Because they explicitly control for company ownership status, these regressions indicate that the univariate results are not driven by a change in sample weights.

The regressions provide additional results. Female and incumbent candidates are substantially more charismatic (lower factor 3) and more creative-strategic (higher factor 4) than male and outsider CEO candidates. Public company CEO candidates have substantially higher general ability (higher factor 1), but are substantially less charismatic and more analytical (higher factor 3) and less creative-strategic and more detail-oriented (lower factor 4). CEO candidates for private equity portfolio companies also have higher general ability (higher factor 1) and are more detail-oriented (lower factor 4), although the magnitudes are smaller than for public-company CEO candidates.

Panel B of Table 4 shows different trends for CFO candidates. For CFO candidates, the largest change is in column two, which shows a significant shift away from interpersonal and towards more execution-oriented CFO candidates (decreasing factor 2). In columns three and four, the CFO factor scores change in the opposite direction of those for CEO candidates, with CFOs becoming less analytical (decreasing factor 3, but insignificant) and more creative-strategic (increasing factor 4). Since CEO and CFO candidates are arguably the most similar candidates in the sample in terms of experience and seniority within a company, these opposing trends indicate that the results are not driven by general changes in ghSMART's methodology for assessing top executives.

For Other candidates, i.e., candidates considered for positions other than CEO and CFO positions, the *Late* coefficients in Panel C of Table 4 have the same signs as those for CEO candidates, but the magnitudes differ. The decline in general ability is smaller for Other than for CEO candidates (decreasing factor 1). The change from interpersonal towards execution-oriented candidates (decreasing factor 2), towards less charismatic and more analytical candidates

(increasing factor 3) and towards less creative-strategic and more detail-oriented candidates (decreasing factor 4) are largely similar to those for CEO candidates.

A difference in the fourth column is that female CEO candidates are more strategic and less detail-oriented (positive factor 4, Panel A), but female CFO and Other candidates are the opposite (negative factor 4, Panels B and C). A difference in the first column is that the coefficient for general ability (factor 1) for private equity candidates changes sign from CEO to Other candidates.

C. *Individual Characteristics*

To investigate CEO characteristics at a more granular level, Table 5 presents the average grades for the specific characteristics for the assessed and hired CEO candidates.

The trends in the specific characteristics are consistent with the changes in the factors. Consistent with a decline in interpersonal skills (decreasing factor 2), the average grades for the specific characteristics “calm under pressure,” “flexible,” “teamwork,” “oral communication,” and “treats people with respect” decreased significantly in the late period. The average grades of listening skills and open to criticism remain essentially unchanged in the late period. Consistent with a decline in charisma in the general pool of CEO candidates, the average grades for “enthusiasm” and “persuasion” also decrease.

For the hired CEOs, interpersonal and social skills also appear to decline, although not as strongly as in the pool of all assessed CEO candidates, possibly because corporations increasingly screen for these characteristics in their hiring decisions. The grades for “calm under pressure,” “oral communication,” “enthusiasm” and “persuasion” all decrease significantly in the late period. The grades for “flexible,” “teamwork,” “treats people with respect” and “listening skills” do not change significantly, while the grade for “open to criticism” actually increases.

Consistent with the factor analysis, the grades for the specific characteristics confirm that interpersonal and social skills for the assessed and hired CEO candidates have not increased over time. If anything, they have decreased. The trends are not consistent with Hansen et al. (2021), as mentioned above, who investigate executive search descriptions and find an increasing demand for social skills for CEOs over time, where social skills include motivating, persuading, listening to, and empathizing with others. These skills are closest to the interpersonal skills in our second factor and the charisma skills captured by our third factor.

III. Executives Considered for the Same Company

The dataset allows us to compare different candidates assessed for the same hiring company. For example, do high-ability CEOs coincide with other high-ability executives? Do CEOs who are more interpersonal and have greater social skills coincide with other executives who share these traits to a greater or lesser extent? Are the characteristics across top management complements or substitutes? We are not aware of any existing studies of this question, likely due to the difficulty of collecting the relevant data. Consequently, we explore these relations for the candidates in our sample who are assessed for the same company.

When there are several CEO candidates considered by the same company, we calculate the pair-wise correlations of their factor scores by forming all possible (unordered) pairs of candidates. To illustrate, if CEO candidates A, B, and C are assessed for a company, and candidates D and E are assessed for another company, then the four pairs are: AB, AC, BC, and DE. Mostly, when several CEO candidates are assessed for the same company, they are assessed as part of the same search. Out of the 709 CEO-CEO pairs, 419 pairs are assessed within a 90-day window.

Panel A of Table 6 shows the pair-wise correlations of the factor scores for the 709 CEO-CEO pairs in the data. The correlations on the diagonal are positive, and the first three are statistically significant, so the factor scores of CEO candidates considered for the same company tend to be positive correlated. This seems to indicate that companies may have different preferences for candidates: candidates for the same company are more similar to each other along the factors than to candidates of a different company. Panel A of Table 6 also shows a negative pair-wise correlation between factors 2 and 4. This is not a consistent finding, and it is more difficult to interpret. It may suggest that companies trade off candidates with a higher score on factor 2 (more interpersonal) and a lower score on factor 4 (more detail oriented) against other CEO candidates with a lower score on factor 2 (more execution skill) and a higher score on factor 4 (more creative-strategic) in the pool of assessed candidates.

Table 6 also shows correlations where both candidates are assessed in either the early (Panel B) or the late (Panel C) period. The total number of CEO-CEO pairs in Panels B and C is smaller than the number of pairs in Panel A, because pairs that span the two subsamples are not included in either panel. Despite the smaller number of pairs in the early period, the correlations for factors two and three are still positive and significant. In the late period, factor 1 becomes significant and factor 2 is no longer significant, which could suggest that companies increasingly identify CEO type by general ability (factor 1) and less by the characteristics captured by factor 2 (interpersonal and execution skills).

Panel D shows pair-wise correlations for the (ordered) pairs of CEO and CFO candidates considered for the same company (this is slightly different from the CEO-CEO correlations that consider unordered pairs). To illustrate, if a company considers candidates A and B for the CEO position and candidates C and D for the CFO position, the four CEO-CFO pairs are AC, AD,

BC, and BD. Naturally, these assessments are less clustered in time than the CEO-CEO pairs, and only 142 of the 581 CEO-CFO pairs in the sample are assessed within a 90-day window.

Panel D of Table 6 again shows a strong positive correlation for general ability (factor 1). Companies that consider CEOs with higher general ability also consider CFOs with higher general ability. Moreover, the positive and significant correlation between the CEOs' factor 3 and the CFOs' factor 1 shows that more analytical and less charismatic (higher factor 3) CEOs tend to be paired with CFOs with higher general ability (higher factor 1). The negative and significant correlation between the CEO's factor 2 and the CFO's factor 4 indicates that more execution-oriented CEOs (lower factor 2) pair with more creative-strategic CFOs (higher factor 4), and conversely that more interpersonal CEOs (higher factor 2) pair with more detail-oriented CFOs (lower factor 4).

Panels E and F of Table 6 show the correlations separately for the early and late periods. The significant correlation in general ability (factor 1) is consistent across both periods. Like CEO-CEO pairs, the CEO and CFO candidates' interpersonal skills (factor 2) are significantly correlated (albeit negatively) in the early period, but this correlation becomes insignificant in the late period. Again, this could indicate that interpersonal skills are becoming less important for identifying a candidate's type.

We also analyze, but do not report, the 283 (ordered) CEO-COO pairs (100 pairs are assessed within a 90-day window). While the number of CEO-COO pairs is smaller, we still find a positive and statistically significant (at the 1% level) correlation in general ability (factor 1).

To summarize, we find a positive and significant correlation in the general ability (factor 1) for candidates that are considered for the same company, and this correlation is robust across positions and periods. It is consistent with assortative matching of executives, such that better

CEOs, CFOs, and COOs tend to be considered by the same, presumably better, companies (see Gabaix and Landier 2008 and Tervio 2008 for assortative matching between CEOs and companies). We also see various correlations with interpersonal skills (factor 2) in the early period, although these correlations weaken in the late period, perhaps indicating that interpersonal skills are becoming less important for identifying a candidate's type when companies choose the pool of potential candidates to assess.

IV. Executive Hiring

To analyze the hiring decisions in more detail, Panel A of Table 7 presents two-sided *t*-tests that compare the factor scores of the hired and non-hired CEO candidates. In the early period, hired CEO candidates were significantly more charismatic (lower factor 3) and more creative-strategic (higher factor 4) than non-hired CEO candidates. In the late period, the selection changes, and hired CEO candidates now have more general ability (higher factor 1) and are less execution-oriented and more interpersonal (higher factor 2) than non-hired CEO candidates. However, despite this change in the selection in the late period, the hired candidates do not have significantly different scores on factors 1 and 2, as shown in the last column of Panel A in Table 3. This result is consistent with Kaplan, Klebanov, Sorensen (2012), who find that more interpersonal CEO candidates are more likely to be hired in a sample of 316 CEO candidates for private equity and venture capital financed companies.

Considering CFO candidates, Panel B of Table 7 shows that, in the late period, hired CFO candidates also have higher general ability (higher factor 1) and are less execution-oriented and more interpersonal (higher factor 2) than non-hired candidates.

Panel C of Table 7 shows stronger results for Other candidates, possibly due to the larger number of observations. In both periods, the hired Other candidates have more general ability

(higher factor 1) and are more interpersonal and less execution-oriented (higher factor 2) than the non-hired Other candidates. Moreover, for Other candidates, the resulting hires have significantly different factor scores in the late period, as shown in the last column of Panel C of Table 3.

A. Regression Analysis of Hiring Decisions

Table 8 shows OLS estimates with *Hired* as the dependent variable. We use linear OLS regressions rather than binary discrete choice models, like the probit and logit models, because our explanatory variables include the *Late* indicator interacted with the factor scores, and coefficients on interaction terms are easier to interpret in the linear OLS model. Again, we control for ownership status, incumbency and gender.

Column one in Table 8 shows that CEO candidates with higher general ability (positive factor 1) and incumbents are more likely to be hired. Column two adds interaction terms between *Late* and the factors scores. The positive effect of higher general ability is concentrated in the late period (positive factor 1 x *Late*), which is consistent with the results from the *t*-tests. Unlike the *t*-tests, the coefficients do not show significant evidence that CEO candidates with more interpersonal skills (higher factor 2) are more likely to be hired when the additional controls are included.

Turning to CFO candidates, columns three and four of Table 8 show that CFO candidates with higher general ability are more likely to be hired in both the early and late periods (positive factor 1), and this selection is stronger in the late period (positive factor 1 x *Late*). Consistent with the *t*-tests, more interpersonal CFO candidates are also more likely to be hired in the late period (positive factor 2 x *Late*).

Columns five and six again show stronger results for Other candidates, possibly due to the larger sample size. Other candidates with higher general ability (positive factor 1) and more interpersonal skills (positive factor 2) are more likely to be hired in both the early and late periods, and the hiring decision is again increasingly focused on general ability (positive factor 1 x *Late*).

Finally, in all specifications, incumbents are significantly more likely to be hired, and there is significant variation in the propensity to hire candidates across public companies and companies owned by private equity and growth equity investors.

V. Corporate Objectives: Trends and Relation to CEO Characteristics

A company's situation might affect its demand for a particular kind of executive. Accordingly, the trends in the assessed and hired executives, documented above, could arise in response to changes in the hiring companies. For example, one kind of CEO may be better at running companies that want to grow while another kind may be better at running companies that want to streamline their operations. If there are increasing numbers of, for example, the former kind of companies, this increase in the corporate demand for CEOs that can grow a business could, in turn, lead to more of such CEOs being hired and possibly to a trend in the entire pool of potential CEO candidates. In short, trends in the supply of executive candidates could arise in response to trends in the corporate demand for executives.

As mentioned, most assessments include a scorecard that lists the main objectives and challenges facing the hiring companies. Accordingly, we look at the stated objectives, how the objectives have changed over time, and how CEO characteristics are related to those objectives, both for CEOs who are interviewed and those who are hired.

To analyze the classification and coding of the scorecard topics, Table 9 shows regressions of the CEO candidates' scorecard ratings on their factor scores and other controls. In general, the coefficients are sensible. Candidates with higher general ability (higher factor 1) receive higher ratings across all topics. They tend to be rated higher on their ability to handle Staffing concerns when they are more detail-oriented (negative factor 4). Candidates are rated more highly on their ability to obtain Organic Growth when they have more execution skill (negative factor 2). The rating on Strategy is strongly related to being more creative-strategic (positive factor 4); it also is related to being more execution-oriented (negative factor 2). The candidate's rating on Operations is positively related to analytical ability (positive factor 3) and to being more detail-oriented (negative factor 4). The rating on issues regarding Relations is related to interpersonal skills (positive factor 2) and to being more analytical (positive factor 3). Exit is positively related to interpersonal skills (positive factor 2) and creative-strategic (factor 4). Acquisitions is related to analytical skills (factor 3) and creative-strategic (positive factor 4). Finally, the candidate's rating on concerns about reducing costs is related to the candidate being more analytical (positive factor 3) and detail-oriented (negative factor 4). Overall, the regression results seem to confirm that the classification, coding, and interpretation of the scorecard topics and ratings are reasonable.

Interestingly, in the first two and the last columns of Table 9, the estimated coefficients on the *Late* indicator are significant. The CEO candidates' ratings on their ability to handle Staffing and Costs have increased (positive *Late*), holding the factor scores constant, which could indicate that staffing and cost concerns are becoming less severe and easier to handle in the late period. In contrast, the ratings relating to Organic Growth have decreased (negative *Late*), holding factor scores constant, and concerns about organic growth could be increasingly difficult

to manage and require better candidates. The *Late* coefficients in the other columns are insignificant, and there is no indication that the nature and difficulty of the associated scorecard topics have changed in the late period.

Table 10 shows the CEO candidates' average grades on the specific characteristics when a scorecard topic is among the Top-3 topics. We show the results for the four most frequent topics. When Staffing is important, the assessed candidates have higher grades on calm under pressure, efficiency, persuasion, treats people with respect and work ethic. When Organic Growth is important, assessed candidates have higher analytical skills, brainpower, listening skills, open to criticism, and oral communication. When Strategy is important, candidates are stronger on strategic vision, brainpower and analysis skills, but also removing underperformers, hiring A players, efficiency and developing people. When Operations is an important objective, attention to detail, creative, developing people and analysis skills are significantly related. Overall, there are reasonable relations between the corporate objectives and the characteristics of the assessed CEO candidates.

A. Trends in Scorecard Topics

To investigate the trends in the corporate concerns, as represented by the scorecard topics, Panel A of Table 11 lists the eight scorecard topics in decreasing order of frequency, for the early and late periods, along with the importance score and the Top-3 frequency, i.e., the percentage of scorecards where the topic is among the first three entries. The two most frequent topics are Staffing and Organic Growth, which are present on 92% and 83% of the scorecards, respectively. Our preferred measure is the Top-3 indicator, because the number of topics on the scorecards increases over time. In the early period, Staffing and Organic Growth are also the two most frequent topics among the Top-3 entries.

Several trends stand out in Panel A. Staffing concerns are almost always listed on the scorecards, but they are becoming less frequent among the Top-3 entries, and their importance score is decreasing. In contrast, Organic Growth, Strategy, Operations and Acquisitions are increasingly among the Top-3 topics, and their importance scores are increasing.

B. Scorecard Topics and Factor Scores

The trends in corporate concerns could be related to the trends in executive characteristics, and Table 12 shows regressions of the factor scores on the Top-3 indicators and additional controls. The purpose is to see whether changes in corporate concerns, as reflected in the scorecard topics, affect the characteristics of the assessed candidates, as represented by their factor scores. Thus, gender and incumbency are not included as controls because they are characteristics of the candidates, not the companies, and thus potentially endogenous to the factor scores. However, the estimated coefficients remain largely unchanged with these additional controls, and they remain largely unchanged with Top-3 indicators for either fewer or more topics.

Panel A of Table 12 shows estimates for all assessed CEO candidates. There are two significant coefficients: Companies with Strategy and Operational concerns assess candidates with higher general ability (higher factor 1), although the effect is weaker for Operational concerns. The other coefficients for the Top-3 indicators are insignificant and smaller in magnitude.

Panel B of Table 12 shows estimates for the hired CEOs, and there are some significant coefficients. Companies with Strategy concerns tend to hire CEOs who have more general ability (higher factor 1) and who are more creative-strategic (higher factor 4). Companies with Staffing

concerns tend to hire more interpersonal CEOs (positive factor 2), and companies with Operational concerns tend to hire more analytical CEOs (positive factor 3).

C. Demand and Supply of CEOs

To evaluate whether the trends in the supply of executive characteristics are consistent with the trends in corporate concerns and demand for certain CEOs, note that the scorecard topics that are significantly related to the candidates' factor scores are Strategy, Staffing, and Operations. Thus, we consider trends in the corporate concerns for these topics to explain the trends in the candidates' factor scores.

Starting with Strategy, Table 11 shows an increase in corporate concerns about Strategy. Moreover, companies with Strategy concerns tend to hire CEOs with greater general ability (higher factor 1) and who are more creative-strategic (higher factor 4), as shown in Panel B of Table 12. However, both general ability and creative-strategic abilities have declined (decreasing factors 1 and 4) in the pool of potential candidates, and thus the decreases in general ability and creative-strategic candidates do not seem to arise from trends in corporate demand.

In contrast, corporate concerns about Staffing have decreased, as seen in Table 11, and companies with Staffing concerns tend to hire CEOs with greater interpersonal skills (positive factor 2), as seen in Panel B of Table 12. Thus, the decline in executive interpersonal skills (declining factor 2) is consistent with a declining corporate demand for executives with the interpersonal skills to manage Staffing concerns.

Similarly, Operational concerns have increased, as seen in Table 11, and companies with operational concerns tend to hire more analytical CEOs (higher factor 3), as seen in Panel B of Table 12. Thus, the increasing trend in analytical skills (increasing factor 3) in the pool of CEO

candidates seems consistent with increasing corporate concerns about Operations and an increasing demand for more analytical CEOs.

To summarize, the trend towards more execution-oriented and less interpersonal (decreasing factor 2) CEO candidates is consistent with a decreasing trend in corporate concerns about Staffing. The trend towards more analytical and less charismatic (increasing factor 3) CEO candidates is consistent with increasing corporate concerns about Operations. However, the declining trend in general ability (decreasing factor 1) and decrease in creative-strategic abilities (decreasing factor 4) are not consistent with the changes in corporate demand. In fact, the increasing corporate concerns about Strategy should increase the corporate demand for CEOs with greater general ability (higher factor 1) and more creative-strategic abilities (higher factor 4). Thus, the declining trends in general ability (decreasing factor 1) and creative-strategic (decreasing factor 4) CEO candidates appear to be due to a deteriorating supply of executive candidates with these skills.

VI. Conclusion and Discussion

We analyze more than 4,900 executive assessments to study changes in the characteristics and objectives of CEOs in the twenty-year period from 2000 to 2019. As in Kaplan and Sorensen (2021), we find that four factors—which we interpret as general ability, execution vs. interpersonal skills, charisma vs. analytical skills, and being creative-strategic vs. detail-oriented—explain roughly half the total variation in the specific characteristics for this sample of executive assessments.

We focus on trends over time. In the late period (candidates assessed in or after 2009), the average CEO candidate has lower overall ability, is more execution oriented and less interpersonal, more analytical and less charismatic, and more detail-oriented and less creative-

strategic than in the early period. The CEO candidates who are actually hired to become CEOs are also more analytical and less charismatic as well as more detail oriented and less creative-strategic in the late period. At the same time, they are similar in overall ability and execution vs. interpersonal orientation compared to CEOs hired earlier. In the late period, we therefore find no evidence of an increase in interpersonal and “softer” skills. Those skills are similar in the subset of hired CEOs and weaker in the larger pool of assessed CEO candidates.

Deming (2017) argues that the demand for social skills has increased because jobs increasingly involve team production and trading of tasks among workers. Hansen et al. (2021) investigate descriptions of executive positions as part of search processes and find an increasing demand for social skills for CEOs, where social skills include motivating, persuading, listening to, and empathizing with others. In our data, we do not find any increase in the importance of interpersonal skills for the hired CEOs. In our later sample period, CEO candidates have lower interpersonal skills, and hired CEO candidates have roughly the same interpersonal skills.

Our results are more consistent with Pfeffer (2015 and 2022), who suggests that little has changed fundamentally for CEOs. Successful leaders have always “built their power bases, embraced ambiguity, eschewed popularity contests, adapted and mastered the science of influence.”

Our larger dataset also allows us to compare the executive candidates that are considered for the same hiring company. For example, do high-ability CEOs attract other higher-ability executives? The answer appears to be yes. In both the early and late periods, we find a strong positive correlation between the ability of assessed CEOs and other executives assessed for positions in the same hiring company, suggesting that higher-ability executives complement each

other. We do not find consistent relations between other factors for executives at the same company.

Finally, it is possible that a company's situation affects its demand for a certain type of CEO and other executives. For example, one CEO may be better at managing a business that wants to grow while another may be better at a business that wants to streamline its operations. Most of the assessments include the objectives and challenges facing the hiring companies. Accordingly, we study how those objectives and challenges relate to the characteristics of the CEOs who are assessed and hired. We find an increase in demand for CEOs with skills in organic growth, operations and strategy. We find a decrease in demand for CEOs with skills in staffing. Again, these results are not obviously consistent with an increase in demand for CEOs with interpersonal or social skills.

The trend towards more execution-oriented and less interpersonal candidates could be consistent with a decrease in corporate concerns about staffing. Moreover, the trend towards more analytical and less charismatic (increasing factor 3) CEO candidates could be consistent with increasing corporate concerns about Operations. In contrast, the decline in general ability and create-strategic skills among CEO candidates are inconsistent with the trends in corporate demand. If anything, increasing corporate concerns about Strategy should lead to a stronger corporate demand for candidates with these skills. Thus, the evidence suggests that the declining trends in executive general ability and creative-strategic skills are due to a deteriorating supply of executive candidates. The reasons for these supply trends present an interesting question for future research.

References

- Adams, R., A. Akyol, A., and P. Verwijmeren, 2018, Director skill sets, *Journal of Financial Economics* 130, 641-662.
- Bandiera, Oriana, Stephen Hansen, Andrea Prat, and Raffaella Sadun, 2020, CEO Behavior and Firm Performance, *Journal of Political Economy* 128:4, 1325-1369.
- 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.
- Benmelech, Efraim and Carola Frydman, 2015, Military CEOs, *Journal of Financial Economics* 117: 43-59.
- 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.
- Borghans, 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 and Kim Powell, 2018, *The CEO Next Door: What It Takes to Get to the Top and Succeed* (Dickens Books).
- 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
- Deming, D. J., 2017, The Growing Importance of Social Skills in the Labor Market, *The Quarterly Journal of Economics* 132: 1593-1640.
- Deming, D. J., 2022, Four Facts about Human Capital, *Journal of Economic Perspectives* 36, Summer, 75–102
- Dohmen, Thomas and Tomas Jagelka (2023) “Individual-Specific Reliability of Self-Assessed

Measures of Economic Preferences and Personality Traits” forthcoming *Journal of Political Economy Microeconomics*

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.

Fuller, J., S. Hansen, T. Ramdas and R. Sadun, 2021, The Demand for Executive Skills, working paper, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3872391

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

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

Graham, John, Campbell Harvey and Manju Puri, 2017, A Corporate Beauty Contest, *Management Science*, 63, 3044- 3058.

M. Guenzel and U. Malmendier, 2020, Behavioral Corporate Finance: Life Cycle of a CEO Career, in: Oxford Research Encyclopedia of Economics and Finance, Oxford University Press.

Hoffman, Mitchell, Lisa B Kahn, and Danielle Li, 2018, Discretion in Hiring, *Quarterly Journal of Economics*, 133 (2), 765–800.

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 and Morten Sorensen, 2021, “Are CEOs Different? Characteristics of Top Managers,” *Journal of Finance* 76, 1773-1811.

Kaplan, Steven, Morten Sorensen and Anastasia A. Zakolyukina, 2021, “What Is CEO Overconfidence? Evidence from Executive Assessments,” *Journal of Financial Economics* 145, 409 - 425.

Ones, Deniz, Stefan Dilchert, Chockalingam Viswesvaran, and Timothy Judge, 2007, In support of personality assessment in organizational setting, *Personnel Psychology* 60, 995–1027.

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

Pfeffer, Jeffery, 2022, *7 Rules of Power*, (Matt Holt).

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

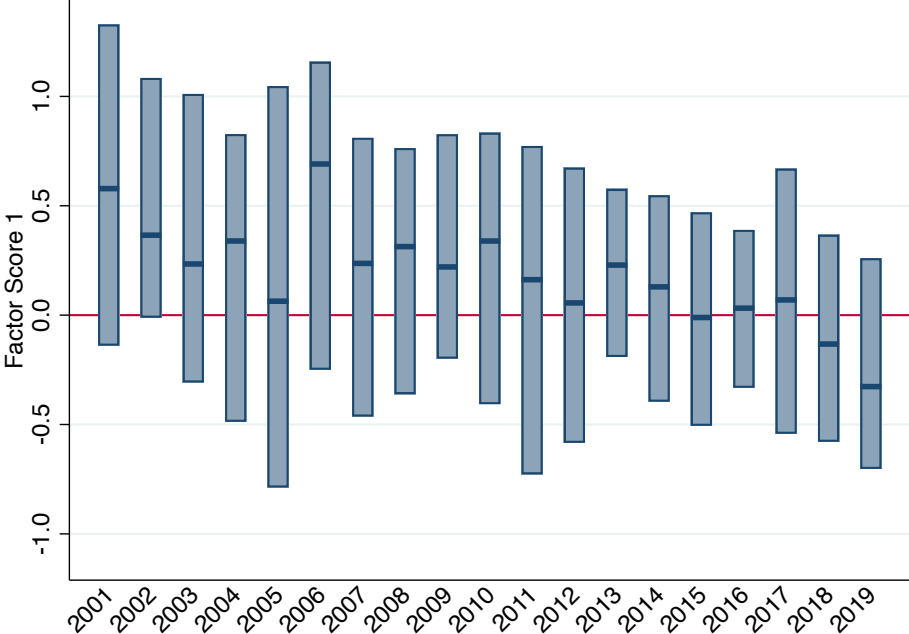
Schoar, Antoinette and Luo Zuo, 2017, Shaped by Booms and Busts: How the Economy Impacts CEO Careers and Management Styles, *The Review of Financial Studies* 30(5), 1425–1456.

Smart, Geoff and Randy Street 2008, *Who: Solve Your #1 Problem*

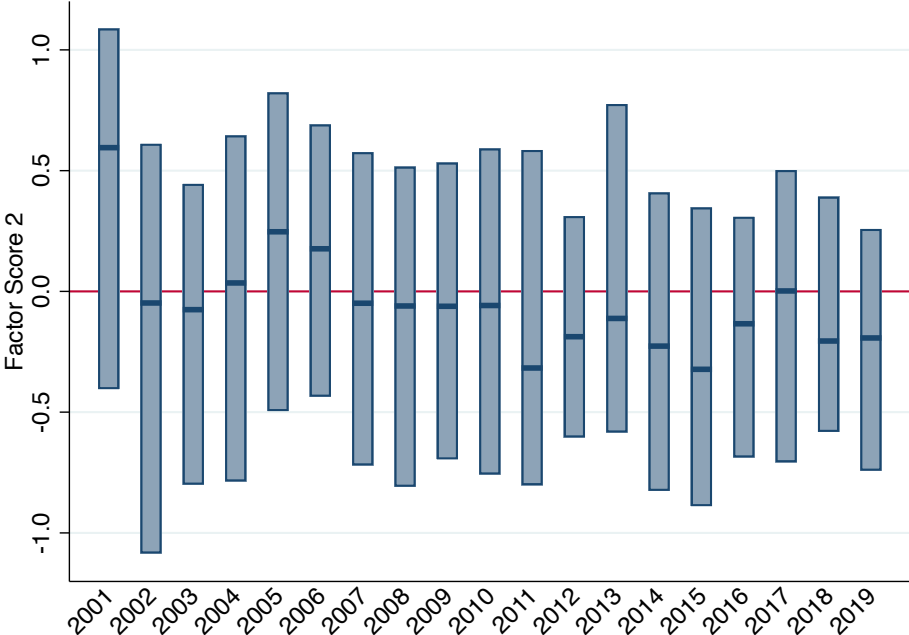
Spearman, Charles, 1904, ‘General Intelligence,’ objectively determined and measured, *The American Journal of Psychology*, 15(2), 201-293.

Figure 1: Trends in CEO Candidate Factor Scores The box plots show factors scores for all assessed CEO candidates by assessment year. The lower edge, middle line, and upper edge of each box shows the 25th, 50th (median), and 75th percentile, respectively.

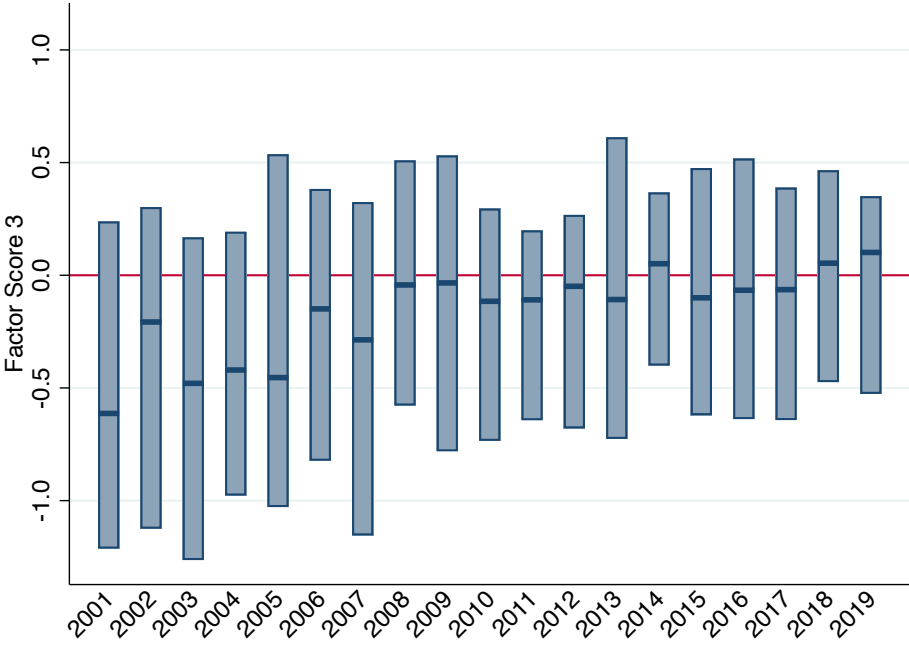
Panel A: CEO Candidate Score on Factor 1 (General Ability)



Panel B: CEO Candidate Score on Factor 2 (Execution versus Interpersonal)



Panel C: CEO Candidate Score on Factor 3 (Charisma versus Analytical)



Panel D: CEO Candidate Score on Factor 4 (Detail-oriented versus Creative-Strategic)

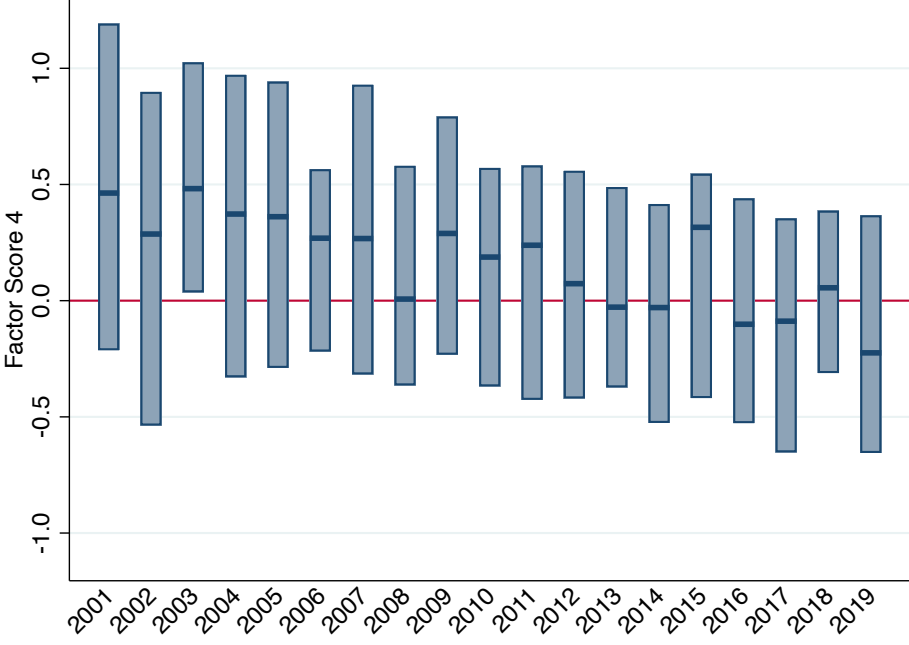


Table 1: Descriptive Statistics Panel A shows the number of assessments by assessment year and position. Panel B shows the number of assessments by type of the hiring company. Panels C and D show number of CEO, CFO, and Other (not CEO or CFO) candidates.

Panel A: Assessments by Year

	CEO	CFO	COO	Total
2000	7	0	0	8
2001	34	14	10	93
2002	66	30	15	204
2003	74	22	15	240
2004	96	21	22	290
2005	78	42	18	297
2006	71	40	20	336
2007	102	50	19	380
2008	89	41	13	320
2009	75	29	10	283
2010	82	32	18	315
2011	102	44	23	353
2012	75	30	15	323
2013	42	15	7	213
2014	58	29	10	226
2015	39	29	9	204
2016	43	39	4	189
2017	47	35	13	225
2018	70	40	20	269
2019	48	19	11	145
NA	3	1	2	26
Total	1,299	602	274	4,939

Panel B: Company Type (Better names of CO types)

Company Type	CEO Candidates	CEO Companies	All Candidates	All Companies
Growth Equity Portfolio Company	103	71	339	97
Investor	21	10	579	39
None	8	6	14	6
Nonprofit	4	3	8	3
PE Firm	25	16	110	22
PE Portfolio Company	780	557	2,158	737
Private Company	68	45	261	87
Public Company	61	25	388	44
VC Portfolio Company	209	168	433	191
NA	20	20	649	168
Total	1,299	921	4,939	1,394

Panel C: Position and Gender

	CEO	CFO	Other	Total
Female	63	47	422	532
Male	1,236	555	2,617	4,407
Total	1,299	602	3,039	4,939

Panel D: Position and Hired

	CEO	CFO	Other	Total
Hired	645	253	814	1,711
Not Hired	593	323	1,417	2,333
NA	61	26	808	895
Total	1,299	602	3,039	4,939

Table 2: Factor Decomposition of Specific Characteristics In Panel A, the factor loadings are not rotated and loadings less than 0.15 in absolute magnitude are blank.

Panel A: Factor Loadings on Individual Characteristics (not rotated)

	Factor 1	Factor 2	Factor 3	Factor 4
Aggressive	0.63	-0.42	-0.28	
Analytical Skills	0.55	-0.15	0.56	0.20
Attention to Detail	0.41		0.45	-0.29
Brainpower	0.52		0.36	0.38
Calm	0.46	0.34		
Commitments	0.68			-0.21
Creative	0.51			0.39
Develops People	0.53	0.22		
Efficiency	0.69			-0.22
Enthusiasm	0.54	0.26	-0.42	
Flexible	0.54	0.37		
Hires A Players	0.55			
Holds People Accountable	0.62	-0.25		-0.28
Listening Skills	0.41	0.59		
Fast	0.66	-0.38	-0.20	
Network	0.59			
Open to Criticism	0.43	0.63		
Oral Communication	0.48	0.16		0.18
Organization	0.51		0.39	-0.26
Persistence	0.67	-0.15		
Persuasion	0.58		-0.34	0.19
Proactive	0.72	-0.25	-0.19	
Removes Underperformers	0.48	-0.20		-0.23
Sets High Standards	0.72	-0.21		
Strategic Vision	0.56	-0.16		0.43
Teamwork	0.48	0.61		
Treats with Respect	0.33	0.71		
Work Ethic	0.58			

Panel B: Eigenvalue and Proportion of Variation Explained

	Eigenvalue	Proportion	Cumulative
Factor 1	8.74	31.2%	31.2%
Factor 2	2.68	9.6%	40.8%
Factor 3	1.37	4.9%	45.7%
Factor 4	1.08	3.9%	49.6%

Table 3: Trends in CEO and Executive Characteristics The table show average factor scores for various subsamples, as indicated. The late subsample contains assessments performed in or after year 2009; the early subsample contains assessments performed before 2009. Stars indicate statistical significance of two-sided t-tests: “A=0” factor scores for assessed candidates equal zero; “E=L” factor scores equal in early and late subsample, either for all assessed or for hired candidates; “H=N” factor scores for hired and non-hired candidates are equal. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% p-levels, respectively.

Panel A: Factor Scores (CEO Candidates, All Companies)

	All	t-test A=0	All Early	All Late	t-test E=L	Hired	t-test H=N	Hired Early	Hired Late	t-test E=L
Factor 1	0.09	***	0.18	0.00	***	0.18	***	0.17	0.19	
Factor 2	-0.11	***	-0.06	-0.16	*	-0.07	*	-0.07	-0.06	
Factor 3	-0.24	***	-0.38	-0.12	***	-0.30	***	-0.45	-0.14	***
Factor 4	0.17	***	0.29	0.06	***	0.24	***	0.37	0.10	***
Obs.	1,299		617	681		645		331	314	

Panel B: Factor Scores (CFO Candidates, All Companies)

	All	t-test A=0	All Early	All Late	t-test E=L	Hired	t-test H=N	Hired Early	Hired Late	t-test E=L
Factor 1	-0.32	***	-0.35	-0.30		-0.19	***	-0.25	-0.13	
Factor 2	0.03		0.17	-0.08	***	0.10		0.19	0.02	
Factor 3	0.43	***	0.45	0.41		0.45		0.48	0.44	
Factor 4	-0.19	***	-0.26	-0.13	**	-0.18		-0.24	-0.12	
Obs.	602		260	341		253		117	136	

Panel C: Factor Scores (Other Candidates, All Companies)

	All	t-test A=0	All Early	All Late	t-test E=L	Hired	t-test H=N	Hired Early	Hired Late	t-test E=L
Factor 1	0.03		0.07	0.00	*	0.17	***	0.10	0.27	***
Factor 2	0.04		0.13	-0.02	***	0.18	***	0.25	0.08	***
Factor 3	0.02		-0.07	0.09	***	-0.09	***	-0.16	0.02	***
Factor 4	-0.03		0.01	-0.07	***	-0.04		0.04	-0.16	***
Obs.	3,039		1,291	1,724		814		477	334	

Panel D: Factor Scores (CEO Candidates, Growth Equity and PE Portfolio Companies)

	All	t-test A=0	All Early	All Late	t-test E=L	Hired	t-test H=N	Hired Early	Hired Late	t-test E=L
Factor 1	0.10	***	0.25	-0.00	***	0.24	***	0.29	0.21	
Factor 2	-0.09	***	0.01	-0.17	***	-0.04	*	0.02	-0.09	
Factor 3	-0.24	***	-0.40	-0.13	***	-0.31	**	-0.48	-0.18	***
Factor 4	0.08	***	0.15	0.02	**	0.12		0.20	0.05	*
Obs.	883		359	524		445		194	251	

Panel E: Factor Scores (All Candidates, All Companies)

	All	All Early	All Late	t-test E=L	Hired	t-test H=N	Hired Early	Hired Late	t-test E=L
Factor 1	0.00	0.05	-0.04	***	0.12	***	0.08	0.17	*
Factor 2	0.00	0.08	-0.06	***	0.07	***	0.13	0.01	***
Factor 3	0.00	-0.10	0.08	***	-0.09	***	-0.18	0.03	***
Factor 4	0.00	0.06	-0.05	***	0.04	**	0.13	-0.05	***
Obs.	4,939	2,168	2,745		1,711		925	783	

Table 4: Trends in CEO and Executive Factor Scores The table shows estimates of OLS regressions with factor scores as the dependent variables. Late is an indicator for the late subsample, post 2009. Public and PE (Private Equity) are indicators for companies that are publicly traded and owned by private equity or growth equity investors, respectively. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% *p*-levels, respectively.

Panel A: Factor Scores (CEO Candidates)

	(1)	(2)	(3)	(4)
	Factor 1	Factor 2	Factor 3	Factor 4
Late	-0.228*** (0.0536)	-0.0949* (0.0544)	0.198*** (0.0529)	-0.115** (0.0479)
Female	0.167 (0.116)	-0.117 (0.124)	-0.218* (0.129)	0.263** (0.120)
Incumbent	-0.0544 (0.0568)	0.0737 (0.0581)	-0.228*** (0.0578)	0.243*** (0.0520)
Public	0.330*** (0.115)	-0.00505 (0.124)	0.420*** (0.127)	-0.320*** (0.100)
Private Equity	0.137** (0.0600)	0.0869 (0.0624)	-0.00699 (0.0585)	-0.281*** (0.0545)
Constant	0.108* (0.0602)	-0.139** (0.0611)	-0.280*** (0.0575)	0.346*** (0.0519)
Observations	1,298	1,298	1,298	1,298
R-squared	0.019	0.006	0.047	0.065

Panel B: Factor Scores (CFO Candidates)

	(1)	(2)	(3)	(4)
	Factor 1	Factor 2	Factor 3	Factor 4
Late	-0.0166 (0.0954)	-0.218*** (0.0836)	-0.0677 (0.0573)	0.159** (0.0621)
Female	0.199 (0.146)	0.0723 (0.118)	0.131 (0.0957)	-0.264** (0.104)
Incumbent	-0.275* (0.143)	0.114 (0.127)	-0.00309 (0.0857)	0.133 (0.0883)
Public	0.126 (0.183)	-0.149 (0.201)	0.241** (0.104)	-0.0251 (0.103)
Private Equity	-0.110 (0.113)	0.104 (0.0986)	0.0643 (0.0645)	0.0215 (0.0788)
Constant	-0.206* (0.111)	0.0570 (0.103)	0.397*** (0.0634)	-0.293*** (0.0822)
Observations	601	601	601	601
R-squared	0.016	0.023	0.009	0.022

Panel C: Factor Scores (Other Candidates)

	(1)	(2)	(3)	(4)
	Factor 1	Factor 2	Factor 3	Factor 4
Late	-0.0790** (0.0381)	-0.135*** (0.0359)	0.132*** (0.0340)	-0.0674** (0.0328)
Female	0.0390 (0.0487)	0.106** (0.0443)	-0.105** (0.0410)	-0.199*** (0.0433)
Incumbent	0.0636 (0.0543)	0.0565 (0.0544)	-0.0673 (0.0522)	0.0465 (0.0514)
Public	0.230*** (0.0523)	-0.0265 (0.0565)	0.0338 (0.0515)	-0.0683 (0.0551)
Private Equity	-0.215*** (0.0382)	0.0629* (0.0363)	-0.260*** (0.0340)	-0.120*** (0.0328)
Constant	0.120*** (0.0364)	0.0743** (0.0348)	0.0653** (0.0333)	0.0770** (0.0309)
Observations	3,015	3,015	3,015	3,015
R-squared	0.023	0.010	0.034	0.014

Table 5: Trends in Specific CEO Characteristics The table shows changes in grades on specific characteristics. The *p*-value is the statistical significance of a two-sided t-test, and ***, **, and * indicate statistical significance at the 1%, 5%, and 10% *p*-levels, respectively.

	CEOs (All Assessed)					CEOs (Hired)				
	Early	Late	Delta	<i>p</i> -value		Early	Late	Delta	<i>p</i> -value	
Aggressive	3.64	3.60	-0.04	0.06	*	3.64	3.64	0.00	0.99	
Analytical Skills	3.49	3.54	0.05	0.02	**	3.46	3.58	0.12	0.00	***
Attention to Detail	3.36	3.43	0.07	0.01	**	3.33	3.47	0.13	0.00	***
Brainpower	3.62	3.57	-0.05	0.01	***	3.63	3.61	-0.02	0.41	
Calm	3.64	3.50	-0.14	0.00	***	3.62	3.56	-0.06	0.08	*
Commitments	3.56	3.43	-0.12	0.00	***	3.59	3.49	-0.10	0.00	***
Creative	3.32	3.32	0.00	0.95		3.29	3.34	0.04	0.24	
Develops People	3.58	3.54	-0.04	0.11		3.56	3.59	0.03	0.41	
Efficiency	3.63	3.50	-0.13	0.00	***	3.67	3.58	-0.09	0.00	***
Enthusiasm	3.48	3.38	-0.10	0.00	***	3.46	3.44	-0.02	0.54	
Flexible	3.74	3.68	-0.06	0.00	***	3.74	3.73	-0.01	0.81	
Hires A Players	3.29	3.31	0.01	0.56		3.25	3.32	0.08	0.04	**
Holds People Accountable	3.48	3.46	-0.02	0.41		3.44	3.49	0.05	0.13	
Listening Skills	3.44	3.43	-0.01	0.67		3.43	3.49	0.06	0.10	
Fast	3.61	3.58	-0.03	0.19		3.61	3.63	0.02	0.58	
Network	3.51	3.46	-0.05	0.04	**	3.51	3.50	-0.01	0.80	
Open to Criticism	3.31	3.32	0.01	0.70		3.28	3.38	0.10	0.01	***
Oral Communication	3.62	3.46	-0.16	0.00	***	3.61	3.52	-0.10	0.00	***
Organization	3.52	3.51	-0.01	0.65		3.50	3.54	0.05	0.20	
Persistence	3.78	3.70	-0.08	0.00	***	3.80	3.76	-0.04	0.10	
Persuasion	3.59	3.39	-0.20	0.00	***	3.61	3.45	-0.16	0.00	***
Proactive	3.73	3.65	-0.08	0.00	***	3.73	3.72	-0.01	0.84	
Removes Underperforms.	3.16	3.25	0.08	0.00	***	3.14	3.26	0.12	0.00	***
Sets High Standards	3.64	3.61	-0.02	0.27		3.63	3.65	0.02	0.53	
Strategic Vision	3.43	3.35	-0.08	0.00	***	3.46	3.40	-0.06	0.08	*
Teamwork	3.50	3.43	-0.07	0.01	***	3.51	3.50	-0.01	0.82	
Treats with Respect	3.56	3.49	-0.08	0.00	***	3.56	3.57	0.01	0.72	
Work Ethic	3.85	3.79	-0.06	0.00	***	3.85	3.83	-0.02	0.36	

Table 6: Correlations for Candidates Assessed for the Same Company The table shows pair-wise correlations and *p*-values for factor scores of pairs of CEO-CEO, CEO-CFO, and CEO-CFO candidates assessed for the same hiring company. The panels for the early and late periods include pairs where both candidates are assessed during the subperiod. Statistical significance is indicated in parenthesis and with stars.

Panel A: CEO-CEO Entire Sample (709 pairs)

CEO		CEO			
CEO	Factor 1	Factor 2	Factor 3	Factor 4	
Factor 1	0.135 (0.000) ***	0.038 (0.315)	-0.022 (0.442)	0.010 (0.561)	
Factor 2		0.081 (0.031) **	0.002 (0.957)	-0.087 (0.021) **	
Factor 3			0.151 (0.000) ***	-0.031 (0.410)	
Factor 4				0.038 (0.318)	

Panel B: CEO-CEO Early Period (237 pairs)

CEO		CEO			
CEO	Factor 1	Factor 2	Factor 3	Factor 4	
Factor 1	0.075 (0.252)	-0.045 (0.489)	0.103 (0.114)	-0.035 (0.588)	
Factor 2		0.206 (0.001) ***	0.011 (0.871)	-0.128 (0.049) *	
Factor 3			0.176 (0.007) **	-0.019 (0.769)	
Factor 4				0.018 (0.783)	

Panel C: CEO-CEO Late Period (419 pairs)

CEO		CEO			
CEO	Factor 1	Factor 2	Factor 3	Factor 4	
Factor 1	0.172 (0.000) ***	0.064 (0.190)	-0.051 (0.295)	0.028 (0.562)	
Factor 2		-0.003 (0.949)	0.017 (0.723)	-0.014 (0.768)	
Factor 3			0.143 (0.003) ***	-0.029 (0.560)	
Factor 4				0.036 (0.465)	

Panel D: CEO-CFO Entire Sample (581 pairs)

CFO	CEO			
	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	0.194 (0.000) ***	0.020 (0.623)	0.146 (0.000) ***	0.025 (0.551)
Factor 2	0.013 (0.756)	-0.063 (0.132)	0.050 (0.228)	0.031 (0.461)
Factor 3	-0.037 (0.371)	0.023 (0.582)	0.016 (0.708)	-0.078 (0.061) *
Factor 4	-0.003 (0.940)	-0.091 (0.028) **	0.025 (0.552)	0.019 (0.657)

Panel E: CEO-CFO Early Period (203 pairs)

CFO	CEO			
	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	0.229 (0.001) ***	-0.029 (0.678)	0.259 (0.000) ***	-0.006 (0.937)
Factor 2	0.048 (0.494)	-0.157 (0.025) **	0.075 (0.290)	0.013 (0.855)
Factor 3	-0.175 (0.012) **	0.079 (0.261)	-0.005 (0.942)	-0.111 (0.114)
Factor 4	-0.034 (0.631)	-0.159 (0.023) **	0.012 (0.868)	-0.062 (0.378)

Panel F: CEO-CFO Late Period (280 pairs)

CFO	CEO			
	Factor 1	Factor 2	Factor 3	Factor 4
Factor 1	0.246 (0.000) ***	0.044 (0.462)	-0.019 (0.757)	-0.025 (0.676)
Factor 2	0.005 (0.930)	-0.034 (0.569)	0.063 (0.292)	-0.072 (0.232)
Factor 3	0.011 (0.858)	-0.085 (0.157)	0.070 (0.243)	0.026 (0.662)
Factor 4	0.032 (0.592)	-0.041 (0.495)	-0.032 (0.600)	0.108 (0.073) *

Table 7: Trends in CEO and Executive Hiring The table compares factor scores for hired and non-hired executives in the early and late periods, as indicated. The late subsample contains assessments performed in or after year 2009. ***, **, and * indicate statistical significance of two-sided t-tests at the 1%, 5%, and 10% p -levels, respectively.

Panel A: Hired vs Non-Hired CEO Candidates

	Early			Late		
	Non-Hired	Hired	t-test	Non-Hired	Hired	t-test
Factor 1	0.202	0.170		-0.165	0.194	***
Factor 2	-0.069	-0.070		-0.233	-0.064	***
Factor 3	-0.253	-0.454	**	-0.091	-0.144	
Factor 4	0.214	0.372	**	0.035	0.101	
Obs.	260	331		333	314	

Panel B: Hired vs Non-Hired CFO Candidates

	Early			Late		
	Non-Hired	Hired	t-test	Non-Hired	Hired	t-test
Factor 1	-0.427	-0.247		-0.464	-0.133	***
Factor 2	0.188	0.189		-0.136	0.023	*
Factor 3	0.434	0.476		0.376	0.435	
Factor 4	-0.281	-0.240		-0.127	-0.121	
Obs.	135	117		188	136	

Panel C: Hired vs Non-Hired Other Candidates

	Early			Late		
	Non-Hired	Hired	t-test	Non-Hired	Hired	t-test
Factor 1	-0.042	0.098	**	-0.136	0.273	***
Factor 2	0.039	0.245	***	-0.055	0.078	**
Factor 3	-0.062	-0.164		0.080	0.021	
Factor 4	0.021	0.045		-0.047	-0.161	**
Obs.	517	477		890	334	

Table 8: Trends in CEO and Executive Hiring The table shows estimates of OLS regressions where the dependent variables is an indicator for being hired. Late is an indicator for the late subsample, post 2009. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% p -levels, respectively.

	(1) CEO	(2) CEO	(3) CFO	(4) CFO	(5) Other	(6) Other
Factor 1	0.0616*** (0.0135)	0.0132 (0.0180)	0.0711*** (0.0171)	0.0422* (0.0217)	0.0575*** (0.00933)	0.0297** (0.0132)
Factor 2	0.0128 (0.0137)	0.00727 (0.0178)	0.0228 (0.0207)	-0.0135 (0.0280)	0.0391*** (0.00977)	0.0438*** (0.0138)
Factor 3	-0.00756 (0.0140)	-0.0148 (0.0186)	0.0327 (0.0281)	0.0204 (0.0363)	-0.0153 (0.0108)	-0.0154 (0.0141)
Factor 4	0.00877 (0.0159)	0.0174 (0.0208)	-0.00361 (0.0276)	-0.00739 (0.0355)	-0.00769 (0.0110)	0.0106 (0.0149)
Factor 1 x Late		0.110*** (0.0271)		0.0701* (0.0360)		0.0661*** (0.0183)
Factor 2 x Late		0.0204 (0.0277)		0.0768* (0.0416)		-0.0133 (0.0194)
Factor 3 x Late		0.0249 (0.0277)		0.0105 (0.0595)		-0.00385 (0.0213)
Factor 4 x Late		-0.0229 (0.0308)		0.00484 (0.0560)		-0.0426** (0.0216)
Late	0.0366 (0.0278)	0.0353 (0.0295)	0.0424 (0.0415)	0.0589 (0.0525)	-0.0894*** (0.0201)	-0.0903*** (0.0201)
Female	0.00779 (0.0595)	0.000322 (0.0597)	0.123 (0.0760)	0.124 (0.0783)	0.0459 (0.0282)	0.0441 (0.0279)
Incumbent	0.432*** (0.0277)	0.424*** (0.0281)	0.463*** (0.0487)	0.469*** (0.0488)	0.418*** (0.0253)	0.415*** (0.0252)
Public	-0.194*** (0.0631)	-0.198*** (0.0631)	0.128 (0.101)	0.136 (0.101)	0.110*** (0.0315)	0.108*** (0.0313)
Private Equity	0.0102 (0.0300)	0.0168 (0.0299)	0.0835* (0.0473)	0.0814* (0.0476)	0.0938*** (0.0200)	0.0946*** (0.0200)
Constant	0.358*** (0.0303)	0.361*** (0.0308)	0.261*** (0.0474)	0.262*** (0.0503)	0.265*** (0.0195)	0.265*** (0.0195)
Observations	1,238	1,238	576	576	2,218	2,218
R-squared	0.184	0.196	0.157	0.167	0.208	0.214

Table 9: CEO Scorecard Ratings and Factor Scores The table shows OLS for all assessed CEO candidates with the candidates' ratings on the scorecard topics as the dependent variables. Statistical significance at the 1%, 5%, and 10% levels are ***, **, and *, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Staffing	Organic	Strategy	Operations	Relations	Exit	Acquisitions	Cost
Factor 1	0.289*** (0.0117)	0.279*** (0.0115)	0.263*** (0.0143)	0.229*** (0.0189)	0.230*** (0.0155)	0.296*** (0.0156)	0.218*** (0.0196)	0.211*** (0.0343)
Factor 2	0.0174 (0.0125)	-0.0366*** (0.0126)	-0.0298** (0.0147)	0.0173 (0.0181)	0.184*** (0.0166)	0.0362* (0.0196)	-0.00603 (0.0213)	-0.0400 (0.0296)
Factor 3	0.00718 (0.0133)	-0.0144 (0.0141)	0.0356** (0.0162)	0.0952*** (0.0200)	0.0424** (0.0175)	0.00749 (0.0190)	0.0758*** (0.0222)	0.115*** (0.0333)
Factor 4	-0.113*** (0.0143)	0.00352 (0.0144)	0.118*** (0.0172)	-0.111*** (0.0191)	-0.0201 (0.0181)	0.0452*** (0.0172)	0.0472** (0.0231)	-0.118*** (0.0303)
Late	0.0487** (0.0231)	-0.0829*** (0.0232)	-0.0101 (0.0287)	-0.00289 (0.0334)	0.0314 (0.0323)	-0.0304 (0.0304)	0.0186 (0.0362)	0.145** (0.0660)
Female	0.123** (0.0519)	-0.0744 (0.0481)	0.0199 (0.0678)	0.0285 (0.0583)	-0.0901 (0.0588)	0.0143 (0.0643)	-0.247*** (0.0691)	0.185** (0.0859)
Incumbent	-0.0690*** (0.0254)	0.0137 (0.0243)	-0.0230 (0.0304)	-0.00382 (0.0375)	0.0143 (0.0333)	0.0136 (0.0332)	0.0665* (0.0378)	0.000283 (0.0889)
Public	-0.0536 (0.0475)	0.0275 (0.0715)	-0.0525 (0.0531)	-0.150* (0.0901)	-0.0547 (0.0681)	0.268*** (0.0728)	0.0454 (0.0814)	-0.101 (0.152)
Private Equity	-0.0953*** (0.0269)	0.0169 (0.0261)	0.0343 (0.0316)	0.0489 (0.0399)	0.0666** (0.0337)	0.0514 (0.0342)	0.0431 (0.0383)	0.132 (0.0845)
Constant	3.279*** (0.0278)	3.430*** (0.0285)	3.329*** (0.0336)	3.379*** (0.0421)	3.244*** (0.0368)	3.334*** (0.0371)	3.281*** (0.0434)	3.189*** (0.0878)
Observations	948	854	742	687	710	608	513	177
R-squared	0.427	0.410	0.364	0.290	0.392	0.410	0.254	0.376

Table 10: CEO Scorecard Ratings and Specific Characteristics The table shows the difference in the grade on each specific characteristic for all assessed CEO candidates, calculated as $E[\text{grade} | \text{topic in top-3}] - E[\text{grade} | \text{topic not in top-3}]$. The hypothesis that the difference is zero is tested with a two-sided t-test, and the statistical significance is indicated with stars.

	Top3- Staffing		Top3- Organic		Top3- Strategy		Top3- Operations	
Aggressive	-0.029		0.001		-0.008		0.024	
Analytical Skills	0.005		0.052	**	0.052	**	0.063	**
Attention to Detail	0.002		0.042		-0.001		0.093	***
Brainpower	0.011		-0.052	**	0.047	**	0.005	
Calm	0.059	**	-0.012		0.006		-0.025	
Commitments	0.022		-0.019		0.030		-0.034	
Creative	0.002		0.034		0.057	**	0.086	***
Develops People	-0.032		-0.028		0.051	**	0.042	
Efficiency	0.051	**	0.013		0.005		-0.008	
Enthusiasm	0.009		-0.006		0.004		0.009	
Flexible	0.018		0.016		0.023		0.030	
Hires A Players	0.026		-0.001		0.081	***	0.032	
Holds People Accountable	-0.003		-0.009		0.046	*	0.055	*
Listening Skills	0.026		0.072	***	0.019		-0.028	
Fast	0.004		-0.002		0.022		0.028	
Network	0.015		-0.040		0.044	*	0.017	
Open to Criticism	-0.001		0.051	*	0.015		0.041	
Oral Communication	0.015		-0.045	*	-0.014		-0.012	
Organization	0.024		0.013		0.048	*	0.042	
Persistence	0.024		0.013		-0.007		-0.015	
Persuasion	0.051	**	-0.012		0.002		-0.005	
Proactive	0.003		0.005		-0.008		0.000	
Removes Underperforms.	0.000		0.044		0.071	**	0.016	
Sets High Standards	0.022		0.013		0.038	*	0.037	
Strategic Vision	0.011		-0.008		0.070	***	0.016	
Teamwork	0.035		-0.002		0.016		0.005	
Treats with Respect	0.070	***	0.017		0.028		0.018	
Work Ethic	0.042	**	0.008		-0.014		0.028	

Table 11: Trends in Scorecard Topics The table shows the frequency of scorecard topics in assessments of CEO candidates. *Frequency* is the fraction of scorecards where the topic is present. *Importance* is measured from zero to three. *Top-3* is the fraction where the topic is among the top three entries. The statistical significance of a two-sided *t*-test of the hypothesis that the frequencies in the early and late subsamples are equal is indicated with stars, and ***, **, and *, indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Scorecard Topics (CEO Candidates, All Companies)

Topic	Frequency				Importance			Top-3		
	Early	Late			Early	Late		Early	Late	
Staffing	92%	91%	92%		2.26	2.03	***	44%	30%	***
Organic	83%	79%	86%	***	2.28	2.54	***	59%	76%	***
Strategy	71%	71%	72%		1.73	1.89	**	30%	47%	***
Operations	66%	59%	71%	***	1.31	1.66	***	15%	28%	***
Relations	65%	46%	81%	***	0.63	1.07	***	2%	1%	
Exit	59%	59%	58%		0.79	0.74		2%	3%	
Acquisitions	49%	46%	52%	**	0.85	1.12	***	9%	17%	***
Cost	16%	12%	19%	***	0.33	0.47	**	7%	10%	*
Obs.	1,155	517	638		517	638		627	681	

Table 12: Scorecard Topics and Factor Scores The table shows OLS regressions with CEO factor scores as the dependent variables.

Panel A: Assessed CEO Candidates (Scorecard Top-3)

	(1) Factor 1	(2) Factor 2	(3) Factor 3	(4) Factor 4
Top3-Staffing	0.0397 (0.0569)	0.0699 (0.0545)	0.0272 (0.0522)	-0.00363 (0.0487)
Top3-Organic	0.0405 (0.0573)	0.0530 (0.0590)	0.0278 (0.0560)	-0.00530 (0.0523)
Top3-Strategy	0.143*** (0.0526)	0.0257 (0.0552)	0.0460 (0.0510)	0.0278 (0.0482)
Top3-Operations	0.116* (0.0601)	-0.00363 (0.0595)	0.0683 (0.0593)	-0.0606 (0.0516)
Late	-0.260*** (0.0542)	-0.112** (0.0558)	0.223*** (0.0544)	-0.158*** (0.0503)
Public	0.324*** (0.115)	0.00250 (0.123)	0.456*** (0.126)	-0.360*** (0.105)
Private Equity	0.144** (0.0603)	0.0819 (0.0648)	0.0160 (0.0597)	-0.300*** (0.0568)
Constant	-0.0120 (0.0680)	-0.181** (0.0714)	-0.453*** (0.0682)	0.479*** (0.0628)
Observations	1,298	1,298	1,298	1,298
R-squared	0.025	0.007	0.034	0.045

Panel B: Hired CEO Candidates (Scorecard Top-3)

	(1)	(2)	(3)	(4)
	Factor 1	Factor 2	Factor 3	Factor 4
Top3-Staffing	-0.0399 (0.0741)	0.143* (0.0759)	-0.00492 (0.0775)	-0.0889 (0.0684)
Top3-Organic	0.00365 (0.0811)	0.0965 (0.0857)	0.0767 (0.0829)	-0.0107 (0.0737)
Top3-Strategy	0.118* (0.0707)	-0.0713 (0.0771)	0.0968 (0.0759)	0.117* (0.0681)
Top3-Operations	0.138 (0.0873)	-0.0569 (0.0833)	0.153* (0.0920)	-0.109 (0.0745)
Late	-0.0888 (0.0722)	0.00113 (0.0746)	0.263*** (0.0804)	-0.200*** (0.0704)
Public	0.741*** (0.146)	0.132 (0.206)	0.500** (0.200)	-0.417** (0.166)
Private Equity	0.290*** (0.0844)	0.0725 (0.0926)	-0.0477 (0.0883)	-0.373*** (0.0808)
Constant	-0.0570 (0.0952)	-0.204* (0.105)	-0.534*** (0.0974)	0.622*** (0.0845)
Observations	645	645	645	645
R-squared	0.038	0.013	0.045	0.074

Appendix Table A1

ghSMART Guidelines for Grading Specific Characteristics

This table presents the ghSMART guidelines for grading the specific characteristics in their executive assessments.

Characteristic	Description	Behavior Associated with High Grade	Behavior Associated with Low Grade
<i>Leadership</i>			
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 effort.	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.
<i>Personal</i>			
Integrity	Does not cut corners ethically. Earns trust and maintains confidences.	Takes pride in always doing what is right.	Cuts corners, unaware of how actions are borderline unethical.
Organization	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.

<i>Intellectual</i>			
Brainpower	Learns quickly. Demonstrates ability to quickly understand and absorb new info.	High GPA and SAT scores, ability to pick-up new job details quickly.	Low GPA and SAT scores. May remain in same role for a long time.
Analytical Skills	Structures and processes qualitative or quantitative data and draws conclusions.	Cites multiple examples of problem-solving skills.	Rarely solves problems through analysis. Heavy reliance on gut.
Strategic 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.
<i>Motivational</i>			
Enthusiasm	Exhibits passion and excitement over work. Has a "can do" attitude.	Displays high energy and a passion for the work.	Displays low energy and limited passion for the work.
Persistence	Demonstrates tenacity and willingness to go the distance to get something done.	Never gives up. Sticks with assignments until they are done.	Has a track record of giving up.
Proactive	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.
<i>Interpersonal</i>			
Listening Skills	Let's 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.