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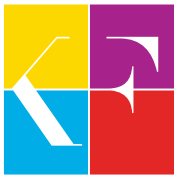
Korn Ferry
Four Dimensional Enterprise Assessment



Research guide and technical manual

Korn Ferry Four Dimensional Enterprise Assessment

Research guide and technical manual

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For the sake of linguistic simplicity in this product, where the masculine form is used, the feminine form should also be understood to be included.

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Korn Ferry Four Dimensional Enterprise Assessment
Research guide and technical manual

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Foreword

Overview of technical manuals for the new Korn Ferry Assessment Solution

The Korn Ferry Assessment Solution (KFAS) offers a new and innovative process for assessing talent. Deployed on a technology platform that enables client self-service, the KFAS shifts the focus away from specific assessment *products* to *solutions* suitable for applications across the talent life cycle. Whether a need pertains to talent acquisition or talent management, the participant will experience a single, seamless assessment process. This process has three elements: a success profile, an assessment experience, and results reporting tailored to a variety of talent acquisition and talent management uses.

The success profile provides a research-based definition of "what good looks like" in a given role. Specifically, the success profile outlines the unique combination of capabilities, including competencies, traits, drivers, and cognitive abilities, that are associated with success in the role. These components are used to inform both the assessment experience and results reporting, which differ according to the solution, for both talent acquisition and talent management.

Whereas the KFAS is new, the assessment components are carried over from legacy Korn Ferry assessment products. The science, research, and psychometric-based information that are the foundation of these robust assessments remain relevant. Therefore, while we work to consolidate and refine technical manuals for the KFAS, we can use the existing technical manuals for KF4D Enterprise, Dimensions-KFLA, Aspects, and Elements as a bridge.

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This technical manual provides background research and psychometric-based information regarding *some* of the assessments used in the KFAS. The following table summarizes the solutions available for talent acquisition offerings and where to find the relevant psychometric-based information in the technical manual. We would like to remind you that, in the talent acquisition context and absent a client-specific validation study, the assessment should always be used with other information (e.g., from interviews and résumés) to guide talent decisions.

The Korn Ferry Assessment Solution: Talent Acquisition

	SOLUTION/NEED				
	ENTRY LEVEL	**GRADUATE I** *(for entry professionals)*	**GRADUATE II** *(for entry first-line leadership)*	**PROFESSIONAL**	**MANAGERIAL/ LEADERSHIP**
Types of roles in solution offering	Frontline Apprenticeships Operational Customer service Hospitality Retail Non-managerial	Graduate/campus Apprenticeships Across all industries Across all geographies	Graduate/campus Apprenticeships Across all industries Across all geographies	Sales Engineering Accounting Technical IT Finance Marketing Design	Any level of leadership Across all industries Across all geographies
Assessment objects available	Competencies Cognitive ability: • Numerical • Verbal • Checking	Competencies Cognitive ability: • Numerical • Verbal • Logical	Competencies Cognitive ability: • Numerical • Verbal • Logical Drivers Traits	Competencies Cognitive ability: • Numerical • Verbal • Logical Drivers Traits	Competencies Cognitive ability: • Numerical • Verbal • Logical Drivers Traits
Technical manuals to reference	Dimensions-KFLA for competencies Aspects for cognitive ability	Dimensions-KFLA for competencies Elements for cognitive ability	KF4D Enterprise for competencies, traits, drivers Elements for cognitive ability	KF4D Enterprise for competencies, traits, drivers Elements for cognitive ability	KF4D Enterprise for competencies, traits, drivers Elements for cognitive ability

The KFAS may also be used for a variety of talent management applications such as high potential identification, leadership development/succession, leadership selection, and professional development. The self-assessment components within these solutions include competencies, traits, and drivers, which may be used for diverse reporting needs, including learning agility and risk factors results. Technical information for these components is covered in the KF4D Enterprise technical manual. Multi-rater assessments may also be a part of talent management solutions.

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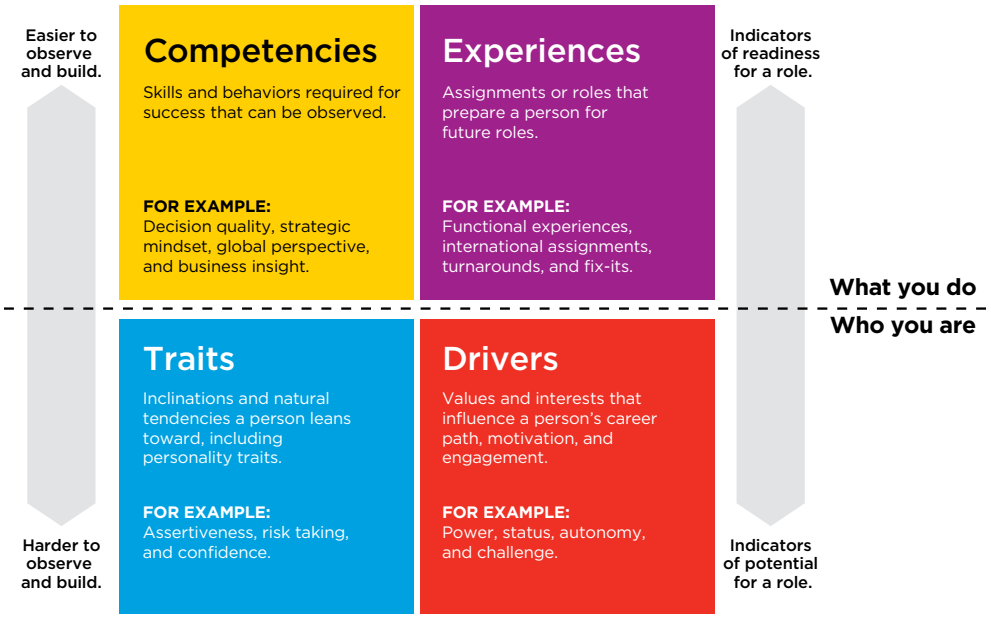
SECTION 1
Introduction to Korn Ferry's Four Dimensions of Leadership and Talent

Through decades of experience and insight gleaned from more than 2.5 million assessments, Korn Ferry (KF) has identified four key dimensions that impact and govern leaders' job performance. These include *Competencies*, *Experiences*, *Traits*, and *Drivers*. In addition to predicting differences in performance, these four areas are correlated with critical organizational outcomes, including engagement, commitment, retention, productivity, and leadership potential (Crandall, Hazucha, & Orr, 2015).



Competencies and Experiences describe "what you do"; Drivers and Traits capture "who you are." The four dimensions influence one another and interact within each person. Assessed together, they provide a rich, robust picture of talent, providing deeper insight into which individuals will succeed in which roles.

Purpose of technical manual

This manual provides a detailed technical description of Korn Ferry's Four Dimensional Enterprise Assessment (KF4D-Ent), an assessment developed for use in conjunction with other data to inform development, selection, and succession planning for all position levels. In addition to describing the content of the assessment, we delve deeply into its psychometric properties. We describe and validate Korn Ferry's point of view on use of psychometric-based assessments in recruitment and placement situations, beginning with an overview concerning the use of assessments in organizations. We continue by more specifically explicating our substantive orientation in terms of measuring and employing personality measures (Traits), skill and behavioral measures (Competencies), and motives/values measures (Drivers) for use in development and selection. We subsequently turn to a discussion of job and organizational contexts, with particular attention to identifying key variables in these areas that are expected to interact with and moderate the desirability of psychological profiles in a way that facilitates identifying "fit" for particular roles. Later we describe and report on our own empirical studies designed to validate measures and underscore their descriptive and predictive utility for applied use. Before discussing these topics, we provide a succinct overview of Korn Ferry's Four Dimensions of Leadership and Talent.

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Korn Ferry's Four Dimensions of Leadership and Talent: A brief and general overview

Competencies

Competencies are observable skills and behaviors required for success at work (Lombardo & Eichinger, 2009). They provide a snapshot of a person's level of proficiency on work-related skills, revealing what the person is capable of doing now. Competency models have become a popular and effective tool for aligning and implementing HR and business initiatives. From the proliferation of models, what competencies truly matter?

Based on a review of the literature, consideration of key business trends, and insights from our data, Korn Ferry has identified and organized critical competencies. The Korn Ferry Leadership Architect (KFLA) library is comprised of 4 factors, 12 clusters, and 38 competencies (Korn Ferry [KF], 2014). Depending on the management level, third-party-rated proficiency with these competencies accounts for between 43% and 64% of total job performance (Barnfield, Dai, Jouve, Orr, Sneltjes, & Storfer, 2014). KF4D-Ent measures 30 of the 38 competencies in the KFLA framework. These 30 competencies, the nature of their measurement in KF4D-Ent, the reason for their inclusion, and their ties to job success are reviewed in detail later in this manual.

Experiences

Experiences are the roles and assignments comprising a person's career history. They sum up major work-related events and accomplishments, highlighting what an individual has had the opportunity to do and learn. Highly developmental assignments take people out of their comfort zone and involve high visibility, a risk of failure, ambiguity, and a broad scope of responsibility. Examples include managing a turnaround, taking a more challenging assignment, or managing a crisis.

Experiences are important for managers and individual contributors. Multiple studies have found positive relationship between prior related work experience and employee performance (McDaniel, Schmidt, & Hunter, 1988; Motowidlo, Packard, & Manning, 1986). The results of Quinones and colleagues' meta-analyses (1995) revealed a positive relationship between work experience and job performance across job levels (skilled labor to professional) and sectors (private and public sector). Experiences also distinguish among leaders. Compared with managers at other levels, senior leaders are more likely to have completed developmental experiences in financial management, strategy development, and external relations (Sevy, Swisher, & Orr, 2014).

Traits

Traits are a person's natural tendencies and abilities, including personality traits and intellectual capacity. Traits guide an individual's behavior, but can, at times, be difficult to observe. In addition, although traits reflect stable aspects of "who people are," they can change slowly over time as people take on new challenges. For example, an introvert who wants to build networks or exert more influence may consciously reach out to meet new people and make an effort to speak out.

For organizations looking to maintain a healthy supply of talent, individuals' traits can provide an indicator of those who are the right fit and who have high potential for moving into higher-level roles. Personality traits and intellectual ability are well-established correlates of job success (Barrick & Mount, 1991; Barrick & Mount, 2012; Ones, Dilchert, & Viswesvaran, 2012; Reeve & Hakel, 2002; Schmitt, 2014).

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Korn Ferry research has found that personality profiles at progressive levels of management look substantially different. For example, for first-level supervisors, the traits that strongly correlate with work engagement include Need for achievement, Curiosity, Persistence, and Adaptability. For high-level executives, success is also tightly bound to a Need for achievement and Curiosity—but top leaders also need much higher degrees of traits such as Risk-taking and Tolerance of ambiguity. As described later in this manual, Korn Ferry has developed a model of personality comprising 20 traits.

Drivers

Drivers are the deep internal values, motivations, and aspirations that influence a person's choices. They lie at the heart of critical questions: What is important to me? What do I find rewarding? Do I want more challenge in my work? Stability? Responsibility? Drivers capture the "will do" that creates engagement and energy for a task or role.

Drivers are instrumental to cultural fit, employee engagement, and talent retention. To the extent that employees' drivers are aligned with their roles and contexts, they will be energized by them. Drivers are essentially the pivot point for the other three dimensions: if driven, an individual may moderate personality traits, work to improve competencies, or seek out experiences to progress toward a professional goal.

The Korn Ferry drivers framework is a research-based taxonomy of six work-related motivational drivers. These drivers are discussed in detail later in this manual.

How to use Korn Ferry's Four Dimensional Enterprise Assessment

KF4D Enterprise was designed for wide use and flexible application in areas including but not limited to:

- Development, including leadership development
- Succession planning
- Readiness assessment
- Selection
- High-performance benchmarking

For use in low-touch high-volume screening-type selection applications within the United States,[1] it is designed to be employed in conjunction with EEOC compliant outcome/validation studies.[2] It is also designed to be part of a broader and high-touch process by which candidates are recommended for role vacancies from individual contributor to executive level, for which criterion-related validation studies may not be feasible, e.g., because of small incumbent populations. For selection applications in which local criterion-related outcome/validation studies are not feasible, KF4D-Ent and all related processes may also be used to *contribute* to related discussions and serve as a single data-point among many. These may include methods that are otherwise qualitative and/or based on insight and conditions that KF4D-Ent was not designed to measure or incorporate. In that context, ultimate decisions concerning best-fit candidates are made as a result of discussions and multiple points of contact between client representatives, candidates, and Korn Ferry professionals and consultants, and KF4D-Ent provides a value-added supplement to high-touch processes and does not replace nor trump the deep professional skill, judgment, insight, and experience of involved parties.

[1] And other nations with similar laws, e.g., South Africa.

[2] Where local criterion-related validation studies are feasible, they enhance the ease of defense of the assessment and KF is prepared to conduct those studies at the customer's request.

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Descriptive and predictive utility

The utility of psychometrics for the selection, recruitment, development, succession planning, and career guidance (etc.) can come in one or more of at least three different forms. Assessments measuring capabilities known to be related to job success, such as social, cognitive, and emotional abilities and tendencies, offer *descriptive utility.* They provide insights valuable for subjective consideration. Measures can also yield scores whose desirability have been empirically established to always or most often be moderated by job and contextual variables. These measures have both *descriptive utility* and the ability for predicting or determining *fit* for a particular job role, context(s), or the interaction between them. Measures can also empirically forecast success in all or most cases, regardless of contexts or the nature of job roles. These are *general success predictors*, whose indication of *fit* is not context specific; these also retain *descriptive utility*. Any battery of psychometric assessments typically contains measures that address one or more of these components individually and perhaps all of them collectively, depending upon the applied use of the assessment.

Whether characteristic scores on a measure are desirable in every case or whether they depend on context is a reflection of the way in which the measure's impact is moderated—and the nature and magnitude of moderation can vary. In some cases, elevated scores on some measure might always be predictive of increased (or decreased) success, but the magnitude of its predictive coefficient(s) might vary across job roles and organizational contexts. Here, we have *moderated magnitude*, which can indicate the degree of salience for a variable across contexts. On the other hand, elevated levels on some variables may sometimes be positively associated with desired outcomes and other times negatively associated. Here, we have *moderated sign*, which will indicate whether an elevated score is desirable or undesirable. Clearly, magnitude and sign moderation are not mutually exclusive, although elevated levels of variables having only the former will help forecast success in all or most cases, regardless of contexts or the nature of job roles. Identifying not only specific moderator variables but also gauging *whether, how,* and the *degree* to which a variable's impact is moderated has much potential to offer an approach to *customizing assessment-based personnel services across job roles and contexts*.

In aggregate, KF4D-Ent offers both predictive and descriptive value-added utility. While predictive utility is perhaps often emphasized in applied use and in validation efforts, we emphasize and underscore the tool's descriptive utility as well. The use of scientifically developed measures and models for predicting success do not preclude the continued use of subjectivity, traditional screening methods, and client preference in personnel selection, promotion, development, and/or placement decisions—even subjectivity which is informed by the measures themselves. Given adequate measurement properties, nearly all psychometric-based assessments have considerable descriptive utility and tap constructs that may or may not be elucidated with traditional screening methods, such as resume reviews and interviews. As such, the added value associated with psychometric-based measures involves the results of respondent profiles and their descriptive utility as well, viz., what they suggest in terms of one's social, cognitive, and emotional tendencies in general, regardless of criterion-related issues and target scores that are calibrated using criterion-related data and job characteristic variables. This descriptive utility is valuable in many talent management practices, such as development planning, coaching, succession planning, and strategic workforce planning.

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Psychometric-based assessments add demonstrable value for talent decisions and development, and their continued and increasing use among human resources departments, search organizations, and talent development firms is, as such, for good reason (Tett, Jackson, & Rothstein, 1991; Scroggins, Thomas, & Morris, 2008; Thomas & Scroggins, 2006; Lombardi, 2011). Nonetheless, the diverse nature of workplace roles, job demands, organizational and national cultures, and the challenges of applied research make identifying and employing predictive measures for workplace success increasingly complex. As such, traditional measures and methods will maintain a stable presence in the process of identifying candidates for job vacancies and promotional opportunities. These include things like resume and reference checks, experience, education, skills, interviews, referrals, and subjective notions of fit and status on diverse variables among key organizational players and decision makers. Among applicant pools and existing employees who may be targeted for hiring, promotion, and/or developmental opportunities, these "hard fit" variables no doubt contribute to a very large portion of the (often unmeasured) variability in who will ultimately succeed in a job across key outcomes. The use of formal psychometric-based assessments—including measures of personality, problem-solving style, cognitive processing, emotional tendencies, social behavior, career motives, and others—has also played a significant role in personnel research, development, and selection and shows strong indications of increasing in popularity (Kristof-Brown, Zimmerman, & Johnson, 2005).

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SECTION 2

Overview of the conceptual and data-driven foundation of Korn Ferry's Four Dimensional Enterprise Assessment

The process of fitting a *person* to a *job* role and expecting maximum *performance* according to the results of psychometric assessments can be a highly complex one. On the one hand, much research suggests that certain person predictors do seem to have a non-context and non-role-specific effect on job performance. For example, provided that sufficiently wide ranges are present in a given sample, individuals with higher general cognitive ability (e.g., IQ) tend to perform better in most professional vocations (Neisser et al., 1996; Schmidt, Ones, & Hunter, 1992) with few exceptions (e.g., Lewis, 2015). Yet a one-size-fits-all approach to the predictive utility of many potentially useful psychological constructs is likely to lead human resources professionals and decision makers astray in a considerable number of cases (Tett et al., 1991; Guion, 1998; Tett & Burnett, 2003).

The nature of job roles, organizational contexts, culture, and issues surrounding job vacancies are all likely to moderate the desirability of a given response profile on any single measure or group of assessment measures (Guion, 1998). For example, highly successful individuals in roles and professions requiring a high degree of expert orientation often have and likely require quite different social behavior and problem-solving tendencies compared to highly successful individuals in people management and/or executive strategy and decision-making roles (Brousseau, 2008).[3] Elsewhere, individuals who are well-adjusted socially and emotionally tend to perform better in most jobs, but the impact and importance of emotional intelligence on job performance and related outcomes is apparently more salient for some job roles—including those that require a greater degree of effectively motivating and leveraging the skills and abilities of others (Brousseau, Driver, Hourihan, & Larsson, 2006). As such, interactions between person characteristics and context are often critical. A specific profile in a given job role can be desirable in one industry, company type, company size, or organizational culture, but undesirable in others (Tett & Burnett, 2003; Lewis, 2012; Lewis & Landis, 2015). In short, some measures yield a single desirable score or score profile that can be expected to predict success or indicate potential for success for nearly all respondents across roles and contexts (Harter, Schmidt, Kilham, & Agrawal, 2009), while the desirability of scores or score profiles on other measures are subject to job and context-specific interaction (Lewis, 2012; Tinsley, 2000).

These are the foundational principles of person-job-performance relations that led Korn Ferry in the development of the KF4D Enterprise Assessment. Korn Ferry is uniquely positioned to do so because of our unparalleled store of data comprised of:

- Data about the nature and contexts of job roles
- KF4D assessments data about people
- Person performance data

As will be demonstrated throughout this manual, these data stores have enabled Korn Ferry to develop a unique and powerful model capturing the relationships among persons, jobs, and outcomes for tens of thousands of leaders, professionals, and contributors.

[3] In fact, an expert orientation among executive decision makers is sometimes conceptualized as debilitating and clearly predictive of low performance, as we will partially demonstrate later in this technical manual.

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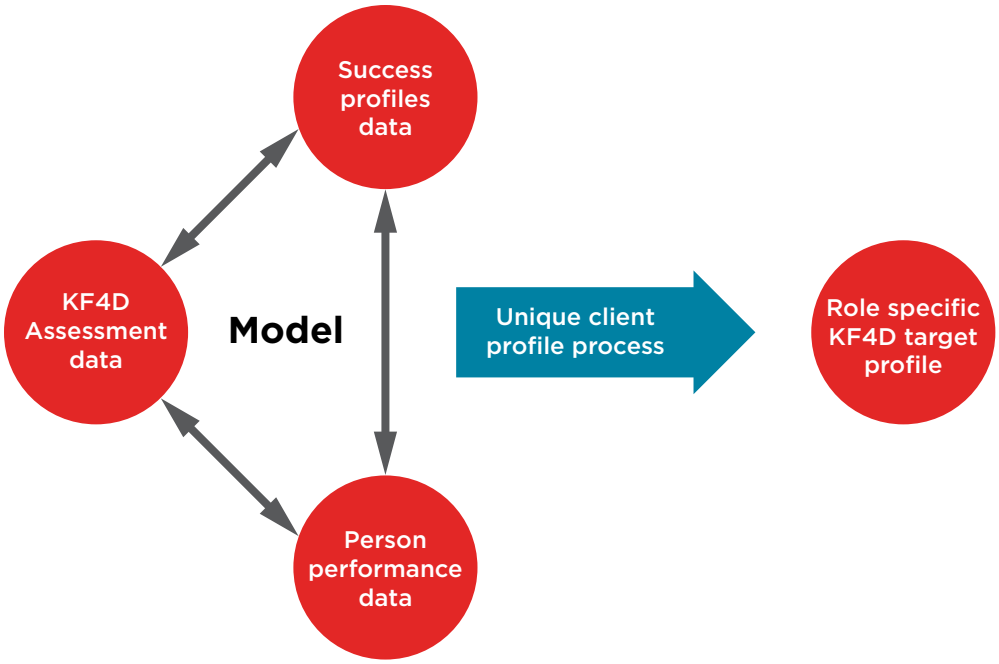

Job role and context data contain a standardized set of information about individual jobs—the most critical competencies, ratings of job challenges, information about company culture, job level, industry and function. KF4D assessment data contain assessment scores on the traits, drivers, and self-efficacy for competencies included in the assessment. Person performance data include scores for individuals on work engagement, organizational commitment, organizational level, compensation, and other outcome variables.

The model allows us to answer this critical question: **"Given a particular job role and its context, what is the profile of KF4D scale scores associated with maximum performance?"** Clients can specify the nature and context of each job or job family to which they wish to apply the KF4D assessment. They do this efficiently with the "Unique Client Profile" exercise. The model then generates a role-specific KF4D "target profile" that specifies the profile of assessment scores that is most likely to yield 95th percentile performers in that job. Reporting characterizes the fit of each participant's assessment results to the target profile. Clients and Korn Ferry consultants can then evaluate fit, along with all other data, in making decisions.

The pages that follow describe in great detail our approach; our content; each of the three parts of our data stores; relationships among jobs, people and outcomes; our multivariate model development; and the value of the KF4D Enterprise Assessment.

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SECTION 3

Individual assessment: KF4D traits, competencies, and drivers

In the following sections, we focus on describing the traits, competencies, and drivers measured by KF4D Enterprise, a state-of-the-art assessment of work-related individual differences utilizing forced-choice Item Response Theory (IRT) scoring. We delve deeply into the extant literature to illuminate the theoretically driven reasoning supporting their assessment. This lays the foundation for later sections of the manual in which we provide empirical analyses that demonstrate the technical robustness of KF4D-Ent and offer evidence-based guidance for score interpretation.

For each domain (traits, competencies, and drivers), we first describe the conceptual framework that serves as the foundation for our choice of constructs to measure. Then, we describe each construct in the domain and briefly review past research relating it to work outcomes. Where applicable, we also consider the potential moderation of the relationship between the construct and outcomes by job or organizational factors.

Traits

Traits are personality characteristics that exert a notable influence on behavior. They include attitudes, such as optimism, and other natural leanings, such as social astuteness. Traits measures are perhaps the most visible and well-researched measures available in all of psychology and include (but are not limited to) measures designed specifically for applied use in organizational and corporate settings. In organizations, traits may be more or less crucial for success, depending on job roles and contexts. For this and other reasons, they carry a considerable degree of legitimacy in diverse contexts and are often *expected* by clients and human resources practitioners who are seeking assessment services for their organizations (Zaccaro, 2012; Hiller, DeChurch, Murase, & Doty, 2011). Although notable temporal variability and responsiveness to focused intervention has been shown (Gopinath, 2014; Slaski & Cartwright, 2003), traits are relatively stable over time and have shown good evidence of cross-cultural/cross-regional validity (Costa & McCrae, 1988). Personality measures have both descriptive and predictive utility and are seen as the key component to a "dispositional perspective" on job outcomes (House, Shane, & Herold, 1996). The KF4D-Ent traits module is a fake-resistant, state-of-the-art personality instrument designed to capture individual differences on those aspects of personality most related to on-the-job performance and organizational fit. It is grounded firmly in the most current science of personality psychology, while placing that science into the context of organizational performance.

Decades of research efforts have demonstrated that personality traits are valuable predictors of job performance (Barrick & Mount, 1991; Barrick & Mount, 2012; Hough, Oswald, & Ock, 2015; Schmitt, 2014) and specific job outcomes such as leadership effectiveness (Judge, Bono, Ilies, & Gerhardt, 2002), sales and customer service performance (Frei & McDaniel, 1998; Ones & Viswesvaran, 2001; Vinchur, Schippman, Switzer, & Roth, 1998), team effectiveness (Mount, Barrick, & Stewart, 1998), and expatriate success (Mol, Born, Willemsen, & Van Der Molen, 2005). Personality traits have also been found to be meaningfully related to other work outcomes important to organizations and across levels of the management hierarchy. These include performance motivation (Judge & Ilies, 2002), turnover intentions and behaviors (Zimmerman, 2008), motivation to learn (Colquitt, LePine, & Noe, 2000), organizational citizenship behaviors (LePine, Erez, & Johnson, 2002), as well as counterproductive work behaviors (Berry, Ones, & Sackett, 2007).

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The trait scales underlying KF4D-Ent were modeled according to a hierarchic perspective on the widely known Five-Factor Personality Model or "Big Five." Like the Big Five model, the trait scales underlying KF4D-Ent are intended to identify personality traits within the normal range, not to identify or diagnose any mental disability or diagnosable disorder. Although the Big Five constructs are sometimes described by different names and according to somewhat different conceptualizations, they are perhaps most commonly known as Stability, Agreeableness, Openness to Experience, Extraversion, and Conscientiousness. The Big Five framework is an extension of the lexical tradition, which assumes the important descriptors differentiating persons will be represented in natural language. This framework is a hierarchical, descriptive conceptualization of personality as opposed to a psycho-dynamic conceptualization. Modern Big Five research is exploring linkages to neural substrates and self-regulatory processes in the brain (DeYoung, 2010; DeYoung, Hirsh, Shane, Papademetris, Rajeevan, & Gray, 2010). The Big Five has demonstrated global applicability (Schmitt, Allik, McCrae, & Benet-Martínez, 2007). Moreover, this model is clearly established as the premier descriptive framework for personality science (John, Naumann, & Soto, 2008).

KF4D-Ent traits measures are grounded in the Big Five model. In light of competing conceptualizations, factor structures, and naming conventions across the scientific literature, we henceforth refer to the Big Five constructs by terms that distinguish our own closely corresponding conceptualization of each. Positivity, Presence, Agility, Agreeableness, and Striving correspond to Stability, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness, respectively.

In the following sections, we discuss each trait and its subdomains in turn. For each trait, we first describe it and briefly review past research relating the trait to work outcomes with applicability throughout the personnel and management pipeline. We also, in some cases, consider the potential moderation of the relationship between the trait and outcomes by job or organizational factors. Then, we describe each subdomain of the trait, discussing past research findings—including potential moderators—before moving on to discuss the next broad trait.

Agility (AG)*

Agility relates to an individual's capacity for novelty, adaptability, cognitive flexibility, risk, ambiguity, and change. Individuals with high AG tend to eschew dogmatism and rigidity. They often adapt behaviors and experiment with solutions, placing a particularly high value on learning and growing from experiences, including failures (Swisher, Hallenbeck, Orr, Eichinger, Lombardo, & Capretta, 2012; Lombardo & Eichinger, 2000).[4]

Agility-like constructs and components are positive predictors of many workplace outcomes across the management hierarchy, including promotion into managerial and professional positions (Nieß & Zacher, 2015), successful training activities (Barrick & Mount, 1991; Barrick, Mount, & Judge, 2001), and creativity and innovation (Feist, 1998; Pace & Brannick, 2010). In general, executive leaders tend to be among the highest scorers on measures of AG compared to lower-level managers and professionals (Dai, De Meuse, & Tang, 2013). Across the psychological research literature, AG typically shows positive correlations with leadership emergence, leadership effectiveness, compensation, leadership competence, and promotion rates (Judge & Bono, 2000; Judge et al., 2002), and conceptualizations of leadership potential often include expected high scores on Agility-like measures (Lominger

* See **Appendix C: Acronyms,** for a list of all acronyms used in this technical manual.

[4] Agility is related to, but differs from Learning agility, which is a key signpost in the Korn Ferry Assessment of Leadership Potential. Learning agility is defined as *the willingness and ability to learn from experience, and subsequently apply that learning to perform successfully under new or first-time conditions* (Lombardo & Eichinger, 2000; KF, 2015-2016). Although Adaptability, Curiosity, Tolerance of ambiguity, and Risk-taking are components of both Agility and Learning agility, Learning agility is broader. For example, Learning agility also involves People agility and Results agility. Agility also is distinct from Learning agility in that it incorporates (negative) Focus.

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International, 2007; Swisher, 2012; Cashman, 2013; De Meuse, 2011; Dai et al., 2013; De Meuse, Dai, & Hallenbeck, 2010). Managers high in Agility-like measures typically receive higher marks on measures of overall performance, speed to promotion and retention (Landis, Brousseau, & Johnson, 2011), engagement and job satisfaction, inspirational motivation/idealized influence (Judge & Bono, 2000), composite measures of transformational leadership behavior (Judge & Bono, 2000), and general leadership readiness and leadership skill.

Although in some cases higher-order AG has a non-significant correlation with performance in lower- or mid-level task-oriented roles (Penney, David, & Witt, 2011), researchers have identified substantial correlation when subdomains of AG-like constructs were used (Woo, Chernyshenko, Stark, & Conz, 2014). Further, subdomains of AG exhibit differential validity for many other organizational outcomes, including leadership effectiveness, adaptive performance, and turnover (Woo et al., 2014).

Agility has also been used to predict and understand variability in company-level outcomes. Researchers have argued (Everaert, Roy, & Kingdom, 2012; Roy, 2012) and demonstrated (Lewis, 2013) that leadership teams characterized by high collective Agility are crucial for company-level success, particularly in economic or market conditions characterized by volatility, fast change, and slow growth, and among companies and company cultures whose objectives require and emphasize innovation, competition, profitability, market disruption, and market responsivity (Judge, Thoresen, Pucik, & Welbourne, 1999).

At the individual level, AG and related constructs and their predictive utility may be moderated by job and contextual factors. Judge and Bono et al. (2002), for example, reported meta-analytic results on the impact of Agility on leadership and found a positive effect for studies of private sector business, but a zero effect among leaders in government and military. These and other findings offer the beginnings of a framework for understanding the moderated utility of trait profiles on predicting success.

Barrick, Parks, and Mount (2005) argued that the relevance of AG to job performance likely depends on job demands. Mohan and Mulla (2013) found that AG was positively related to job performance when task demands were complex, but negatively related to performance when task complexity was low. Raja and Johns (2010) found that AG's effect on creativity was influenced by job scope. Elsewhere, Penney and colleagues (2011) observed that AG interacts with Conscientiousness and social skills in predicting performance of jobs with complex task demands. Moreover, after studying the dimensionality of AG and its relationship with performance, Mussel, Winter, Gelléri, and Schuler (2011) noted a need to examine situational moderators of the relationship between subdomains of AG and job performance. AG and its effects on work outcomes can be better understood by examining its subdomains as described below.

***Risk-taking* (RI).** Operationally, Risk-taking refers to a willingness to make decisions based on limited information or to take a stand. People high on measures of RI are characterized by a preference for success over security and are likely to exhibit willingness for substantial risk in decision making. Low scorers tend to prefer familiar, prudent, and conservative approaches to decision making and problem solving. Taking risks has long been thought necessary for innovation performance (Beck, 1992) and entrepreneurship (Brockhaus, 1980). RI typically increases at higher levels of management (Delgado-Garcia, de Quevedo-Puente, & Fuente-Sabate, 2010) and is most often associated positively with measures of performance and success among high-level managers (Delgado-Garcia et al., 2010; MacCrimmon & Wehrung, 1990).

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Interestingly, experienced managers usually make an impassioned and marked distinction between RI and gambling, such that the latter is far more associated with chance, luck, odds, and "rolling dice." Rather, individuals typically combine notions of RI and its adaptive application with references to skill, experience, informed judgment, and the ability to exert some degree of control. Risk-taking is applied or avoided in the context of what can be calculated and what can be done and managed in the case of failure, degrees of failure, and ongoing decision-making processes. Both empirical examinations and anecdotal reports from successful managers with adaptive RI tendencies (Shapira, 1995) typically draw associations between adaptive risk-taking and confidence, energy, action orientation, broad employability, confidence, promotability, and achievement orientation. Conversely, risk-aversion is often associated with notions of pessimism, unwillingness to do more than one's job description, complacency, defensiveness, and slow decision making (Shapira, 1995).

The effect of RI on work outcomes can sometimes be moderated. Companies or industries characterized by increased need for regulation and stability are less likely to reward risk propensity in terms of compensation, promotability, and/or performance evaluation. Not only company/industry, but job characteristics and other traits within individuals may also moderate the desirability of RI (e.g., Barrick et al., 2005). Some management professionals speak in terms of company and/or job-based "risk-appetite" that, whether implicitly or explicitly measured, moderates not only the extent to which RI is desirable, but also helps to characterize RI as a trait for which there may be an *ideal point* under or over which personnel dispositions may create misfit.

***Adaptability* (AD).** An adaptable individual is one who maintains comfort with unanticipated changes, including changes in goals and changes in the methods by which goals are pursued. They are typically willing and able to nimbly change approach, adapt easily to diverse situations, adjust to constraints, and manage or rebound from adversity. Individuals who are not adaptable tend to be change-averse and may react to multiple demands or changing priorities with a rigid or inflexible demeanor, or even with low composure or stress. Today's organizations face increasing demands to adapt to change, and the ability of employees to adapt to change has become increasingly important (Griffin & Hesketh, 2005).

Adaptability has implications for employees at all levels in organizations. In general, AD is central to many work processes, and research has linked individual AD to employability (O'Connell, McNeely, & Hall, 2008) and sales performance (Spiro & Weitz, 1990), as well as adaptive adjustment to task changes, vocational changes, socialization, daily challenges, and stress at work (Oreg, Michel, & Todnem, 2013). Task-oriented individuals, particularly those with complex, changing, and ill-defined task demands, tend to perform better when exhibiting elevated AD (Mumford, Baughman, Threlfall, & Constanza, 1993). Wang, Zhan, McCune, and Truxillo (2011) posited and empirically demonstrated that AD contributed to broader person-environment (P-E) fit among newcomer employees, and P-E fit, in turn, led to job performance, job satisfaction, and low turnover intentions. AD may be less salient among workers with less-complex task demands, although it may not in those cases be a problematic trait or necessarily have non-positive effects (Wang et al., 2011).

Consistent with the relevance of AD in complex roles, AD has repeatedly been described as a key component of agile leaders who facilitate change and lead effectively in economic or organizational conditions characterized by volatility (Everaert et al., 2012; Swisher, 2012; Orr, 2012). In the modern business climate, AD is increasingly characterized as crucial for leadership success in general, but also particularly for leaders in organizations focused on innovation, and during times of change or crisis management (Kantor, Kram, & Sala, 2008; Martinuzzi, 2014). Low AD among upper-level managers, including CEOs, is notably associated with underperformance, turnover, board mistrust, and lower pay, and, again, related associations are more pronounced during times of organizational adversity and

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industry change (Guay, Taylor, & Xiao, 2014). High adaptability is typical among senior executives with more breadth of experience and more complex career trajectories (Zhu, Wolff, Hall, Heras, Gutierrez, & Kram, 2013). AD has sometimes been characterized as a component of key emotional constitution for managers and executives, such that low AD can impact affective and social outcomes as well, including relationships and perceived managerial performance among peers, subordinates, and superiors (Calarco & Gurvis, 2006). Managers with low adaptability are less efficient in terms of resource use and self-perceived resource need, including human capital (Plattner, 2011). Although market circumstances, cultures, or the nature of roles may impact the extent to which adaptability is crucial for leaders, there is generally an overwhelming research consensus spanning 20+ years indicating that AD has measurable and consistent *positive* effects on most key leadership and managerial outcomes—including both individual- and company-level outcomes (Reeves & Deimler, 2011).

Tolerance of ambiguity **(TA).** A comfort with uncertainty and a willingness to make decisions and plans in the face of incomplete information are tendencies closely linked to both AD and RI, and are hallmarks of high scorers on measures of Tolerance of ambiguity. High TA is markedly associated with innovation and an entrepreneurial orientation to vocational pursuits, whether within or outside organizational contexts. High scorers on measures of TA are more likely to seek and value diverse feedback, experiment, seek opportunities for innovation, and avoid micromanaging (Kirschkamp, 2007). TA serves as a common and critical component of Agility-like measures used in selection, development, and succession contexts (Lewis & Ream, 2012). Individuals high in TA tend to show high levels of innovation and flexibility (Hofstede, 2001; House, Hanges, Javidan, Dorfman, & Gupta, 2004). TA is relevant to creative performance, such as new product innovation (McNally, Durmusoglu, Calantone, & Harmancioglu, 2009). It has been viewed as a personality factor (Dacey, 1989; Shalley, Zhou & Oldham, 2004) and a valuable resource (Sternberg & Lubart, 1995) relevant to creativity. TA is also important for coping with change and new environment. Organizational change efforts inevitably entail uncertainty, and TA affects how individuals react to and cope with such changes (Judge, et al., 1999). TA has been found to relate to performance of newcomers, particularly expatriates in their new environments (Mol et al., 2005).

TA is often markedly and inversely related to variables that, at first glance, may seem crucial to success in any vocation or role. High detail orientation and a tendency to make decisions based on deep and thorough analysis, for example, may seem key to success. Indeed, in many contexts they are—particularly in contexts characterized by well-defined task demands or clear tactical orders. But individuals who strongly display related characteristics typically score *low* on measures of TA. Although the strength of association may be moderated by the nature of job roles and contexts, high TA among *leaders*, like AD, has been almost unilaterally associated with positive individual- and company-level outcomes (Yukl & Mashud, 2010). Business climate and organizational functioning characterized by ambiguity and uncertainty has repeatedly been characterized as “the new normal” (Cone, 2013), and management professionals and managerial scientists include TA among the top characteristics of successful leaders into the foreseeable future, along with well-known things like inter-cultural knowledge and sensitivity, and collaboration (Gratton & Erickson, 2007; Gratton, 2010). High scorers on measures of TA are more likely to seek and value diverse feedback, experiment, seek opportunities for innovation, and avoid micromanaging (Kirschkamp, 2007). For medical organizations, TA has been called a key indicator differentiating between physicians who can and cannot successfully make the difficult and oft-times avoided transition from clinical to administrative functions (Sherrill, 2001).

Interestingly, high scorers on measures of TA do not eschew data or avoid seeking information by which planning and executing decisions can be guided. Rather, an effective manager or employee

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with an ambiguity tolerant disposition typically has a more adaptive and nimble sense of when a critical mass of key information has been gathered, and they proceed without problematic trepidation in cases where others may not when faced with information that seems inadequate or incomplete. Brainstorming to fill in data gaps, pragmatism, and contingency plans are usually key accessories for effective and highly ambiguity-tolerant individuals and managers (Strosaker, 2010). Begley and Boyd (1987) also refer to and empirically verify some previously noted associations between executive outcomes and TA, showing also a positive relationship between TA and executive ROI marks. High TA scores, they assert, are a hallmark of the Type A successful managerial professional who is also typically competitive, tenacious, and skeptical when faced with reports concerning the insurmountability of time and/or resource limitations.[5] They also hypothesize and empirically demonstrate, however, that levels of TA and related variables can and do become dysfunctional if too high and/or non-commensurate with needs as dictated by contextual variables. TA then, like RI and others, is typically relatively high among more successful managers, while yet having potential for ideal point values that are likely context dependent, above (or below) which the adaptive nature of TA will cease to be adaptive and even perhaps become problematic for performance and sustainability.

Table AGDEF. Definitions for Agility trait subdomains

TRAIT	DEFINITION	HIGH SCORE	LOW SCORE
Adaptability	Comfort with unanticipated changes of direction or approach. High scorers are willing and able to nimbly change approach, adapt easily to changes in situation, adjust to constraints, and manage or rebound from adversity. Low scorers often are change-averse, and may react to multiple demands or changing priorities with a rigid or inflexible demeanor.	**Adaptable**	**Consistent**
Curiosity	The extent to which a person is likely to tackle problems in a novel way, see patterns in complex information, and pursue deep understanding. High scorers enjoy solving complex problems in creative ways and addressing issues in thoughtful and intellectually driven ways. Low scorers may prefer less novelty, tried-and-true methods, and more structured problems.	**Inquisitive**	**Certain**
Focus	Preference for organization, procedure, and exactitude. High scorers demand structure and tend to be seen as systematic, detail-oriented, and in control. Low scorers dislike detail and structure and may be perceived as spontaneous and disorganized.	**Detail-oriented**	**Breadth-oriented**
Risk-taking	A willingness to take chances based on limited information or to take a stand. High scorers may have a preference for success over security, and exhibit a willingness to take substantial risk in decision making. Low scorers tend to be risk-averse, preferring a familiar, prudent, and conservative approach.	**Risk-taking**	**Cautious**
Tolerance of ambiguity	Comfort with uncertain, vague, or contradictory information that prevents a clear understanding or direction. High scorers find energy in these situations, are open to alternative solutions, and can productively work, despite the lack of a clear view of the future. Low scorers tend to be disoriented or immobilized by lack of clarity or certainty.	**Ambiguity tolerant**	**Preference for clarity**

***Curiosity* (CU).** Curiosity is the extent to which individuals approach problems in novel ways, see patterns and potential for synthesis in complex information, and pursue deep understanding. High CU scorers tend to seek and solve complex problems creatively and address issues in thoughtful and intellectually driven ways. They also may be described as unconventional and skilled at making fresh connections between ideas and information. Low scorers tend to prefer less novelty and evaluate

[5] Later discussions of related traits show that related trait profiles can be desirable or problematic, depending on circumstances.

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things according to conventional standards. They are inclined toward tried-and-true methods and prefer structured problems with clear and known solutions. Psychologists have otherwise characterized CU as "intellectual engagement" (Woo, Harms, & Kuncel, 2007) or "mental agility" (Orr, 2012; Swisher, 2012; Cashman, 2013) and describe individuals with low CU as less experienced, insular, inclined toward narrow and low complexity specialization more than breadth, more interested in answers than in questions, and deferential to logic and convention in potentially limiting ways.

Psychologists studying CU draw comparisons between CU and general intelligence (*g*). While there is virtually no disagreement that they are divergent constructs, CU has shown a consistently positive but modest correlation with "crystalized intelligence," which is a measure of accumulated knowledge and skill and the ability to apply them across circumstances. CU tends not to be related to conceptualizations of intelligence that involve pure deductive or inductive reasoning ability independent of experience and acquired knowledge (Goff & Ackerman, 1992; Ackerman & Goff, 1994; also see Spearman, 2005, for a discussion on different types of intelligence).

CU is expected to be linked to work-related outcomes due to its relevance for learning and in situations that involve dealing with uncertainty and change (Mussel, 2013). Curiosity is particularly important for jobs that are characterized by high demands for learning. Studies have found positive correlations between CU and workplace learning (Reio & Wiswell, 2000) and newcomer adaptation (Harrison, Sluss, & Ashforth, 2011). CU appears to have an impact on job satisfaction as well. CU is positively related to job satisfaction among professionals, as well as blue collar and clerical workers (Peterson, Stephens, Park, Lee, & Seligman, 2010). In organizational settings, CU tends to increase at higher levels of management and has been successfully used in the assessment of leadership potential (De Meuse, Dai, & Wu, 2011). Given the changing nature of the world of work, the importance of CU-like constructs is likely to increase, even though its relationship to job performance can be moderated by job and organizational variables.

While average intelligence (or higher) has been described as a necessary antecedent of CU, its inclusion in measurement batteries predicting emergence and success among managerial leaders has been called, by at least one organizational psychologist, "smarter than IQ" (De Meuse, 2011). Boss ratings of performance and behavior have shown that high scores in CU may not predict promotion among managers,[6] but they do predict performance *after* promotion, and predictive strength has been seen at levels commensurate with statistical notions of "strong prediction" (r = .53; Cohen, 1988). In fact, the authors (Lominger International, 2007) of one study concluded that if more people with high CU were promoted, "the net performance of promoted people would be much stronger." In organizational settings, CU tends to increase at higher levels of management (De Meuse, Dai, & Wu, 2011). Bivariate correlations of CU with performance and leadership potential are moderately strong or strong for all management levels (Lominger International, 2007). It's utility for career development intervention, succession planning, and selection has also been explicated (Fleit, Hansen, & Butler, 2013).

***Focus* (FO).** We include Focus among the components of AG due to the inverse relationship between the two constructs. FO taps the extent to which individuals are detail oriented, thorough, and careful in decision making and work processes. Very high scorers may even be described as excessively rigid and/or problematically perfectionist. FO and FO-like scores tend to decrease at higher levels of management (Brousseau et al., 2006; Lewis & Ream, 2012) and typically correlate negatively with executive performance and other management outcomes, including career success (Lewis, 2012). Conceptually convergent or otherwise markedly correlated measures have even been characterized

[6] Our findings described later in this manual do not support the notion the CU does not predict promotion.

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as derailers for executive managers (viz., "dutiful" in Hogan & Hogan, 2009) and are negatively correlated with defining components of transformational leadership behaviors and traits, including traits much like those described in the immediately previous sections (e.g., Tolerance of ambiguity, Adaptability, Risk-taking).

However, FO is typically positively associated with performance among lower-level managers and individual contributors whose roles involve a notable degree of task orientation and applicability of expertise, perhaps as well as deference to protocol and well-defined process standards. It is likely that individuals high in FO tend to focus on details and duties in completing tasks (Costa, McCrae, & Dye, 1991), and thus will have higher execution effectiveness in jobs with related demands.

Given its known interaction with management level vis-à-vis having a negative or positive effect on performance, it is quite likely and virtually known (e.g., Lewis, Goff, & Hezlett et al., 2015) that FO scores' effects on outcomes are moderated by the nature of job roles and contexts to a considerable extent, both within and across management levels.

Positivity (PO)

Returning to the higher-order level in the trait taxonomy and turning to the next factor, we conceptualize Positivity as an individual's capacity for composure, mindfulness, and optimism. Individuals high on PO are well-adjusted, optimistic, aware, and stress-tolerant. High PO—the tendency to be calm, optimistic, and mindful—has been found to be a useful predictor of job performance (Barrick et al., 2001; Barrick & Mount, 2012), although the correlation effect is not always consistent (Barrick, Stewart, & Piotrowski, 2002; Salgado, 1997; Salgado, 2003). Job characteristics (e.g., Smillie, Yeo, Furnham, & Jackson, 2006; Uppal, 2014) and organizational support (Uppal, 2017) may moderate the link between PO and job performance. Moreover, the relationship between PO and job performance may not be linear and may at times be negative or quadratic (Uppal, 2017). Low scores on PO are also generally linked to workplace outcomes such as burnout (Wright & Staw, 1999) and low performance motivation (Judge & Ilies, 2002). We review the subdomains of PO below.

***Composure* (CP).** Composure measures how people are prone to react in stressful situations. A composed individual tends to be calm, poised, and responds well to pressure. Conversely, low-scoring individuals are typically seen as unsettled and prone to react to stressful situations in ways that are notably transparent and potentially perceived as negative. They're also more likely to interpret situations or various stimuli as *being stress inducing*, and to have corresponding low scores on various ratings of impulse control, which is seen as a key underpinning of virtually all conceptualizations of emotional intelligence (Goleman, 1995; Goleman, 1998; Gopinath, 2014; Lazarus, 1999).

In general, individuals who are more composed and stress tolerant—particularly in times of organizational change—are more committed to their organizations, more satisfied with their jobs, have more self-esteem, perform better, and are less likely to be viewed as having reached career plateau (Judge et al., 1999). They also have more generalized positive affect and a notably higher degree of self-efficacy for achieving goals (Judge et al., 1999). Low stress tolerance has been linked to decreased productivity (Aiello & Kolb, 1995). Researchers sometimes refer to the "non-existence" of stress-free modern (especially managerial) job roles in ways that underscore the importance of stress tolerant dispositional tendencies and even related training for effecting both performance and health outcomes (Anbazhagan & Rajan, 2013). Simply put, virtually everyone has stress. As such, high CP is continually described as key to the success of managers and workers in general. It has also been conceptualized as a component of leadership "presence" (Dagley, 2013). According to Llopis (2014), for example, a composed professional has body language, an attitude, and general presence that elicit confidence

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and better work from peers and subordinates. They are more likely to see adversity as opportunity and behave in ways that, more times than not, prevent crises that may otherwise emerge as a result of low composure and related behavior. We caution, however, that at very high levels of CP, individuals may seem socially and/or emotionally inaccessible, opaque, and/or detached.

Table PODEF. Definitions for Positivity trait subdomains

TRAIT	DEFINITION	HIGH SCORE	LOW SCORE
Optimism	The degree to which people are comfortable with themselves and positive about life. High scorers tend to disregard disappointment, are positive, and rarely worry about past failures. Low scorers may be relatively dissatisfied with their lives, have low expectations for the future, and may spend more time thinking about past failures than successes.	**Optimistic**	**Realistic**
Composure	How people are prone to react in stressful situations. High scorers tend to be calm, poised, and take pressure well. Low scorers are often seen as anxious, unsettled, and reacting negatively to stressful situations.	**Composed**	**Transparent**
Situational self-awareness	Maintaining broad, receptive, and non-judgmental attention to present experience. High scorers find it easier to pay attention to the importance of a variety of demands, be more aware of their expert intuitions, and able to improvise in a dynamic environment. Low scorers are more likely to be focused on past or future events, and are less aware of their impact on the situation as it occurs.	**Mindful**	**Systematic**

***Situational self-awareness* (SS).** Situational self-awareness is an emerging construct in the industrial/organizational psychology literature. It is sometimes referred to as *mindfulness*, and has been called a "western adaptation to an eastern way of thought" (Haigh, Moore, Kashdan, & Fresco, 2011). SS involves one's ability to anticipate and be proactive for change, accept circumstances, live in the moment, reserve judgment, and be aware of even subtle internal and external information. Low scorers on SS are more likely to be focused on past or future events, are less aware of their impact on situations as they occur, and are more likely to use strict and well-defined heuristics when making decisions or characterizing a situation. Across studies and measurement instruments, SS has repeatedly shown compelling evidence of construct validity and has displayed key correlations with many other psychological constructs and outcomes (Haigh et al., 2011; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007). Together with its theoretical foundations, correlational patterns help to elucidate the nature of SS and its potential utility. It has shown considerable positive relationships with curiosity and exploration, emotional regulation, and cognitive flexibility.

For much of its history, SS has been used as part of developmental plans for designing psycho-social interventions in diverse non-clinical settings. These include acceptance and commitment, relational frame theory, and a host of other cognitive-behavioral interventions (Baer, 2003). Related interventions designed to boost scores on SS-like constructs are emerging rapidly in organizational contexts as well (Hayes, Bond, & Barnes-Holmes, 2006). SS can provide a framework or otherwise assist in coaching and development activities and have been explicated specifically for high-level executives (Passmore, 2007; Passmore & Marianetti, 2007). The potential utility of SS measures in organizations extends beyond its promising application for predicting who will be successful in the executive ranks. SS also can provide a framework or otherwise assist in coaching and development activities that show indications of substantially helping organizational personnel to manage stress, take advantage of stress, produce results while learning on the job, and mitigate derailment (Lee, 2012).

Emerging conceptualizations increasingly embed SS in a larger framework as a component and an antecedent to pro-social behavior. It has otherwise been associated with effective strategic decision

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making, novelty seeking, adaptive risk-taking, and awareness of key resources among key players in organizations (Langer, 2009; Nadkarni & Barr, 2008; Weick & Roberts, 1993). Currently, the consensus in the extant literature is that SS has unilaterally positive effects in organizational contexts and beyond (Lee, 2012; Dane, 2011). Although no empirical work has shown otherwise, this notion is not without critique (Dane, 2011). The paucity of skepticism on SS as a strictly positive characteristic focuses mostly on its "wide attentional breadth" and how it might distract skilled professionals whose charge is to focus on limited information and limited scope issues in considerable depth (Dane, 2011). Still, given the clear and substantial positive relationships between SS and many general measures of positive adaptive behavior and strategic coping, it is likely that job roles and organizational context will only moderate the *magnitude* of its otherwise generally *positive* effect in occupational contexts (Goleman, 1998). Interestingly, SS may also moderate the link between other psychological constructs and ratings of job performance, such that higher SS strengthens positive associations where applicable (Barrick et al., 2005).

***Optimism* (OP).** Optimism is the extent to which people tend to disregard disappointment, are satisfied with who they are, and expect the future to be positive. Researchers have conceptualized OP as an explanatory style relating to how an individual characterizes the causes of positive and negative events (Buchanan & Seligman, 1995). Optimistic individuals tend to attribute negative events to external, unstable, and specific causes, and positive events to personal and pervasive causes. Others have described OP as a set of generalized positive outcome expectancies (Scheier & Carver, 1985). According to this conceptualization, high scorers "look on the bright side" and expect good things to happen, and low scorers view things from a negative perspective.

Seligman (1998) states that ''optimists can make the difference between getting the job done well or poorly or not at all.'' Optimistic individuals tend to stay more goal-focused despite difficulties. They will perform better on the job because they exhibit more positive behaviors at work. OP has been linked to stress reduction (Luthans, 2002), coping (Scheier, Carver, & Bridges, 1994; Nes & Segerstrom, 2006), satisfaction with performance (Werenfels, 2006), and job satisfaction (Al-Mashaan, 2003).

Some, however, have noted a quadratic relationship between optimism and performance, indicating that both markedly low and markedly high optimism can both be potentially problematic (Brown & Marshall, 2001). Very high optimism can lead to inadequate preparation, unrealistic expectations, and encourage riskier behaviors (Grant & Schwartz, 2011). This is because OP can ''be too extreme, leading to inappropriate complacency about the adequacy of one's skills for coping with difficult situations'' (Haaga & Stewart, 1992).

Presence (PR)

Presence is our own analog to Big Five higher-order Extraversion. We characterize it as consisting of four subdomains including Sociability, Empathy, Influence, and Assertiveness. Higher scorers on PR tend to be seen as sociable, persuasive, commanding, and poised, while people with a low level of PR are generally reserved, quiet, passive, and emotionally detached. PR-like constructs are most often associated with performance in jobs that require social interactions, sales (Vinchur, et al., 1998), leadership abilities (Lim & Ployhart, 2004), training proficiency (Barrick & Mount, 1991), and job satisfaction (Judge, Heller, & Mount, 2002). We review the subdomains of PR below.

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***Sociability* (SO).** The introvert-extravert continuum is perhaps the most popular notion in all of traits measurement (e.g., Barrick & Mount, 1991). Our measure of Sociability might be otherwise referred to as unidimensional *extraversion* or as a primary subdomain of higher-order extraversion in Big Five personality conceptualizations (Davies, 2012). SO measures the degree to which people enjoy interacting with others. High SO scorers are generally characterized as "outgoing" and energized by the presence of others, while tending to seek and initiate social interactions. They tend toward higher positive affect and are more sensitive and affected by positive social cues (Larsen & Ketelaar, 1989). As such, SO and closely related measures are sometimes seen as subdomains or positive correlates of emotional intelligence (e.g., Rothmann, Scholtz, Sipsma, & Sipsma, 2002; Yusoof, Desa, Ibrahim, Kadir, & Rahman, 2013). Low scorers may be characterized as "introverts," and tend to be more reserved, find it somewhat taxing to be around others, and prefer to do things alone.

SO is consistently related to job satisfaction across diverse samples of employees and professionals (Judge, Heller, & Mount, 2002). Higher-level management personnel typically have higher scores on SO-like measures (Judge, Bono et al., 2002). Elevated SO is positively associated with actual and perceived status and social influence within organizations, and is seen as a key component of a broader "effective leader" personality cluster along with other motives and psychological tendencies including pursuit of power, confidence, leadership identity, and self-efficacy for leadership (Harms, Roberts, & Wood, 2007). Not surprisingly, the positive impact of SO on job outcomes is stronger for jobs requiring interpersonal management, including sales and internal/external customer-facing professions (Hurtz & Donovan, 2000; Hough, Ones, & Viswesvaran, 1998), and individuals with higher levels of SO are more likely to pursue careers involving enterprising, sales, management, merchandising, politics, and public service (Larson & Borgen, 2002). The effects of SO on leadership tends most often to be positive, particularly in organizations and roles characterized by fast-pace and a need for adaptability (Bono & Judge, 2004) and among workers with more decision-making discretion (Barrick & Mount, 1993).

Despite its many and consistent positive effects, elevated SO has sometimes been associated with negative performance ratings in certain job contexts and on certain job-related outcomes (Hartman, 2006). High extraverts, for example, are more likely to have issues with absenteeism and perceived lack of dependability. They also tend toward lower ratings on measures of citizenship behavior, intrinsic motivation, and, in certain circumstances, they are more likely to turnover—even when highly satisfied with their jobs (Stuart & Carson, 1997; Furnham & Miller, 1997; Judge, Martocchio, & Thoresen, 1997). Measures of SO have also been notably and positively correlated with other constructs that are sometimes described as career derailers. Hogan and Hogan (2009), for example, report a notably high correlation (with positive magnitude approaching what is conventional for evidence of convergent measures) between SO and a career derailer they call "colorful," which is strongly associated with poor listening skills and potentially problematic attention-seeking behavior. Recent studies also suggest that the commonly observed positive effect of SO on job outcomes may not be entirely linear, at least for certain job roles—including sometimes those having a marked social component (Blickle, Meurs, Wihler, Ewen, Merkl, & Missfield, 2015). It is perhaps not difficult to imagine hyper-extraversion as being potentially problematic, particularly when not accompanied with solid skills or trait levels in aspects of social and self-regulation (e.g., composure). As such, it is likely that the positive impact of SO is not only moderated by job-related variables, but, where applicable, may also have a notable tendency for diminishing returns at markedly high levels across or within vocational types or organizational circumstances.

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Table PRDEF. Definitions for Presence trait subdomains

TRAIT	DEFINITION	HIGH SCORE	LOW SCORE
Empathy	The degree to which people are concerned with and aware of others' feelings, motivations, and problems. High scorers tend to be seen as empathetic, interpersonally aware, and non-judgmental. Low scorers are often perceived as judgmental, emotionally detached, and unsympathetic.	**Empathetic**	**Rational**
Assertiveness	The degree to which people enjoy taking charge and directing others. High scorers tend to be seen as aggressive and decisive. Low scorers are often perceived as tentative, passive, or indecisive, and may be more comfortable following the lead of others.	**Assertive**	**Reserved**
Influence	The degree to which people enjoy motivating and persuading others. High scorers tend to be seen as cogent, interpersonally adept, and persuasive. Low scorers are often perceived as interpersonally less confident and less able to inspire or sway others.	**Influential**	**Supportive**
Sociability	The degree to which people enjoy interacting with others. High scorers are energized by the presence of others and tend to initiate social interactions. Low scorers tend to be more reserved, find it somewhat tiring to be around others, and prefer to do things by themselves.	**Extroverted**	**Introverted**

***Empathy* (EM).** Our measure of Empathy refers to the degree to which people are concerned with and especially aware of others' feelings, motivations, and problems. High scorers tend to be seen as empathetic, interpersonally aware, and non-judgmental. Low scorers are often perceived as judgmental, emotionally detached, unsympathetic, and unable to discern the motivations and concerns of others. EM is a key component of Emotional Intelligence (EI) (Goleman, 1998) and has been linked to a number of workplace outcomes, including negotiations (Elfenbein, Foo, White, Tan, & Aik, 2007; Galinsky, Maddux, Gilin, & White, 2008; Bazerman & Neale, 1983), job satisfaction (Byron, 2007), and job performance (Elfenbein & Ambady, 2002; Elfenbein et al., 2007; Rosenthal, Hall, DiMatteo, Rogers, & Archer, 1979). A meta-analysis of 18 studies on the relationship between empathic accuracy and job performance observed a correlation of .20 (Elfenbein et al., 2007).

EM has been considered indispensable to leadership and managerial roles for decades (Wilson, 2015). Managerial professionals who lack EM often suffer difficult social relations at work. They tend to be poor collaborators, have trouble with changing and ambiguous situations, and are often generally ineffective at leading others (Gentry, Weber, & Sadri, 2007; Holstein, 2015). EM is unilaterally counted among the components of EI, and there is no paucity of extant research demonstrating the marked utility of EM in leadership on job performance and other outcomes (e.g., Gentry et al., 2007; Langelett, 2014; Bharwaney, BarOn, & MacKinlay, 2011). We have observed its positive effects on leadership outcomes and emergence in our own data as well (Lewis, 2013; Lewis & Ream, 2012).

Cultural or organizational considerations may moderate the magnitude of EM's positive effects or extent to which EM is in supply (e.g., Gentry et al., 2007), although its effect is most often positive, particularly when examined using zero-order correlations or when moderators or other measures are not considered concomitantly. Nonetheless, elevated EM is not always associated with more favorable or value-added outcomes. It is possible that EM is linked to performance in jobs that are emotionally demanding, but not in jobs that pose lesser emotional demands (Côté, 2014; Wong & Law, 2002). This is consistent with research in EI literature. Joseph and Newman's meta-analysis (2010), for example, showed that the 95% confidence interval for the correlation between emotional intelligence and job performance in jobs with lower emotional labor demands are sometimes negative and ranged widely from -.12 to .14. Elsewhere, a recent study shows that EM may sometimes have problematic effects on leadership performance, such that executives with high EM but low

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scores on most or all other components of EI or EI-like constructs may be at risk for derailment and low engagement (Lewis, 2015). In this sense, managers who place a primary emphasis on EM at the expense of showing or employing other components of EI (such as self-awareness, interdependence, and sociability) may have problems. Managers who can read and understand people but have relatively low levels of composure, motivational skill, sociability, and collaborative tendencies are prone to disengaging when faced with managerial and leadership challenges.

***Influence* (IN).** Influence measures the degree to which people are predisposed toward motivating others, leveraging others' strengths, and using interpersonal skills for marshalling support for an idea or vision. High scorers tend to be seen as cogent, interpersonally adept, and persuasive. Low scorers are often perceived as lacking interpersonal confidence and less interested in inspiring or swaying others; they may be more inclined to play supporting roles in organizations or to defer to formal authority or others when giving or receiving direction.

Individuals with high IN tend to be more transparent, adaptable, and collaborative (Leigh & Maynard, 2012). They are more likely to solicit input from others across levels of implied or formalized management hierarchy and to facilitate a sense of ownership for projects and goals among all contributors. IN is positively associated with innovation (Den Hartog, Van Muijen, & Koopman, 1997) and is typically seen as a key component of leadership and contributor styles that facilitate positive changes among groups and maximize group member potential. High IN among leaders and peers may also contribute to group members' sense of well-being in general (Jacobs et al., 2013).

In terms of job performance, Munyon and colleagues' (2014) recent meta-analysis shows that IN-like constructs also strongly predict task performance. For workers in general, it is likely that IN operates most effectively in certain job contexts, such as those with enterprising job demands (Blickle, Kramer, Zettler, Momm, Summers, Munyon, & Ferris, 2009). Enterprising job demands are characterized by tasks that involve directing or persuading other people (Holland, 1985). Indeed, significant predictive effects of IN-like constructs on measures of sales performance has been demonstrated empirically (Blickle et al., 2012).

The relationship between IN and workplace outcome is likely to be moderated by job and organizational context. IN is seen as an important disposition for individuals who find themselves embedded in organizations that emphasize structures with loosely defined or informal hierarchy, and where an individual's *de facto* degree of influence trumps or approximates formalities associated with rank, job title, or position (Leigh & Maynard, 2012). IN may be less effective, less prevalent, or less salient in regulated industries or in well-established companies and/or operational units with inert, fixed, and well-known work processes and objectives (Sandilands, 2015). When the goal is to maintain a well-known flow of operations and/or "keep the machine running," managers with high IN are perhaps less likely to have large positive effects on company, business unit, and person-level outcomes (Sandilands, 2015). Some assert that the utility of a high IN leader or manager is more applicable and effective in the private sector and/or in volatile and competitive markets, such that the high IN leader's high visibility and current popularity sometimes obscures the continuing need for more transactional and hierarchic leadership styles in diverse contexts (Tourish, 2013). High IN among leaders is also often seen as a component of what constitutes the archetypal "visionary" and/or "charismatic" leader. While there is no paucity of research explicating the potentially positive effects of this kind of leadership, some caution that high IN "charismatic visionaries" can, in some cases, also tend toward a lack of integrity or may potentially promote unethical practices among companies and group members (Parry & Proctor-Thomson, 2002). Tourish and Vatcha (2005), for example, argue that many of the executive leaders responsible for high-profile debacles and failures such as Enron

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and the banking crash of 2008 were high charisma and essentially high IN. While this leader type is likely uncommon, such possibilities perhaps underscore the need to evaluate potential leaders on profiles of dimensions of social, emotional, and cognitive constitution.

***Assertiveness* (AS).** Assertiveness measures whether people are inclined to proactively assume wide responsibility, take charge, and lead others. A notably assertive individual is convinced that she/he *should* be in charge, and that both individual and group outcomes will be optimized when she/he is granted group-level decision-making discretion, some kind of leadership status, authority to delegate, and authority to set or notably influence organizational objectives. As such, high AS is no doubt a contributing indicator of internal locus of control. High AS scorers may also tend to be seen as confident, aggressive, and decisive, while low scorers are likely perceived as tentative, passive, reserved, or indecisive and more comfortable deferring to and following the lead of other individuals or groups.

In the extant Big Five personality literature, a construct similar to AS is often conceptualized as a component of higher-order Extraversion, and is often called Dominance (e.g., Costa & McCrae, 1992; Depue & Collins, 1999). Ones, Dilchert, Viswesvaran, & Judge (2007), however, in a comprehensive meta-analytic review, show marked differential predictive utility for these two components of Extraversion—Sociability and Dominance, particularly for managerial professionals. They find the impact of Dominance on managerial performance is positive and notably different and larger than the impact of Sociability. Judge, Bono et al. (2002) similarly found Sociability and Dominance having separate effects on leadership. Although we do not follow this path in our own conceptualization of KF4D-Ent Presence/Extraversion, others have conceptualized and supported AS-like constructs as belonging to higher-order factors removed from Sociability or other social-behavior-related measures, particularly for leaders (e.g., Dries & Pepermans, 2012; Northouse, 1997; Mann, 1959; Stogdill, 1948; Hogan, 1983; Wiggins, 1996). Hogan (1983) and others (e.g., King & Figueredo, 1997) in empirically-based higher-order personality structures separate Dominance from Extraversion or Sociability, concluding that the latter is better dubbed "Surgency"—having reference to general positive mood and sociability, whereas, Dominance emerges as its own factor with primary reference to confidence, independence, and aversion to submissiveness or deference. Others separate AS and social variables and argue that the former and latter are clearly associated, but not necessarily conceptualized as subdomains of a single common latent factor (Dries & Pepermans, 2012). Yet others (e.g., McCrae & Costa, 1987) assert that Sociability is not best combined with AS in an Extraversion factor, but that Sociability belongs with emotional and affective variables—much like found in our own conceptualization of "Social leadership" in a related tool designed primarily for use with upper-level management and executives (Lewis, Goff, Hezlett et al., 2015).

AS predicts both self and third-party ratings of Sociability, as well as "competency" domains like creativity, analytical thinking, and problem solving (e.g., Anderson & Kilduff, 2009). Interestingly, AS seems to affect others' perceptions of competence in various domains *incrementally* in models also containing scores of *actual* competence. As such, Anderson and Kilduff (2009), among others, show that high AS individuals typically instill trust and confidence in others in ways that are not always directly linked to rationality, truth, or more objective measures of actual leadership status or skill. Empirical findings also show Assertiveness (AS) to be a key component of leadership emergence

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and potential as well as results-drive and achievement orientation (Dries & Pepermans, 2012).[7] AS is positively associated with management and also employee engagement among those in mid- and upper-management levels (Lewis, Goff, Hezlett et al., 2015). More broadly, AS has been suggested to be important in enterprising occupations (Hogan & Hogan, 1991; Holland, 1997). For example, in a study examining the associations between personality facets and occupational interest, Armstrong and Anthoney (2009) demonstrate that AS, along with activity gregariousness, are the Extraversion facets most closely aligned with enterprising occupations.

Despite the many positive associations between AS and desirable states and outcomes, assertiveness can sometimes be associated with lack of receptivity, micromanaging, and/or need for control in ways that create challenges for team performance, particularly when high AS marks are present in individuals having low marks on affiliation-type measures or measures of EI and/or positive affect (Driskell & Salas, 1992). It has also been suggested that interpersonal assertiveness has a quadratic relationship with leadership effectiveness (Ames, 2009), such that AS is effective to the extent that it is not too high or too low.

Striving (STV)

Striving is our own analog to Conscientiousness (CT). Among the Big Five personality traits, Conscientiousness has been purported to have perhaps the most consistent, well-documented, and positive predictive utility on workplace outcomes (Barrick & Mount, 1991; Hurtz & Donovan, 2000; Mount & Barrick, 1995; O'Connor & Paunonen, 2007). Barrick, Mount, and Judge (2001), for example, refer to CT as having a "trans-occupational positive effect on job performance." High CT is most often associated with high performance and, in general, individuals with high CT are also notably less likely to quit, turnover, or to be dissatisfied with their jobs (Zimmerman, 2008). Although there are competing conceptualizations, CT is typically defined as a latent variable, tapping the extent to which a respondent is achievement-oriented, persistent, reliable, and maintains an internal locus of control. It is difficult to imagine contexts in which this combination of characteristics would not be desirable and, again, in most cases the literature does support its widely applicable positive impact on job-related outcomes.

The effect of CT has, however, shown some susceptibility to moderation according to job-related and organizational context (Reiter-Palmon, Illies, & Kobe-Cross, 2009; Tett, 1998). Managerial personnel seem to benefit somewhat less from CT than service workers, individual contributors, expert-oriented professionals, and support function personnel—particularly from common CT subdomain measures like dependability and "order" (Ones et al., 2007).

In addition, psychologists have argued that the five-factor conceptualization of personality is necessarily hierarchic (Costa & McCrae, 1995) and that grouped subdomains may be predictive of differing outcomes. This includes and has been shown for subdomains of CT (Bogg & Roberts, 2004; Dudley, Orvis, Lebiecki, & Cortina, 2006; Hough & Ones, 2001; Roberts, Chernyshenko, Stark, & Goldberg, 2005). Reliability, or dependability, as often measured is sometimes negatively associated with management level (Tett, 1998) or unrelated to managers' job performance (Hough, 1992).

[7] Dries & Pepermans (2012) separate components of AS into multiple constructs for which they argue conceptual divergence. Taking initiative, they assert, is a component of "drive," assertiveness in decision making is a component of "analytical skill," and actively looking for opportunities to lead, delegating, and objective setting are components of "emergent leadership." In their study, these higher-order constructs, however, show markedly and arguably statistically convergent correlational patterns (all having $r > .75$). We make no argument with regard to the relative appropriateness of competing factor structures or conceptual groupings. Indeed, scientific models are based largely on their utility and replicability and the degree to which constructs as measured meet conventional standards of quality and acceptability. In a different context (Lewis et al., 2015), we empirically demonstrate adequate psychometric fit for "Energy" as being a latent construct tapped by indicators including Need for achievement, Persistence, and Assertiveness and, as evidenced in this discussion, all have some reference to locus of control. The high Energy leader has a trait profile characterized by a need to achieve challenging and excellent goals, a tendency to persevere through time and adversity, and a belief that the best outcome for self and others requires that they be in charge or otherwise assume a great deal of responsibility and influence over decisions, objectives, and methods.

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Although findings of certain studies may support dissenting opinions (e.g., Dudley et al., 2006), dependability as often measured is also likely, at least partially, culpable in CT's known negative association with creativity (Reiter-Palmon et al., 2009), CT's positive association with conventionality and "traditionalism" (Roberts et al., 2005), and CT's positive association or sometimes component relationship (e.g., Christiansen & Tett, 2013) with "dutifulness" and "prudence," which at markedly high levels involve strict rule orientation, unexamined deference to policy, careful detail orientation, perfectionism, and even sometimes dogmatism and rigidity. These constructs are often negatively related to promotion but may be positively predictive of success in lower-level roles. In contrast, CT facets that have been characterized as achievement, drive, or tenacious and deliberate pursuit of goals predict performance more consistently at higher levels in the management pipeline and perhaps even among individual contributors (Dries & Pepermans, 2012; Hough, 1992; Hough & Ones, 2001; Roberts et al., 2005).

Below, we describe the subdomains of our own analog to CT and its known and expected utility for predicting outcomes. We characterize Striving as consisting of four subdomains, including Credibility, Confidence, Need for achievement, and Persistence.

Credibility **(CR).** Credibility is the degree of consistency between a person's words and actions. High scorers mean what they say, protect confidences, and can be counted on to follow through on their commitments. Low scorers may have difficulty matching their actions with their talk, and inconsistently meet commitments.

In the extant management literature, a construct similar to CR is often called *Behavioral Integrity* (Simons, 2002), and is sometimes conceptualized as the consistency of an acting entity's words and actions that are observable by relevant stakeholders (Palanski & Yammarino, 2007). Integrity is important for effective leadership and management (Bass, 1985; Grover & Moorman, 2007). Palanski and Yammarino (2009) proposed a conceptual model explaining how a leader's personal integrity links to outcomes such as subordinate integrity, trust, and satisfaction with the leader. Integrity results in trust (Simons, Friedman, Liu, & McLean Parks, 2007), and how much subordinates trust their manger influences their attitude and performance (Kaiser & Hogan, 2010). In a meta-analysis, Dirks and Ferrin (2002) show that when employees trust their direct supervisor, they tend to experience greater job satisfaction, display more organizational citizenship behaviors, exercise more discretionary effort, and perform better. Similarly, Davis and Rothstein (2006) conducted a meta-analysis and found a large effect size between behavior integrity and employee attitudes including job satisfaction, organizational commitment, satisfaction with the leader, and affect to the organization. Previous studies have also shown that a manager's behavioral integrity is associated with their own job performance, (Judge & Piccolo, 2004), organization profitability (Simons & McLean Parks, 2000), and leader emergence (Palanski & Carroll, 2006).

Confidence **(CF).** Confidence refers to the degree to which a person is convinced that they control the course of events in their lives. High scorers tend to hold positive self-perceptions and believe they will be successful. They believe that many events and outcomes are within their control and are confident that their future is in their own hands. Low scorers believe that fate, luck, or external and largely uncontrollable forces are more important in determining their future.

CF and relevant constructs are important in facilitating adaptive human self-concept and have been linked to academic performance and satisfaction with life in general (Stajkovic, Lee, Greenwald, & Raffiee, 2015). CF also predicts job performance criteria (e.g., sales performance) and job satisfaction (Stajkovic et al., 2015). CF may be relevant to job performance for a number of reasons. Self-confidence can influence the effort that people invest on the job. Those with high CF generally exert

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high-level effort on tasks that they are committed to because they are confident that their efforts will be successful and affect success. CF may also influence the persistence with which people attempt difficult tasks. People with high CF are likely to heighten their effort in the face of setbacks (Miyake & Matsuda, 2002). As Boyatzis concluded (1982), "Self-confidence appears strongly associated with managerial effectiveness."

CF has shown positive associations with management level and career success among management personnel (Lewis & Ream, 2012), as well as performance among project managers. In general, high scorers in CF-like measures are less maladaptively cautious and have lower scores on popular career derailers such as dutifulness, excitability, and overzealousness (Landis et al., 2011). They also tend to have elevated scores on measures of socio-emotional adjustment and ambition, and they are more likely to value new learning (Landis et al., 2011). Other research has demonstrated positive association between CF and learning agility subdomains—especially result-drive agility, but also mental agility (related to our own CU measure), change agility, and overall learning agility (De Meuse, Dai, Eichinger, Page, Clark, & Zewdie, 2011).

Some authors have asserted that excessive levels of CF may impair job performance (Vancouver & Kendall, 2006; Vancouver, Thompson, Tischner, & Putka, 2002). Overconfidence is one of the most widespread psychological biases (Johnson & Fowler, 2011). Overconfidence has been identified among both novices and experts in a variety of professions (Alicke & Govorun, 2005; Barber & Odean, 2001), and people with high status are particularly likely to show overconfidence bias (Anderson & Brion, 2010). It has been suggested that overconfidence may be one of the underlying causes for managers making poor decisions and ignoring obvious flaws (Shipman & Mumford, 2011). As such, it would seem that the relationship between CF and performance may not be linear and can potentially be moderated by contextual factors.

Table STDEF. Definitions for Striving trait subdomains

TRAIT	DEFINITION	HIGH SCORE	LOW SCORE
Need for achievement	Motivation by work or activities that allow testing of skills and abilities against an external standard. High scorers appreciate working hard, judge achievement according to the goal, and strive to meet and exceed standards. Low scorers are not motivated by external standards, and tend not to work energetically to exceed expectations.	**Driven**	**Content**
Credibility	The degree of consistency between a person's words and actions. High scorers mean what they say, protect confidences, and can be counted on to follow through on their commitments. Low scorers may have difficulty matching their actions with their talk, and inconsistently meet commitments.	**Credible**	**Oblique**
Persistence	A tendency toward passionate and steadfast pursuit of personally valued long-term or lifetime goals, despite obstacles, discouragement, or distraction. High scorers are seen to push through obstacles and not give up on difficult tasks. Low scorers are more likely to pull back from obstacles or lower expectations for their own attainment.	**Persistent**	**Accommodating**
Confidence	The degree to which people are convinced that they control the course of events in their lives. High scorers believe that many events and outcomes are within their control and are confident that their future is in their hands. Low scorers believe that fate, luck, or external forces are more important in determining their future.	**Shaping**	**Accepting**

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Need for achievement **(NA).** Need for achievement refers to motivation by work or activities that allow for skills and abilities testing against an external standard(s). High scorers are typically seen as hard workers and are oriented toward some high standard of excellence that they seek to meet or exceed. They are likely characterized by a perpetual need to improve or to accomplish more. Like high scorers in CF, high scorers in NA also typically adhere to an internal locus of control, meaning that they largely attribute outcomes to the extent to which they (and potentially others) worked hard, accepted responsibility, and did their best in every respect. High scorers are also more likely to pursue and obtain loftier goals and to seek job- or goal-related feedback more than personal feedback (McClelland, 1961). Low scorers are not motivated by external standards and tend not to orient themselves according to some clearly defined notion of excellence that they are motivated to meet or exceed. They may also not feel that goal achievement alone is a sufficient reward, adequate (single), or primary measure of success for any pursuit. Low scorers are also likely more interested in personal and subjective feedback than they are external job-related feedback.

Research into NA suggests that it has far-reaching implications for both person-level and aggregate outcomes conceptualized in different ways. McClelland (1961), for example, found that aggregate NA levels among a nation's population are positively associated with national economic prosperity. For many decades, NA has often been included among short-listed key traits for executives, and its positive association with management level is well known (McClelland, 1961; Kirkpatrick & Locke, 1991). In both single empirical studies and comprehensive meta-analyses, NA shows a marked positive correlation with leadership and leadership emergence (Judge, Bono et al., 2002; Marinova, Moon, & Kamdar, 2013), managerial performance (Hough et al., 1998; Dudley et al., 2006; Ones et al., 2007), entrepreneurial performance (Collins, Hanges, & Locke, 2004), sales performance (Hausknecht & Langevin, 2010), and engagement and organizational commitment across management levels (Lewis, Goff, Hezlett et al., 2015). It may also be more salient for higher-level-complexity individual contributor type roles (engineer, scientist) compared to low-complexity jobs (Le, Oh, Robbins, Ilies, Holland, & Westrick, 2011). Among high-level executives, including CEOs, NA is positively associated with venture growth (Lee & Tsang, 2001), organizational size (Schlevogt, 1998), and also with innovation (Papadakis & Bourantas, 1998). High NA has been characterized as relatively rare in the US and many other nations, although national averages do significantly vary (McClelland, 1961). Early research suggests that entrepreneurs seem to typically have elevated NA compared to other professionals (McClelland, 1961).

Research suggests that high NA can sometimes be a weakness (Kumar & Meenakshi, 2009; Miller & Droge, 1986; Lewin & Stephens, 1994). Kumar and Meenakshi (2009) explain that while high NA is often a key asset, those who do not combine high NA with notable tendencies toward affiliation, adaptability, and consensus-building can create problematic environments for teams and may be, at best, well-suited for short-term growth and not long-term success. High NA individuals, they assert, are often "utilitarian" and problematically brief communicators. If they are non-affiliative and lack strong influential communication skills, they also tend to react in predictable and problematic ways to stress. When circumstances become characterized by increased pressure to perform, their high NA tendency to drive harder, while preaching and rewarding hard work and dedication, may transform into confrontation, micromanaging, and distributing blame in ways that target select individuals and/or groups as being incompetent or complacent. One effective counter to these kinds of problems, they assert, may be an increased degree of investment or emphasis on facilitating or selecting for contributors, executives, and/or managers who have high NA while also valuing work-life balance. Kumar and Meenakshi (2009) also caution that organizational cultures that value heroes and place

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primary emphasis on great performers and achieving at all costs are likely more susceptible to hiring, promoting, and retaining individuals who have dispositional and motivational profiles that interact to create maladaptive high NA.

Elsewhere, a growing body of research suggests that high NA top-level leaders can have a far-reaching and predictable impact on organizational cultures and structures. Companies with CEOs having high NA, for example, tend to be and/or *become* places characterized by increased centralized power and control (Miller & Droge, 1986; Lewin & Stephens, 1994). Some have even characterized NA as the executive's "stimulant," and despite a notable amount of research to the contrary, others maintain that high NA leaders are far more inclined toward task-orientation and micromanagement and, as such, may be better suited for mid-level managerial duties and not high-level executive leadership (McClelland & Boyatzis, 1982). Others have argued similarly that because high NA individual contributors are often promoted, they sometimes find themselves disadvantaged in new roles where their direct efforts, self-sufficiency, and preferences for explicit and self-achieved goals are no longer complemented in managerial roles wherein they now have to facilitate and conduct training, delegate, and leverage the skills and abilities of others (Saylor Academy, 2012). As such, these kinds of transitions may sometimes result in new managers with a tendency to micromanage and become bored or frustrated.

***Persistence* (PE).** Persistence refers to a tendency toward passionate and steadfast pursuit of personally valued *long-term* or lifetime goals or values, despite obstacles, discouragement, or distraction. High scorers tend to push through adversity and tend not to give up on difficult tasks and pursuits. They are typically characterized as resilient and as having stamina and long-term or stable focus. Low scorers are more likely to change course when faced with adversity, while putting emphasis on emergent opportunities and short-term pursuits and accomplishments. Unlike NA, PE has reference to long-term goal or value perseverance, resilience to adversity, and is not primarily maintained by short-term periodic and ongoing work-related feedback from others or from comparison with easily defined standards of excellence.

Duckworth, Peterson, Matthews, and Kelly (2007) explain that PE as a construct has arguably one of the longest histories in all of psychology and particularly in the "psychology of achievement." Several early researchers, going back as far as the late 19th century, were interested in variables that separated similar and even similarly gifted individuals into levels of achievement. Many found that persistence, perseverance, and resilience were often key differentiating traits among individuals who otherwise had similar ability levels or similar IQ (Terman & Oden, 1947; Howe, 1999; as noted in Duckworth et al., 2007). Simonton (1994) concludes that one PE component, viz., "grit," is among the more certain and consistent variables that high-impact and notable historical figures most often have in common. PE is typically found to be uncorrelated or slightly negatively correlated with general intelligence (*g*), and its incremental utility (over *g* and aptitude) for predicting life and occupational outcomes seems well established (Duckworth et al., 2007; Ackerman & Heggestad, 1997; Moutafi, Furnham, & Paltiel, 2005; Eskreis-Winkler, Shulman, Beal, & Duckworth, 2014). In fact, its utility in predicting success is sometimes seen as the cornerstone for understanding the differential and additive utility of natural ability vs. disposition-related variables in understanding life's outcomes—including work-related outcomes (Ericsson & Charness, 1994). High PE scores are associated with increased emotional stability, increased standardized test scores, achievement motivation, educational attainment, educational performance, employment retention, and retention in challenging educational programs—including highly selective military training programs (Duckworth et al., 2007; Eskreis-Winkler et al., 2014).

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PE-like constructs are also associated with increased levels of EI, learning agility, strategic vision, adaptability, motivation to lead, and stakeholder sensitivity among leaders or potential leaders in organizations (Dries & Pepermans, 2012). PE has also been positively associated with executive and entrepreneurial success (Baum & Locke, 2004). Leaders and individuals having higher levels of PE-like traits tend to be more resourceful and confident. They are more effective at communicating, setting, and reaching goals, as well as growing businesses (Baum & Locke, 2004). PE may be characterized as a component or expression of work-related "passion" (Houlfort, Philippe, Vallerand, & Menard, 2014) which, especially when associated with other socio-emotional adaptive states, is positively predictive of increased enthusiasm, discretionary effort, positive work-related relationships, positive organizational outcomes, work satisfaction, and resilience to burnout (Cardon, Wincent, Singh, & Drnovsek, 2009; Cardon, Zietsma, Saparito, Matherne, & Davis, 2005; Liu, Chen, & Yao, 2011; Philippe, Vallerand, Houlfort, Lavigne, & Donahue, 2010).

Emerging research has distinguished between adaptive and maladaptive "passion" in ways that may have potential implications for applied traits measurement and multivariate profile interpretation, particularly where PE or PE-like measures are involved (Houlfort et al., 2014; Vallerand et al., 2003).[8] Balon, Lecoq, and Rime (2013), for example, explicate key distinctions in personality types otherwise associated with high persistence and passionate pursuit of goals. They demonstrate that a type of maladaptive or "obsessive" passion is part of a trait cluster also characterized by low EI (also see Vallerand et al., 2006), decreased sociability, and increased perfectionism in general. On the other hand, adaptive persistence and passion are characterized by *increased* sociability and EI, while being unrelated to what they operationalize as "good perfectionism" and negatively related to what they characterize as "problematic perfectionism." Other researchers drawing from the same theoretical establishment arrive at similar conclusions, viz., that elevated scores on PE-like measures can be a marker associated with known personality types having predictable likelihood of various positive and negative life outcomes, including career and leadership outcomes (Houlfort, Vallerand, & Laframboise, 2015; Harpaz & Snir, 2015; Houlfort & Rinfret, 2010). When combined with circumstances and traits characterized by flexibility, self-awareness, EI, and increasing degrees of autonomy in decision making, high passion and PE are typically associated with positive outcomes (Hodgins & Knee, 2002) and perhaps even increased mindfulness (Brown & Ryan, 2003). Conversely, when high PE is associated with low EI and reflective of one's *need* for acceptance, self-worth, socio-emotional well-being, or even one's sense of identity, high PE is associated with impulsivity, decreased self-control, and persistence based on need more than free choice and self-determined autonomy (Vallerand et al., 2003; Mageau et al., 2009).

Agreeableness (AGR)

Highly agreeable individuals are generally considerate, collaborative, and inclusive, and see other people as trustworthy. AGR individuals are more likely to have positive and rewarding workplace relationships and to think highly of their workplace (Organ & Lingl, 1995). Among the Big Five personality traits, Agreeableness has sometimes been purported as a "niche predictor" (Barrick et al., 2001) that relates to success in specific jobs or for specific criteria. Although AGR is not most often cited among the most general and consistent predictors of commonly measured workplace outcomes—especially those related to performance and promotion—it is among the more consistently sought-after traits for job applicants and one of the strongest (inversely related) predictors of negative behaviors. Moreover, some researchers indeed *have* identified AGR as among

[8] In the collective literature briefly reviewed in this section, we make reference to a well-researched dichotomous model of human "passion." While PE, as formally defined and measured in our system, is not passion per se, a review of the related literature supports that PE is necessarily a non-trivial component or expression of passion as typically measured and conceptualized. We largely treat the two concepts interchangeably here and caution the reader to draw one's own conclusions.

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the top predictors in job performance while also noting its potential for context-based moderation vis-à-vis predictive utility (Sackett & Walmsley, 2014).

AGR, for example, is consistently and positively associated with teamwork outcomes, but is far more inconsistent with regards to leadership ability and outcomes (Judge et al., 2002). Others assert that "disagreeableness" is necessary and desirable for some jobs, and that highly AGR individuals tend to establish less rapport with others in conversation (Mkoji & Sikalieh, 2012; Colquitt, LePine, & Wesson, 2009). Agreeableness most readily predicts success in jobs requiring teamwork (Mount et al., 1998; Bell, 2007), interaction with the public (Ones et al., 2007), and customer service (Frei & McDaniel, 1998).

We conceptualize AGR as consisting of four subdomains, including Affiliation, Humility, Trust, and Openness to differences. Although the inclusion of the latter facet among the subdomains of AGR is perhaps inconsistent with some conceptualizations of AGR—which may be more inclined toward including Openness to differences among the subdomains of Agility-type measures—it is also not without precedent or substantive and (as we will discuss later) empirical basis. Our Openness to differences measure has interpersonal reference and contains conceptual similarity to the notion of cooperation (as in Goldberg, 1999), inclusion, and being open to diversity and difference of opinion. Others have noted that conceptually similar constructs may be closely related to *both* Agility-like measures and AGR, calling an important unifying correlate or possible latent expression of the two the "universal-diverse orientation," and describing AGR as involving tolerance, (positive) attitudes toward diversity, and "diversity of contact" (Strauss & Connerley, 2003). In this context, Strauss and Connerley essentially argue that AGR and its Openness to differences facet are key to making managers into effective organizational role models. Others have noted that a "diversity" component of AGR is an antecedent to "constructive controversy" and productive debate (Wang, Chen, Tjosvold, & Shi, 2010). Butrus and Witenberg (2013) demonstrate that *both* Agility and AGR are related to tolerance of human diversity, and that the latter offers no incremental predictive utility when entered into models predicting tolerance with empathic concern. They assert that AGR involves, among other things, having both pro-social tendencies and an open mind.

Having briefly reviewed AGR in workplace terms and described some basis for including Openness to differences among the subdomains of AGR (and not Agility), we now turn to a discussion of each of the subdomains of AGR.

***Affiliation* (AF).** Affiliation refers to individuals' propensity for working with others and involving others in their work. High scorers characterize work and goal pursuit as team oriented and collective by default. They value collective success and feel or seek identification with groups and their norms. Low scorers seek solo and autonomous work and may see collaborative efforts as ineffective or as a barrier to productivity, success, or goal accomplishment. Employees with high levels of AF are considered team players, organizational citizens, and service providers (Mount et al., 1998). It follows that if working collaboratively comprises an important component of a job, higher scores on AF would be expected to be linked to better performance (Barrick et al., 2001).

AF is linked to a number of positive outcomes, although the positive effects of AF are perhaps particularly salient in increasingly prevalent matrixed or horizontal organizations characterized by a de-emphasis on top-down authority and an emphasis on consensus building, lateral influence, and multiple points of ownership among contributors and stakeholders (Sy & D'Annunzio, 2005). Individuals with high AF-like scores are more likely to be rated high on measures of organizational citizenship behavior and to promote similar behavior throughout the organization (Johnson, 2008). They also contribute to company cultures in ways that increase flexibility, responsibility, standards, clarity, and commitment (Goleman, 2000). Increased collective AF among team members

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is positively associated with team performance in terms of task execution and decision-making quality (Driskell, Salas, & Hughes, 2010). Affiliative individuals are more likely to have satisfying work relationships, feelings of organizational embeddedness, and feel obligated toward their organizations and organizational members in ways that, among other things, are related to decreased likelihood of job dissatisfaction and intent to turnover or quit (Zimmerman, 2008; Salgado, 2002).[9] This pattern of relationships with outcomes distinguishes AF from SO, highlighting the distinction between the propensity to collaborate with others and the tendency to be energized by and seek out social interactions.

In terms of AF and leadership, researchers increasingly assert that leadership is most often and by definition a group activity that involves collective development, inquiry, and learning. High-level management tend to oversee, at least informally, multiple individuals and groups across functions and within-organization business units. For these reasons and others, AF and AF-like constructs have been characterized as key dispositions among executive leaders (Van Velsor, McCauley, & Ruderman, 2010). A leader who emphasizes and is predisposed toward interdependence tends to facilitate cross-functional collaboration and communication and related synergies that can be particularly useful in accomplishing enterprise-wide objectives. Emphasizing interdependence in leadership also predicts company-level outcomes. Companies characterized by executive teams who have the strongest tendencies toward collaborative efforts are far more likely to show growth, be in the upper quartile of revenue, and receive high marks on ratings of innovation (Myers, 2013). CEOs with elevated scores on AF-like constructs have companies with higher aggregate organizational commitment levels (Colbert, Barrick, & Bradley, 2014).

High AF is not without potential critique and caution (Yukl, 1998). Van Velsor et al. (2010) assert that interdependence emphasis can sometimes be conflated with a tendency toward hyper-inclusivity in ways that can promote chaos, dysfunctional non-centrality, slow progress, and/or slow decision making (also see Brousseau et al., 2006). As such, a highly affiliative disposition may result in diminishing returns vis-à-vis leadership or individual effectiveness to the extent that it is not combined with some degree of clarity concerning where ultimate decision-making discretion lies or with a notable degree of motivation to lead or assertiveness among leaders. Affiliative leaders and contributors are most effective when they combine their inclination for inclusiveness, or even nurturing, with a clearly stated vision and set of standards (Goleman, 2000; Forde, Hobby, & Lees, 2000).

[9] The findings of Zimmerman (2008) and Salgado (2002) were with specific reference to Agreeableness, which contains, as a whole, many features similar to AF, but may have key differences not explicated here or precisely deconstructed from elements that do overlap with our AF measure.

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Table ARDEF. Definitions for Agreeableness trait subdomains

TRAIT	DEFINITION	HIGH SCORE	LOW SCORE
Affiliation	A preference for working with others. High scorers prefer to work as part of a team, working toward goals collectively. They value team success, and feel identification with the group and its norms. Low scorers prefer solo, autonomous work.	**Affiliative**	**Autonomous**
Trust	An expectation of honesty and forthrightness on the part of oneself and others. High scorers tend to give others the benefit of the doubt and interact with people in an honest and straightforward fashion. Low scorers may be less willing to rely on the words and actions of others and tend to approach people with greater skepticism or suspicion.	**Trusting**	**Discerning**
Humility	The degree to which people are seen as courteous, free from self-absorption, and easy to get along with. High scorers tend to be seen as unassuming and appreciative of others. Low scorers are often perceived as prideful, narcissistic, or arrogant.	**Humble**	**Proud**
Openness to differences	A desire to consider and explore differences in perspective, thought, and experience of persons from a variety of backgrounds. High scorers are eager for varied experiences and welcome, as well as seek to learn from, the perspectives of others. Low scorers tend to be closed to the experiences and perspectives of others and seem more conventional in outlook.	**Inclusive**	**Decisive**

***Humility* (HU).** Humility is the degree to which a person is seen as courteous, free from self-absorption, and easy to get along with. High scorers tend to be seen as humble, unassuming, and appreciative of others. Low scorers are often perceived as prideful or arrogant. In recent years, the study of HU-like constructs is gaining momentum, both in personality and leadership research. HU taps the Honesty-Humility factor in the "HEXACO" personality model (Ashton & Lee, 2005). Although in our own data, HU loads together with other components of Agreeableness (as will be demonstrated later in this manual), the HEXACO conceptualization considers Honesty-Humility—being genuine, fair, modest, and unassuming—to be the "sixth" factor in the Big Five personality model. Empirically, research shows that the Honesty-Humility factor has higher correlations than did Big Five factors in (inversely) predicting self-reports of materialism, social manipulativeness, unethical decision making (Ashton & Lee, 2008), and egotism (De Vries, De Vries, De Hoogh, & Feij, 2009). HU may also moderate the impact of general mental ability on work performance, such that low and high mental ability individuals perform more similarly when high HU is present, but very dissimilarly when having low HU (Owens, Johnson, & Mitchell, 2013).

Owens et al. (2013) demonstrate positive relationships between HU and work performance in individual and team settings, while asserting—seemingly against consensus evidence (e.g., Barrick, Mount, & Judge [2001])—that HU is a better predictor of individual work performance than both conscientiousness and intelligence. They also observe that leader HU is positively related to employee (subordinate) engagement, job satisfaction, retention, and team engagement, while showing positive bivariate relationships between HU and accurate self-evaluations, honesty, emotional stability, and even openness to experience. Ou, Su, Chiu, and Owens (2014) found, similarly, with regard to leaders that leader HU is associated with positive reactions from top- and mid-level managers. Indeed, in the leadership literature, scholars and practitioners suggest that HU is increasingly critical for leadership effectiveness (Collins, 2001; Guthrie & Venkatesh, 2012; Morris, Brotheridge, & Urbanski, 2005; Owens & Hekman, 2012; Senge, 2005; Taylor, 2011; Vera & Rodriguez-Lopez, 2004). According to Baldoni (2010), HU is important due to its inspirational effects and that it "authenticates" a leader's or contributor's humanity, while also contributing to the ability to grant autonomy and promote development in others. More broadly, scholars have suggested a greater need for today's workforce to have HU for effectiveness in today's dynamic, turbulent, interdependent, and unpredictable

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workplace (Crossan, Vera, & Nanjad, 2008; Ireland & Hitt, 1999; Owens, Rowatt, & Wilkins, 2010), making HU in organizations an increasingly salient construct (Hugo, 2005).

Despite its known or purported positive associations with diverse outcomes, HU may be inversely related to leadership emergence and effectiveness. In our own data, for example, we have found a composite conceptualization of Egotism—which is chiefly characterized by low HU—to be positively related to management level and (slightly) negatively related to individuals' own engagement across management levels, *except* among upper-level managers, for whom its relationship to engagement is slightly positive. High scorers on HU-like measures also tend to be introverted, less imaginative, more problematically cautious, and tend more toward dutifulness, which is often characterized as a derailer, especially for upper-level management (Landis et al., 2011). HU may also interact with individual characteristics in ways that may moderate its effectiveness in leadership and contribution. For example, the positive effects of HU on outcomes may be more pronounced when the strength and competence of a particular individual is already well established or readily perceived (Ghosen, 2011). As such, the effects of high assertiveness and high HU scores in combination may warrant further study, given that the former, as previously noted, tends to instill confidence and perceptions of competence in others (Anderson & Kilduff, 2009).

***Trust* (TR).** Trust is an expectation of honesty and forthrightness on the part of oneself and others. High scorers tend to give others the benefit of the doubt and interact with people in an honest and straightforward fashion. Low scorers may be less willing to rely on the words and actions of others and tend to approach people with greater skepticism or suspicion. Rotter (1967) defines trust as a form of personality—a general expectancy that others will behave fairly, responsibly, and can be relied on. This personality-based conceptualization of trust has also been referred to as *trust propensity* (Mayer, Davis, & Schoorman, 1995) and *dispositional trust* (Dirks & Ferrin, 2002; Kramer, 1999). In the Big Five personality model, TR is typically among the subdomains of Agreeableness. According to McCrae and Costa (1992), individuals with high TR scores are disposed to believe that others are honest and well-intentioned, and those who are less trusting are more likely to be skeptical, cautious, and to assume others may be dishonest or dangerous.

Trust has a number of important benefits for organizations (De Jong & Elfring, 2010; Dirks & Ferrin, 2002; McEvily, Perrone, & Zaheer, 2003; Ashleigh, Higgs, & Dulewicz, 2012) and is vital to establishing effective working relationships (Lind, 2001; Tyler & Lind, 1992). Dispositional trust is associated with positive work attitudes such as organizational commitment, job satisfaction, attraction to the organization (Bianchi & Brockner, 2012), and lowered employee turnover (Ferres, Connell, & Travaglione, 2004). Colquitt and colleagues (2007), in a meta-analysis, show that employees who are willing to trust others tend to produce better task performance, engage in more citizenship behaviors, and have fewer counterproductive behaviors. Trusting individuals are more likely to be happier at work. They tend to foster better work relationships, have more positive experiences at work, and perceive themselves more readily as worthy organizational members (Van Dyne, Vandewalle, Kostova, Latham, & Cummings, 2000). They also have lowered tendency to micromanage. High TR individuals perceive that their organizations are more supportive and require fewer organizational supports to achieve job satisfaction (Poon, Salleh, & Senik, 2007). Moreover, individuals who are inclined to trust their managers have elevated scores on quality of work and life measures. They tend toward increased perceived autonomy, lower job insecurity, increased "meaningfulness" of work, less role ambiguity, and more control over time management and work execution (Van Der Berg & Martins, 2013). Manager and subordinate social exchange quality is also positively affected by propensity to trust—particularly in cases where both parties are high TR

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(Bernerth & Walker, 2009). High TR among subordinates also (positively) moderates the positive effects of trustworthy managers on their job performance (Piryaei & Arshahdi, 2012).

Very high TR is not without caution and may also have drawbacks (Bianchi & Brockner, 2012; Rose, 2007; Rose & Rose, 2003). It has been suggested that employees with high levels of TR may pay less attention to problems inside the organization, therefore allowing questionable practices to continue unchecked (Bianchi & Brockner, 2012). Elsewhere, Sicora (2014) found that people who were particularly imaginative had a lower tendency for propensity to trust.

***Openness to differences* (OD).** Openness to differences is a desire and willingness to accept/respect differences in perspective, thought, and experience of people from a variety of backgrounds. High scorers tend to view dissimilarity as positive, and make an effort to understand and learn from the perspectives of others. They are eager for varied experiences and proactively welcome diverse points of view. Low scorers tend to be closed to diverse experiences and seem more conventional in outlook. They tend to take a negative view about differences, and are closed to appreciation of varied perspectives.

OD and related constructs are important for teamwork and cross-cultural effectiveness (Jordan & Cartwright, 1998; Hartel & Fujimoto, 2000). Wheelan (1999) argues that in a team environment, high OD among team members means the members are more likely to participate in team activities and to be open to feedback, thus leading to high team performance. OD promotes understanding and reduces conflict (Ensley & Pearce, 2001). Ayoko and Hartel (2000) found that OD contributes to conflict resolution and group cohesion. OD also contributes to some conceptualizations of EI and a positive association has been observed between EI-like constructs and OD (Wells, 2004). OD-like constructs are frequently discussed and measured in the cross-cultural management literature. Kelley and Meyers (1995), for example, included a Flexibility/Openness scale in their Cross-Cultural Adaptability Inventory to assess self-perceived openness to difference. Similarly, Douthitt, Eby, and Simon (1999) developed the Receptiveness to Difference (RTD) scale using a biographical measure to assess people's receptiveness to dissimilar others.

Others have described OD-like constructs as a propensity for inclusiveness. High OD individuals tend to be team players, collaborative, good listeners, and have tendencies toward conflict resolution and "win-win" solutions. They also tend to be more intuitive, perceptive, and extraverted (Lewis & Ream, 2012). At the same time, high scorers on OD-like constructs may be indecisive, slow to decide, ambiguous communicators, and tend toward hyper-inclusivity or "too many inputs" when seeking information to help inform decisions (Driver, Brousseau, & Hunsaker, 1998). High scorers on OD-like measures also tend to be more mischievous (Landis et al., 2011).

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Competencies

Competencies are the skills and behaviors required for success (Lombardo & Eichinger, 2009). Korn Ferry (KF) affiliated professionals and scientists have elsewhere written and explicated much concerning competencies and their utility for description, development, coaching, succession planning, and as a supplement to selection activities (e.g., Ruyle, Hallenbeck, Orr, & Swisher, 2010; Lombardo & Eichinger, 2009). In 2014, Korn Ferry adopted a new competencies framework designed to be implemented across lines of business and, where applicable, for different services and solutions for our clients. A comprehensive treatment of competencies and the updated framework is available in the *Korn Ferry Leadership Architect™ Research guide and technical manual* (KF, 2014). Our discussion of competencies in the following sections makes repeated reference to this publication both implicitly and explicitly and also uses its reported empirical findings, which are primarily based on correlations between competencies and outcome variables.

We do caution that the (statistical) analyses referred to in the aforementioned publication were done using primarily third-party ratings of both performance and competencies. Our current purposes are to explicate a set of 30 *self-assessed* competencies. As such, future insights may or may not involve new understandings of self-assessed competencies and that their relative importance and (incremental) predictive utility differ from third-party rated competencies. Below, we discuss the notion of *self-efficacy* as our basis for understanding competencies and their utility as self-assessed constructs, and in a later section we discuss why we believe our self-assessment represents an improvement upon legacy self-assessed competencies, which in KF4D-Ent are based on forced-choice format item responses and not on the more conventional and legacy Likert-type item responses which, while being a sub-optimal response format for (self-efficacy for) competencies (Judge, Jackson, Shaw, Scott, & Rich, 2007), nonetheless, still typically show significant and expectable relationships with third-party ratings of the same competencies (Dai, 2007).

A subset of 30

Korn Ferry's Four Dimensional Enterprise Assessment taps 30 of the 38 competencies available in the KFLA framework. The subset of 30 was selected according to various considerations. First, we sought a relatively parsimonious subset that would maximize descriptive and predictive utility and could be reasonably expected to yield *self-report* results that were useful and had variability across respondents. For example, Attracts top talent and Drives vision and purpose, despite their unique descriptive utility, were excluded due to their non-incremental predictive utility when measured in conjunction with other competencies that were included, viz., Develops talent and Drives engagement, respectively. We excluded some competencies from among our exhaustive set of 38, such as Business insight, due to their context specificity both within and across companies, industries, and/or business sectors. Organizational savvy was also excluded due to being context specific. The final set of 30 can be examined along with their definitions in Table COMDEF.

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Table COMDEF. KF4D-Ent competency names and definitions

FACTOR	COMPETENCY	DEFINITION
THOUGHT		
	Balances stakeholders	Anticipating and balancing the needs of multiple stakeholders.
	Cultivates innovation	Creating new and better ways for the organization to be successful.
	Customer focus	Building strong customer relationships and delivering customer-centric solutions.
	Decision quality	Making good and timely decisions that keep the organization moving forward.
	Global perspective	Taking a broad view when approaching issues, using a global lens.
	Strategic mindset	Seeing ahead to future possibilities and translating them into breakthrough strategies.
RESULTS		
	Action oriented	Taking on new opportunities and tough challenges with a sense of urgency, high energy, and enthusiasm.
	Directs work	Providing direction, delegating, and removing obstacles to get work done.
	Drives results	Consistently achieving results, even under tough circumstances.
	Ensures accountability	Holding self and others accountable to meet commitments.
	Optimizes work processes	Knowing the most effective and efficient processes to get things done, with a focus on continuous improvement.
	Plans and aligns	Planning and prioritizing work to meet commitments aligned with organizational goals.
	Resourcefulness	Securing and deploying resources effectively and efficiently.
PEOPLE		
	Builds effective teams	Building strong-identity teams that apply their diverse skills and perspectives to achieve common goals.
	Builds networks	Effectively building formal and informal relationship networks inside and outside the organization.
	Collaborates	Building partnerships and working collaboratively with others to meet shared objectives.
	Communicates effectively	Developing and delivering multi-mode communications that convey clear understanding of the unique needs of different audiences.
	Develops talent	Developing people to meet both their career goals and the organization's goals.
	Drives engagement	Creating a climate where people are motivated to do their best to help the organization achieve its objectives.
	Interpersonal savvy	Relating openly and comfortably with diverse groups of people.
	Manages conflict	Handling conflict situations effectively, with a minimum of noise.
	Persuades	Using compelling arguments to gain the support and commitment of others.
	Values differences	Recognizing the value that different perspectives and cultures bring to an organization.
SELF		
	Being resilient	Rebounding from setbacks and adversity when facing difficult situations.
	Courage	Stepping up to address difficult issues, saying what needs to be said.
	Instills trust	Gaining the confidence and trust of others through honesty, integrity, and authenticity.
	Manages ambiguity	Operating effectively, even when things are not certain or the way forward is not clear.
	Nimble learning	Actively learning through experimentation when tackling new problems, using both successes and failures as learning fodder.
	Self-development	Actively seeking new ways to grow and be challenged using both formal and informal developmental channels.
	Situational adaptability	Adapting approach and demeanor in real time to match shifting demands of different situations.

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Self-efficacy for competencies

We conceptualize and design our self-ratings of competencies as measures of self-efficacy for competencies and the performance of competencies. Self-efficacy is among the more widely investigated and well-known theoretical constructs derived from social-cognitive psychology (e.g., Bandura, 1986; Schaubroeck, Kim, & Peng, 2012), and refers to an individual's state of mind concerning their capacity to execute upon certain behaviors and/or to attain certain outcomes related to specific skills or behaviors. More simply, a person's self-efficacy is the degree to which they believe that they are capable of performing given tasks and behaviors. Because competencies are behaviors and skills, they are well-suited to be conceptualized and measured according to a self-efficacy framework.

Self-efficacy is strongly related to past performance in a given area. It varies systematically across particular skill and behavior areas and is notably predictive of actual performance. At times, self-efficacy is even more predictive than past performance in the same area (Pajares & Miller, 1994), and/or uneasiness for executing upon the behavior or skill in question (Pajares & Miller, 1995), and/or even *actual* skill in a given area (Pajares, 1997). *Individuals' self-efficacy has a considerable impact on their choices, motivations, outcome expectations, persistence, and methods by which they solve problems and set/pursue desired goals.*

Self-efficacy's predictive utility for a given outcome increases with the degree of specificity with which both self-efficacy and the skill or outcome is measured (Pajares, 1996). If one is asked, for example, concerning their self-efficacy for a particular management skill such as balancing stakeholders, the response's relationship to a boss or peer rating of general management ability or performance is likely to be non-zero and positive to the extent that balancing stakeholders is relevant to the role, but the relationship will be stronger when the (boss- and/or peer-rated) outcome and the self-efficacy assessment specifically tap balancing stakeholders. As such, the Korn Ferry Enterprise Assessment is designed to measure specific competencies and is expected to be more predictive of specific job-relevant competency areas, while having a non-zero and positive relationship to performance in general, particularly and increasingly to the extent that the particular competency area is relevant to the job. In KF4D-Ent, the importance of a particular management skill/competency for *general* success and performance for a given role is partially based on client input and insight around the role in question.

When self-efficacy is low, individuals often think that executing a given skill or behavior is more difficult than it actually is. As a result, they are often given to increased uneasiness, stress, and avoidance of related tasks or behaviors. Individuals with higher self-efficacy for a particular skill persist longer and more passionately in performing the same skill. They are more committed to it and resilient to related adversity. High self-efficacy for a given skill is markedly related to optimism, internal locus of control, personal agency, confidence, and decreased stress surrounding the same skill or outcome it is intended to produce (Schwarzer & Fuchs, 1995). An individual with high self-efficacy in a given area is more motivated to perform in that area, is more certain that they can affect change and outcomes in that area, learns and adapts more effectively to related setbacks, and responds better to related constructive feedback. Self-efficacy is also related to (better) planning (when high) and success/failure attributions. Individuals with low self-efficacy will blame themselves and/or low self-ability when encountering setbacks or failures in a given area. They may often give up and/or more quickly become discouraged. Conversely, a person with high self-efficacy will persist in the face of adversity, avoid seeing failure as inert, and will seek and act upon external factors that can be changed, affected, and/or manipulated in order to achieve desired outcomes, including organizational outcomes related to the competency area of interest.

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While being notably predictive of actual performance in given areas, self-efficacy likely also captures different information than others' specific or general performance ratings alone, offering a unique perspective on how individuals view themselves (Stumpf, 2010). People high on self-efficacy believe they can affect the motivation, resources, and actions needed to successfully perform a particular task or achieve a specific outcome (Hannah, Avolio, Luthans, & Harms, 2008; Schyns & Sczesny, 2010). Although self-efficacy was originally conceptualized as specific to a task (e.g., fulfilling a given quota), it also has increasingly been viewed and studied as more broadly domain-specific (Schyns & Sczesny, 2010). In KF's case, this refers to competency domains such as Cultivates innovation, having a Strategic mindset, Develops talent, Ensures accountability, and others (see Table COMDEF). Other examples of domain-specific yet broader self-efficacy from the literature include creative self-efficacy, occupational self-efficacy, and leadership self-efficacy. Hannah et al. (2008) assert that "…leadership efficacy is a specific form of efficacy associated with the level of confidence in the knowledge, skills, and abilities associated with leading others." Leader self-efficacy is positively linked to even broad key outcomes, including organizational commitment, managerial performance, and organizational performance (Hannah et al., 2008; Schaubroeck et al., 2012). Not surprisingly, the less precise but related concept—confidence—is commonly viewed as a critical attribute of successful leaders (Hannah et al., 2008).

In addition, research has shown that leaders' beliefs about key aspects of leadership capability play an important role in the process of leadership effectiveness. Specifically, leaders' traits are related to their self-efficacy, which in turn predicts their effectiveness in the eyes of supervisors, peers, and team members (Hannah et al., 2008; Ng, Ang, & Chan, 2008). Ng et al. (2008), for example, showed that leadership self-efficacy variously mediated the impact of Extraversion, Stability, and Conscientiousness on leadership effectiveness. This indicates that self-efficacy is a mechanism through which traits impact leadership outcomes. The mediating effects can be complex and even moderated by context, but the findings of Ng et al. (2008), nonetheless, underscore the important and potentially value-added information captured by self-evaluations of capabilities, as well as the rich processes through which leaders' perceptions of their competencies shape their performance.

There are additional relevant pathways through which self-efficacy may influence leaders' success (Schyns & Sczesny, 2010). For one, self-efficacy is associated with performance adaptability in general, including adapting knowledge and skills to meet the demand of new situations and maintaining motivation (Kozlowski, Gully, Brown, Salas, Smith, & Nason, 2001). Self-efficacy is also linked to preference for challenge and challenging tasks.

A variety of approaches have been used to assess self-efficacy, ranging from broad measurement of general self-efficacy to narrow evaluations of self-efficacy to perform very specific tasks. As we explained earlier, the general rule is to measure self-efficacy at the same level of specificity as the outcome of interest. For example, if the goal is to predict task performance, one should evaluate task self-efficacy (Schyns & Sczesny, 2010). Although general self-efficacy has been linked to work outcomes, we re-emphasize that domain-specific assessments of self-efficacy more strongly relate to domain-specific outcomes and general work performance to the extent that the measured self-efficacy is important for the role in question (see also, Schyns & Sczesny, 2010). In the sections that follow, we review and discuss the 30 competency domains for which we employ self-efficacy measures in KF4D-Ent.

Thought competencies

***Balances stakeholders* (BST).** We conceptualize Balances stakeholders as a thought-oriented competency. High scorers on BST anticipate and balance the needs of multiple stakeholders.

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They are proactive and demonstrate foresight and sensitivity to the priorities of diverse players both within and outside of their own teams and organizations. High BST scorers lay formal and/or informal processes and prepare organizations and stakeholders to meet diverse needs in ways that will optimize collective and priority goal attainment. Diverse stakeholders rarely align vis-à-vis wide and/or specific conceptualizations of goals and processes by which goals are achieved. As such, related and competing interests, competing needs, and competing priorities have potential to create conflicts and barriers to progress. High BST scorers anticipate related issues proactively and make related provisions early. They're likely to be poised to provide rapid, versatile, and targeted service and response to a number of different stakeholders. BST's salience likely increases among higher-level managerial professionals.

BST is a key component of effective leaders and leadership teams. Companies without a proliferation of high BST leaders are more likely to encounter a wide range of undesirable organizational and business outcomes, and certainly low revenues and poor financial marks are among them. But the proliferation of low BST among company leaders can also negatively impact even brand image and organizational reputation (Dickinson-Delaporte, Beverland, & Lindgreen, 2010; Palazzo & Basu, 2007; Voss, Voss, & Moorman, 2005). In fact, some have observed that BST may be *particularly* salient among high-level executive public relations professionals (Phillips, 2004).

Individuals with high BST often have or are perceived to have more insight into business operations, business needs, and business priorities. They manage conflict better than their low BST counterparts, and have or are typically believed to have better judgment, stronger relationship networks, and are more persuasive. High BST is positively correlated with being organized and prioritizing effectively, as well as integrating feedback and proactively communicating goal-pursuit progress in ways that mitigate project derailment and minimize wasted effort (KF, 2014).

***Cultivates innovation* (CIN).** Cultivates innovation is a relatively rare skill, even among leaders. It's also among the most very difficult competencies to develop and acquire (KF, 2014). High scorers on measures of CIN create new and better ways for organizations to be successful. They inspire and champion novel ideas and facilitate the identification and development of new products, services, approaches, processes, and solutions. They keep a relatively sharp focus on information and creativity for sustainable competitive advantage, while encouraging diverse points of view, experimentation, and providing latitude for self and others' failure in pursuit of the new and different. High CIN leaders are often found in start-up companies but, regardless of organizations' maturity, are increasingly salient amidst conditions characterized by market volatility, economic uncertainty, market disruption, and organizational change. Organizations with a clear and stable focus and/or markets characterized by stability can render this competency and accompanying motivational orientation less desirable. Market stability and organizational maturity tend to decrease the need and effectiveness of leaders with high CIN scores, as do conditions characterized by a marked need for risk mitigation (Cameron, Quinn, Degraff, & Thakor, 2014).

High scorers on CIN and CIN-like measures successfully project how innovative solutions might perform in the market. They pick effectively from among competing innovative alternatives, as well as encourage and incentivize subordinates and colleagues to seek novelty. They make unobvious connections between disparate pieces of information. Those who effectively cultivate innovation are risk-oriented and tolerant of trial and error. They may concede to a variety of conditions and false starts. They are more likely to champion cross-functional collaboration and to include diverse experts or non-experts to diversify perspectives and maximize the potential for creative breakthroughs.

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CIN is positively correlated with overall job performance across most management levels, but is particularly salient among senior executives and business unit leaders in terms of performance, (avoiding) derailment risk, and promotability where applicable (KF, 2014). CIN shares substantial, positive, and intuitively appealing correlations with other (KF) competencies including Global perspective, Strategic mindset, Nimble learning, and Drives vision and purpose. Managers who effectively cultivate innovation are also typically rated by superiors and peers as having better overall general judgment, viz., Decision quality.

Customer focus **(CFO).** Customer focus measures an individual's capacity for building strong customer/client relationships and delivering customer-centric solutions. High scorers on measures of CFO anticipate customer needs. They search for ways to improve service and exceed customer expectations. They follow up with customers to ensure problems are solved and customer requirements are met. They establish and maintain effective customer relationships.

Customers are among the most important people in any organization. In some roles, there is a direct link to external customers and in others the connection is more indirect. Customers can include individuals inside the (same) organization. Internal or external—they're equally important. Across position levels, CFO alone typically explains between 10% and 20% of the variability in overall job performance, but is particularly salient among mid-senior level individual contributors and mid-level leaders (KF, 2014). At the organizational level, customer focus is an important driver of company performance (Kirca, Jayachandran, & Bearden, 2005).

CFO is relatively easy to acquire and develop, and it shares substantial, positive, and intuitively appealing correlations with other measured competencies, including Ensures accountability, Collaborates, Communicates effectively, Values differences, and Situational adaptability.

Decision quality **(DQU).** Decision quality refers to making good and timely decisions that keep the organization moving forward. High scorers on DQU make high-quality decisions. They display superior judgment and are a good judge of when a solution is optimal. People with high DQU scores seek input from pertinent sources to make timely and well-informed decisions. DQU is very highly correlated with some of the other competencies in the Thought factor, including Manages complexity, Balances stakeholders, Strategic mindset, and with some competencies in the Results factor (Plans and aligns, Drives results).

Decision making is important in a wide range of roles, ranging from complex roles that require extensive knowledge, skill, experience, and training, to entry-level roles that require little preparation (Dalal & Bolunmez, 2016). Individuals constantly make decisions in the workplace. Decisions can vary in importance, but the ability to make sound decisions is important. For entry-level contributors, DQU typically explains about 14% of the variability in overall performance. For mid-senior level contributors and managers across levels, DQU explains 25% of performance variability. DQU also predicts a substantial portion of the variance in perceived promotability for mid-senior level contributors and managers (KF, 2014). Fortunately, DQU is relatively easy to develop and harness.

Global perspective **(GPE).** Global perspective measures the extent to which individuals allow for inclusive and broad information and diverse perspectives when making recommendations or decisions. GPE is substantially predictive of general performance, promotability, and derailment risk across management levels. High GPE is typically a strong competency among effectively innovative individuals and individuals who are also high on independent ratings of Strategic mindset, Business insight, and Organizational savvy. Those high in GPE also do better in terms of Manages complexity, Nimble learning, and Drives vision and purpose. People with high GPE tend to critically examine their

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own principles, assumptions, and judgments, and may seek to compare them to the assumptions and perspectives of others broadly defined. Where applicable, they may seek exposure to within- or between-organization members working in diverse regions or in diverse business units.

Individuals with high GPE place a premium on the potential benefits of diverse thinking, disparate perspectives, competing interests, cross-cultural, and even cross-regional considerations. They may see opportunity in disagreement or non-uniform inter-group policy structures or barriers. Their orientation to information and diverse perspectives often renders them poised for early recognition of emerging (global) trends and for anticipating future needs and/or opportunities (Edin, Lingqvist, & Tamsons, 2012). They typically have or seek insight into how diverse markets, including (but not limited to) diverse regional markets, will react to their organization's products, strategies, and/or policies.

***Strategic mindset* (SVI).** People with a Strategic mindset (SVI) orient themselves to future possibilities, effectively plan and set goals, and seek to translate ideas, expectations, forecastings, and emerging opportunities or needs into viable strategies. Like Cultivates innovation, SVI is among the most very difficult competencies to develop and harness. SVI is markedly and positively predictive of overall job performance and promotability, and across management levels. It is similarly negatively related to derailment risk. Those high in SVI tend to have increased business and organizational insight. They manage complexity more effectively. They make better decisions and cultivate the new and different. SVI is very highly correlated with Global perspective, agility-like measures and openness to diverse perspectives and input. Managerial professionals with high SVI identify new opportunities to create value. They commit resources and lift barriers to innovation and promote a culture that rewards creativity.

SVI is, in many cases, a virtual prerequisite for leadership roles (Clark, 2013). Companies with high aggregate SVI tend to be in front of emerging opportunities and unforeseen threats, which facilitate timely, informed, and sometimes crucial decisions (Birshan & Kar, 2012). High SVI individuals think broadly and inclusively (Clark, 2013). They see emerging trends, recognize the organizational relevance of trends, and anticipate how trends will play out in the future (Birshan & Kar, 2012; Edin, Lingqvist, & Tamsons, 2012). Strategic orientation is increasingly important for sustaining organizational performance and competitive advantage.

Strategic planning can, however, become complicated by ambiguous circumstances and the increasingly common volatile and fast-changing nature of markets. For these and other reasons, high SVI is particularly effective when combined with some of its natural correlates, such as high adaptability, agility, resilience, and persistence (Yorks & Nicolaides, 2012). Perhaps, paradoxically, the most effective strategic individuals likely bring a mix of *malleable* and *persistent* strategic mindset that ultimately fosters long-term goal achievement, as well as facilitates ongoing shorter-term and ad hoc achievements.

Results competencies

***Action oriented* (ACO).** Action oriented refers to taking on new opportunities and tough challenges with a sense of urgency, high energy, and enthusiasm. Action oriented people make things happen and get things moving. They identify and seize new opportunities, and turn ideas into plans and reality. When things get tough, they rise to the occasion and always display a can-do attitude.

ACO is correlated with overall performance, and its predictive utility tends to decrease with management level, and least when measured via boss ratings (KF, 2014). Among individual contributors and first-level managers alike, ACO's correlation with overall performance ranges

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between .45 and .48. Among mid-senior level managers, the size of correlation lies between .28 and .41. ACO seems to be particularly salient for first-level managers, while being nonetheless predictive of promotability and (lower) derailment risk for most position levels.

ACO is relatively easy to develop and shares positive and intuitively appealing correlations with other competencies, including Drives results, Ensures accountability, Courage, and Being resilient. High ACO individuals are also typically rated by others as making good and timely decisions, viz., Decision quality.

Drives results **(DRE).** Drives results refers to consistently achieving results, even under tough circumstances. High scorers on DRE set aggressive goals and have high standards. They persist in accomplishing objectives in the face of obstacles and setbacks, and have a track record of exceeding goals successfully. They push themselves and help others achieve results.

In Korn Ferry's empirical studies of boss-rated competencies and managerial outcomes, DRE is positively correlated with overall performance across all position levels (r = .48 to .66; [KF, 2014]). With the exception of senior executives, DRE is in the top three most predictive of performance in all the other position levels. DRE also shows substantial predictive utility for promotability and derailment risk across position levels. DRE associates substantially and positively with other (KF) competencies, including Ensures accountability, Action oriented, Decision quality, and Resourcefulness. Individuals who are results-driven are also typically rated by others as being able to plan and prioritize work to meet commitments aligned with organizational goals.

Driving results is an overall achievement mindset. High DRE professionals infuse their teams and organizations with a sense of urgency. They help to create a culture where organizational performance is always top of mind.

Directs work **(DWO).** Directs work measures one's capacity to provide direction, delegate, facilitate for others, and remove obstacles to get work done. High DWO individuals set clear direction and expectations. They delegate work and decisions appropriately in a way that empowers ownership. They track how work is progressing and intervene as needed to remove obstacles.

DWO is positively correlated with job outcomes for managerial professionals and mid-senior level individual contributors, explaining between 16% and 27% of the variability in job performance, and between 5% and 15% of the variability in promotability. DWO also has a significant and positive correlation with (lower) derailment risk across all leadership levels. DWO is less salient among entry-level individual contributors in terms of performance, (avoiding) derailment risk, and promotability (KF, 2014).

DWO is relatively easy to acquire and develop and is positively correlated to other competency areas including Ensures accountability, Develops talent, Drives engagement, and Plans and aligns. Individuals scoring high on DWO also tend to build more effective teams (KF, 2014).

Ensures accountability **(EAC).** Ensures accountability is a hallmark of a results-oriented and tactically focused manager and individual contributor. High EAC individuals effectively and diligently hold both themselves and others accountable to meet commitments. EAC is related to high performance at all management and professional levels. In our own empirical studies of boss-rated competencies and managerial outcomes, EAC's bivariate relationship with overall performance ranges from .41 to .53 (KF, 2014). It also shows substantial predictive utility for promotability and derailment risk across position levels. High EAC leaders and professionals also tend to be notably action oriented and resourceful. They receive higher marks on measures of driving results, directing work, and tend to be

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notably skilled at optimizing work processes, among other things. High EAC also strongly relates to courage and willingness to have difficult conversations, increased decision quality, effective planning, and optimized, effective, and efficient use and allocation of organizational resources (KF, 2014).

High EAC leaders and professionals communicate expectations with clarity and are likely perceived as fair and straightforward ambassadors of meritocracy. They tend to plan and evaluate progress systematically. They may divide outcomes into measurable units, think in terms of deliverables and related time lines, and assign responsibilities and expectations with clarity and in concrete terms if and when possible. High EAC leaders may create formal or informal systems and practices that promote accountability, reward results, and foster a feedback-rich organizational culture (Zenger & Folkman, 2014). They can and know when to instill a strong sense of urgency and drive, which often yields improved business performance and helps self, teams, and individuals meet deadlines and commitments (Georgia Perimeter College, 2011). Subordinates and colleagues of high EAC individuals tend to understand their own roles and importance more clearly, and often are increasingly satisfied with their jobs and have better and more trusting relationships with colleagues and organizational members (Thoms, Dose, & Scott, 2002). Despite the many benefits of high EAC leadership, a high EAC orientation toward management can sometimes operate at cross-purposes or create challenges in matrixed environments or among modern leaders who eschew tactics and detail orientation in favor of agility, adaptability, and high degrees of autonomy granting. EAC is among the easier competencies to develop and is in relatively high supply among managerial professionals. Yet, high EAC in effective combination with high agility, adaptability, flexibility, innovative skill, and forward-thinking strategic orientation may be more elusive and particularly valuable to modern organizations.

Optimizes work processes **(OWP).** Optimizes work processes is about knowing the most effective and efficient processes to get things done, with a focus on continuous improvement. People high on OWP identify and create work process and combine activities into efficient workflow. They think about the whole system and seize opportunities for synergy and integration. They look for ways to improve processes, keeping a focus on continuously upgrading and optimizing processes by which work is accomplished. High OWP is typically a strong competency among individuals who are also high on ratings of Manages complexity, Decision quality, Directs work, Plans and aligns, and Resourcefulness.

OWP is moderately difficult to develop and is positively associated with overall job performance across position levels. It is particularly salient among first-level leaders, explaining about 25% of the variability in job performance. With the exception of entry-level contributors, elevated OWP scores are markedly predictive of promotability, and they significantly lower derailment risk (KF, 2014).

Plans and aligns **(AEX).** Individuals scoring high in Plans and aligns effectively plan, organize, and prioritize work to meet commitments in ways optimally aligned with organizational goals. For entry-level and high-level management alike, AEX *alone* typically explains about 25% of the variability in overall performance. Fortunately, AEX is typically in high supply and relatively easy to acquire and develop. AEX also predicts a substantial portion of the variance in promotability and derailment risk across management levels. High AEX contributors and managers effectively execute upon organizational strategies and employ tactics diligently to achieve organizational goals. They anticipate and remove barriers and allocate resources in alignment with strategic priorities. High AEX personnel identify and promote wide adoption of best practices and lessons learned. They ensure work is coordinated and sequenced appropriately across the organization in pursuit of known and prescribed objectives (Lavoie, 2013). They contribute to determining and communicating appropriately ambitious time lines.

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EI, personality traits, and related competencies may mediate and/or moderate the ultimate impact of AEX on performance outcomes. High AEX individuals also tend to manage complexity, direct work, demonstrate resilience, drive results, and optimize work processes effectively (KF, 2014). High correlates also include Ensures accountability, Decision quality, and Resourcefulness and are all likely key to making high AEX individuals a maximally effective performer.

High AEX is no doubt an adaptive and key competency across contexts and management levels. A skilled AEX manager or contributor is steadfast and driven, but also willing and able to adopt partial solutions to problems and improve and adapt as needed. Unqualified and classic notions of high AEX (careful planning and diligent execution) may typically be found more readily and are perhaps more immediately adaptive and salient in highly structured company cultures and/or within (tactical) business units with relatively clear goals and methods. Individuals who *view* leadership and management as *primarily* functions of AEX and EAC may grow confused and/or frustrated amidst the fluidity, nimble change, and ambiguous circumstances that increasingly characterize modern businesses and modern markets. Organizations are increasingly willing to actively sell products and/or services that, in many cases, are *yet to exist* and/or yet to be fully designed or conceptualized (Cottmeyer, 2011). Fast and incomplete increasingly default to "lesser evil" status compared to not-so-fast, correct, and fully developed. Technology and software companies, for example, commonly and proactively design, create, and prepare *entire departments* to specifically handle the inevitable issues raised because *they know and expect* to release products and services that are incomplete, sometimes not working well, underdeveloped, and/or contain "bugs." Moreover, client companies increasingly negotiate and design (non-trivial components of) products and services together long before formal contracts exist. As a result, the specific nature of a given service and/or product may not be forthcoming in markedly consequential ways until related agreements are formalized or beyond, and, as such, tactical and task-oriented managers and contributors may have to operate also with marked degrees of ambiguity and low clarity. The decree to "build!" is increasingly put forth before the answer to "build what?" is known. As such, a truly skilled high AEX, high EAC, and results-driven individual is most likely also a high agility, highly flexible, and highly ambiguity tolerant performer—and one who is able to avoid the understandable and natural allure of viewing careful planning, clear expectations, clean execution, and classical results-drive as being oriented in an oxymoronic way toward ambiguity, flexibility, risk, unknowns, evolving messages, false starts, and pushing hard in an unknown direction against an unknown surface. Increasingly, effective planning *is* contingency planning first. Executing often means executing upon what can be known and otherwise laying the infrastructure needed to remain poised and ready to execute quickly and efficiently according to any number of contingencies or complex interactions among contingencies.

***Resourcefulness* (RSF).** Resourcefulness is about securing and deploying resources effectively and efficiently. In organizations today, there are often more opportunities than there are resources available: people, time, and money. The challenge is to produce results by making the best use of the limited resources available. High RSF means finding a way to get things done, even with scant resources. Highly resourceful individuals know how to find and secure limited resources. They orchestrate efforts so that tasks are executed efficiently and effectively. They challenge themselves to do more with less.

RSF is highly (positively) correlated with performance, promotability, and (lower) derailment risk for managers at all levels and mid-senior level individual contributors. Interestingly, its positive relationship with performance ratings is higher than its relationship with both promotability and derailment risk, although the latter correlations are substantial as well. RSF is strongly and positively associated with measures of Ensures accountability, Directs work, Financial acumen, Plans and aligns, and Optimizes work processes (KF, 2014).

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In summary, organizations want resourceful employees at all levels (Robles, 2012) and resourcefulness is a necessary leadership skill (Baldoni, 2010). Fortunately, RSF is a relatively easy skill to acquire and develop (KF, 2014).

People competencies

Builds effective teams **(BET).** This competency is about building strong-identity teams that apply their diverse skills and perspectives to achieve common goals. High scorers on BET form teams with a diverse mix of background and perspectives. They establish common goals and a shared mindset, defining success in terms of the whole team. They create strong team moral and cohesion, fostering team collaboration.

Effective teamwork is key to the successful operation of organizations. Teams are the primary way to accomplish coordinated tasks, and team members need each other to achieve common goals. BET is among the very most difficult skills to develop and harness. BET is in high demand, increasing in importance from supervisors to executives, although it gains the most in importance (when measured with boss ratings) from supervisors to middle managers (De Meuse et al., 2011). BET is notably predictive of overall job performance, derailment risk, and promotability across all position levels. Individuals with high BET tend strongly toward increased scores on other KF competency measures including Collaborates, Develops talent, Values differences, Directs work, and Drives engagement (KF, 2014).

Builds networks **(NNE).** High scorers on Builds networks effectively build formal and informal relationships and relationship networks both within and across organizational boundaries. NNE is correlated with overall managerial performance, and its predictive utility increases with management level, at least when measured with boss ratings (KF, 2014; Thompson, 2005). As such, NNE is a competency that distinguishes between management levels better than most. NNE is also markedly difficult to develop, which contributes in no small way to its low supply among (increasingly) lower-level managerial personnel. Increased NNE is also among the strongest predictors of promotability (Seibert, Crant, & Kraimer, 1999) and decreased derailment risk (KF, 2014). NNE is strongly and positively associated with measures of organizational savvy, persuasiveness, negotiation skill, situational/social adaptability, broad perspective, conflict management, and effective communication. NNE is typically higher among extroverts (Forret & Dougherty, 2001; Wolff & Kim, 2012), and individuals who are more flexible, agile, and open to experiences (Wolff & Kim, 2012) tend toward being proactive more than reactive vis-à-vis NNE in a variety of ways (Thompson, 2005). High scorers on NNE-like measures typically value and build key relationships and partnerships across functional, cultural, organizational, and regional boundaries. They tend to be well connected and markedly resourceful in ways that facilitate advancing ideas and implementing initiatives across and within organizations.

Collaborates **(COL).** Collaborates is a people-oriented competency and refers to building partnerships and working collaboratively with others to meet shared objectives.

Highly collaborative individuals encourage collaboration by involving others, promoting shared contributions to goals, and crediting others for their accomplishments. They facilitate an open dialogue with a wide variety of contributors and model collaboration across the organization.

In today's workplace, collaboration and similar constructs are consistently identified as major skill needs among employers (e.g., American Management Association, 2010; Levy & Rodkin, 2015; National Association of Colleges and Employers, 2014). COL is moderately easy to develop and is positively correlated with job performance for all position levels, but especially for mid-level

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contributors and leaders, for whom it is a top-10 predictor of performance ratings (KF, 2014). It also predicts promotability and (decreased) derailment risk across most position levels. Not surprisingly, COL is notably correlated with other people-relevant competencies in the wider KF competencies framework, including Manages conflict, Values differences, Interpersonal savvy, Builds effective teams, and Instills trust.

High COL employees bring people together to leverage their skills, talents, and knowledge to achieve a common purpose. COL creates synergy—resulting in a combined effort with greater results than those achieved by individuals.

Communicates effectively **(COM).** Communicates effectively measures the ability to develop and deliver multi-mode communications that convey a clear understanding of the unique needs of different audiences. Highly effective communicators deliver messages in a clear, compelling, and concise manner and are effective in a variety of settings. They are attentive listeners who are open to others' ideas. They adjust communication content and style to fit the audience.

In employer surveys, COM is a major skill sought by employers (e.g., American Management Association, 2010; Levy & Rodkin, 2015; National Association of Colleges and Employers, 2014). Effective communication results in mutual understanding, harmony, and action. Leaders communicate to inform, persuade, coach, and inspire. People at all levels share ideas, learn from each other, and keep each other informed about problems, opportunities, progress, and solutions.

COM predicts job performance across position levels. With the exception of entry-level contributors, COM notably correlates with promotability and derailment risk. High COM individuals also tend to effectively collaborate and direct work. They value differences, have higher interpersonal savvy, and situational adaptability.

Develops talent **(DTA).** Leaders who effectively develop talent proactively, nurture people-development and talent-development in ways that facilitate goal achievement for both individuals and organizations. DTA is a rare competency and most often characterized as being notably difficult to acquire and develop. High DTA leaders build and nurture cultures focused on talent. They promote and reinforce the value of active learning and its organizational impact. They tend to sponsor and/or facilitate initiatives or action to ensure leadership and talent excellence and continuity. A leader with notably high DTA will formally and/or informally set and communicate individual and organizational talent development expectations in effective ways.

Companies with high DTA leadership tend toward a culture of continuous learning and improvement (Gardner, 2011). High DTA leaders actively seek talent and potential among their colleagues and subordinates and facilitate developmental opportunities such as mentoring and/or "connecting the right people" (Gallo, 2011), as well as action and experience-based learning, formal training, and/or exposure to challenging growth roles and/or responsibilities. Leaders who effectively develop talent build developmental scaffolds for themselves and others. They encourage and offer feedback to ensure learning and development. They have high expectations and tend to value and grant increasing levels of autonomy and challenge to subordinates or laterally oriented coworkers, where applicable (Gardner, 2011; Murphy Paul, 2013).

Developing talent is notably correlated with third-party ratings of overall job performance across management levels—including among high-level executives (e.g., r = .38 among senior executives). Its salience, nonetheless, seems at least slightly elevated for first-line and mid-level leaders (KF, 2014), perhaps particularly in terms of promotability. This may be due to mid-level leaders' increased

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proximity to lower-level managers and contributors whose need and capacity for growth is typically larger and who are more likely to be in process vis-à-vis establishing and developing their own sense of occupational and organizational identity. Not surprisingly, DTA is also markedly and positively correlated with other KF competencies including Directs work, Drives engagement, Builds effective teams, Attracts top talent, and Courage, among others (KF, 2014).

Drives engagement **(EIN).** High scorers on Drives engagement motivate others to mentally, emotionally, and with discretionary effort invest in organizational missions, duties, goals, and objectives. EIN is a rare competency and is generally predictive of overall performance, promotability, and decreased derailment risk, although its salience generally increases among higher-level management. EIN among leaders tends to positively affect employee and subordinate productivity and loyalty (Kerns, 2014), which in turn also positively impacts the upper-level managers with elevated EIN. Subordinates and colleagues of high EIN individuals tend to have higher scores on measures of well-being, and companies in which high EIN leaders are abundant tend to have higher returns for investors, increased customer loyalty, increased operating income, increased employee optimism, and higher quality impacting products and services (Kerns, 2014).

High EIN managers and contributors make others feel valued and instrumental to organizational success. Managers scoring high on EIN and EIN-like measures tend to "delegate internalized ownership" and internalized responsibility in ways that increase colleague and subordinate loyalty and discretionary personal investment. They communicate organizational vision and strategy in ways that engage others, incite passion, increase general optimism and confidence, and tend toward making intentional or unintentional effective appeal to individuals' values and broadly defined goals (see, for example, Zhang, Avery, Bergsteiner, & More, 2014).

EIN is positively associated with other competency areas including collaboration (Leigh & Maynard, 2012), developing talent, directing work, interpersonal savvy, situational adaptability, and driving vision and purpose. High-scoring individuals on EIN and EIN-like measures also build more effective teams and tend to more strongly value and effectively leverage differences and diversity (broadly defined) (KF, 2014).

Instills trust **(ITR).** Instills trust can be defined as gaining the confidence and trust of others through honesty, integrity, and authenticity. High ITR people are honest and authentic. They act with integrity, show consistency, and are credible. Trust is the foundation of effective relationships. Trust enables successful collaboration and more productive outcomes in the workplace (Colquitt, Scott, & LePine, 2007).

ITR is predictive of overall job performance across position levels, and is particularly salient for individual contributors. ITR-like constructs are positively associated with organizational commitment and job satisfaction (Bianchi & Brockner, 2012), job performance, and organizational citizenship behaviors (Colquitt, Scott, & LePine, 2004).

Not surprisingly, high ITR individuals also tend to be more willing to confront and successfully engage in difficult and high-stakes conversations. They are generally more collaborative, have a greater sense of self-awareness, and communicate more effectively. ITR is also positively correlated with Ensures accountability and Values differences. ITR is relatively easy to acquire and develop.

Interpersonal savvy **(IPS).** Interpersonal savvy measures the extent to which individuals relate openly and comfortably to other people. High IPS individuals build rapport even when facing difficult situations. They pick up interpersonal and group dynamics and react effectively. They build constructive relationships with people both similar to and different from themselves. Being

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interpersonally savvy involves having a range of interpersonal skills and approaches and knowing when to use what with whom. IPS is among the more difficult competencies to develop.

Interpersonal savvy is essential for getting things done in organizations. It is important for "almost every area of business" (Butler & Waldroop, 2004). IPS increases in importance from supervisors to middle managers and to executives (De Meuse et al., 2011). It also has predictive utility with overall job performance, promotability and decreased derailment risk (KF, 2014). IPS is clearly a correlate of EI (KF, 2014). As such, it is strongly and positively associated with measures of Collaborates, Manages conflict, Values differences, and Situational adaptability. High IPS individuals also tend to score high on Communicates effectively.

***Manages conflict* (MCO).** Manages conflict is a people-oriented competency and refers to handling conflict situations effectively and with a minimum of noise or collateral damage. High MCO scorers have an increased ability to defuse high-tension personnel situations. Employees, especially leaders, who are able to effectively manage conflict often can and do see conflict situations as *opportunity* that can affect breakthroughs in relationships and communication, contribute to individual and group problem solving, and increase collective and individual strategic and visionary thinking.

While MCO is an important competency for all position levels from individual contributor to senior executives, research has shown that MCO is one of the most difficult skills to develop, and relatively rare among all types of employees. With the exception of entry-level task-oriented contributors, elevated MCO scores are markedly predictive of performance and promotability, and they significantly lower derailment risk (KF, 2014).

Not surprisingly, leaders who manage conflict effectively also tend to be more willing to confront and successfully engage in difficult and high-stakes conversations. They tend to be more collaborative, persuasive, resilient, socially adaptable, and they more effectively balance stakeholders (Coleman & Kugler, 2014). MCO is also negatively associated with work-related stress (Fracher & Blick, 1973) and is positively associated with relationship quality and sociability (Bloomfield & Blick, 1975). MCO *is* constructive conflict management and is positively related to EI (Schlaerth, Ensari, & Christian, 2013). Although we have seen little related evidence in our own data (e.g., KF, 2014), except when examining MCO's relationship with performance across entry-level professionals and *all* other levels, some have found the importance and predictive utility of MCO-like constructs to increase among *lower*-level managers (Schlaerth et al., 2013), suggesting that lower-level managers' relatively high focus on execution and tactical implementation may grant more opportunity for the proliferation of personnel conflict (Schlaerth et al., 2013).

Lower scorers on MCO tend to defer to rank-legitimized and "controlling" approaches to negotiations and conflict (Follett, 1973/1924; Magee & Galinsky, 2008; Rubin & Brown, 1975; Zartman & Rubin, 2002). They're more likely to employ "pressure tactics," offer fewer concessions, have unrealistic expectations and aspirations, and employ more contentious tactics in conflict (Anderson & Berdahl, 2002; Brown & Levinson, 1987; Dwyer & Walker, 1981; Magee, Galinsky, & Gruenfeld, 2007; McAlister, Bazerman, & Fader, 1986; Rubin & Brown, 1975; Zartman & Rubin, 2002). They also tend to neglect and underestimate the resources and potential impact of lower-level internal stakeholders (Fiske, 1993; Salacuse, 2002). Individuals scoring low on measures of MCO-like constructs are more likely to harbor a sense of general dominance, they fare less well in negotiations, undermine relationships, foster less commitment to their decisions, and cultivate negativity and resentment of subordinates (Lewicki, Saunders, & Barry, 2005; Salacuse, 2002; Yukl, Kim, & Chavez, 1999; Yukl & Tracey, 1992; Zartman & Rubin, 2002).

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***Persuades* (PER).** High scorers on the Persuades competency use compelling arguments to gain the support and commitment of others. PER is a relatively difficult skill to develop and is among the competencies more highly (positively) correlated with performance for all position levels. Interestingly, its positive relationship with performance ratings is higher than its relationship with both promotability and derailment risk, although the correlations are substantial and relatively high with these as well. Not surprisingly, PER is notably correlated with other socially relevant competencies in the wider KF competencies framework, including Manages conflict, Interpersonal savvy, Builds networks, Situational adaptability, and Communicates effectively, among others (KF, 2014).

Individuals with high PER tend toward strong interpersonal skills and negotiating capabilities. Their support-garnering skills tend toward inspiration and win-win outcomes that are likely to result in *enduring* agreements and, where applicable, enduring change. High scorers tend to have strong relationship networks. They invest priority and discretionary time and effort to establishing and nurturing strong relationships. Their persuasive skill involves communicating a notable and compelling sensitivity to the needs and concerns of others. A leader with strong PER negotiates in ways that underscore the extent to which their position supports and optimizes outcomes related to key business interests. They garner support, commitment, and change the minds of others skillfully, and can be especially effective even when pushing for approaches or decisions that may initially be unpopular or otherwise associated with stress among organizational members and stakeholders. When leaders high in PER also have elevated scores in Drives engagement, Situational adaptability, and other prosocial and motivational constructs, they are typically able to influence and inspire others and proactively shape shareholder agendas and opinions (Gallo, 2010). As such, PER is likely a key competency among those whose jobs involve persistently and proactively balancing stakeholders and representing a variety of within- and between-organization interests and even competing interests.

***Values differences* (VDI).** Valuing differences refers to recognizing the value that different perspectives and cultures bring to an organization. High scorers on measures of VDI seek to understand different perspectives and cultures. They view dissimilarity as positive and contribute to a work climate where differences are valued and supported.

As the economy becomes increasingly global, the workforce has become more diverse. Valuing differences creates a work environment where people can and want to do their best. VDI promotes understanding and reduces conflict, and research shows that teamwork and cross-cultural effectiveness can be improved by truly valuing each other and each other's differences (Ayoko & Hartel, 2000; Wheelan, 1999).

VDI is a difficult skill to develop and is positively correlated with performance across all position levels. Interestingly, its positive relationship with performance ratings is higher than its relationship with both promotability and derailment risk. VDI is related to Emotional Intelligence (EI) and, not surprisingly, it is notably correlated with other relevant competencies in the wider KF competencies framework, including Collaborates, Drives engagement, Interpersonal savvy, Demonstrates self-awareness, and Situational adaptability (KF, 2014).

Self competencies

***Being resilient* (BRE).** Being resilient means rebounding from setbacks and adversity when facing difficult situations. Highly resilient individuals maintain a positive attitude despite troubling circumstances or setbacks. They bounce back quickly from setbacks and negative experiences. They

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stay calm under pressure and positively adapt to difficult situations. Being resilient is markedly and highly correlated with ratings of overall job performance across position levels—including among individual contributors (e.g., *r* = .67 among entry-level contributors). BRE predicts promotability and derailment risk across most position levels, and especially among individual contributors, first level managers, and mid-level managers. BRE is relatively difficult to acquire and is positively correlated with other KF competencies, including Ensures accountability, Manages ambiguity, Manages conflict, Drives results, and Situational adaptability (KF, 2014).

In today's demanding, adverse, and often volatile working environment, setbacks are often unavoidable. Researchers sometimes refer to the "non-existence" of stress-free modern roles (Anbazhagan & Rajan, 2013). Highly resilient employees are more committed to their organizations, more satisfied with their jobs, have more self-esteem, and perform better (Judge et al., 1999). They also have more generalized positive affect and a notably higher degree of self-efficacy for achieving goals (Judge et al., 1999).

***Courage* (COU).** People with high scores on Courage tend to address problem situations and controversial issues directly. They will engage proactively in difficult conversations, "saying what needs to be said" in effective, timely, and appropriate ways. COU seems particularly salient for front-line supervisors and perhaps also senior executives, while being nonetheless predictive of performance, promotability, and (lower) derailment risk for most management levels. COU may be particularly predictive of performance for supervisors and first-level leaders because their orientation to direct reports tends to be more hierarchic and directive. Front-line leaders often do not make decisions or set policies (De Smet, McGurk, & Vinson, 2009), but they rather communicate, enforce, and oversee policy implementation, which may orient them to their direct reports in ways requiring more frequent coaching and even more frequent disciplinary conversation. COU, nonetheless, has a similar predictive and top-10 magnitude for senior executives as well (KF, 2014). Many difficult and widely consequential company issues are resolved at the very highest levels of management. As such, COU is also a particularly salient competency for senior executives (Jablin, 2006) who often feel as if they "stand alone" (Saporito & Winum, 2012), which is partly due, in no small measure, to their need to make and defend high-stakes decisions that may be unpopular or represent necessary compromise in ways that can impact clients, colleagues, and/or personnel in sometimes less-than-desirable ways. COU is among the more difficult competencies to develop.

High COU individuals tend to be action oriented, and they tend to support others who take personal risks and "do the right thing for the company," even if unpopular or unsettling to some or many (Tichy & Bennis, 2008). High COU individuals are more resolved and action oriented in high-stakes situations, in crises, in conditions of uncertainty and adversity, and when needing to address behavior inconsistent with organizational core values and objectives. They often act and speak confidently with conviction, particularly in problem or crisis situations, because they tend to be decisive, and to speak and act when they truly believe their decisions and/or point of view are correct (Tichy & Bennis, 2008). They also tend to encourage others to act or speak up where appropriate and to remain sensitive to how organizational policies and direction can affect internal and external stakeholders. High COU individuals tend toward elevated skill in other competency areas including Manages conflict, Decision quality, Directs work, Drives results, and especially Ensures accountability (KF, 2014). They tend to be more experienced in management and leadership and are notably likely to have elevated scores on measures of confidence and integrity (Amos & Klimoski, 2014; Goud, 2005).

***Nimble learning* (NLE).** High scorers on measures of Nimble learning actively learn through experimentation and use successes and especially failures as fodder for learning and growth. NLE is moderately difficult to develop and is positively correlated with job performance for all position

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levels, but especially for senior executives, for whom it is a top-five predictor of performance ratings (KF, 2014). It also predicts promotability and (decreased) derailment risk across levels. High NLE individuals also tend to do better in terms of managing complexity, making quality decisions, cultivating innovation, managing ambiguity, and adaptively employing broad and strategic perspective. NLE has been used as a subdomain of third-party-rated measures of higher-order learning agility, and is sometimes embedded in a larger cluster of strategic skill measures for executives, being conceptualized as the extent to which individuals learn quickly, broadly, and "on the fly" (Orr & Sack, 2009; Lominger International, 2007).

High NLE leaders tend to promote and foster a company culture that encourages exploration and learning. They expect and provide latitude for failure and place a high value on related learning and how it can ultimately affect improvement and breakthrough (Llopis, 2013). Reflection and feedback on failure is a key element of the high NLE leader (Weinzimmer & McConoughey, 2013; Haque, 2010). Informed and skillful trial and error sharpen their instinct for innovation and problem solving (Weinzimmer & McConoughey, 2013).

Manages ambiguity **(MAB).** Individuals with high Manages ambiguity scores operate and manage effectively, even when circumstances are uncertain or the way forward is unclear. MAB is among the very most difficult skills to develop, and is in relatively low supply and high demand among leaders and potential leaders. MAB is notably predictive of overall job performance, (lower) derailment risk, and promotability across all position levels, including among individual and entry-level contributors, whose performance variance is explained by MAB alone at a magnitude near 25%. Leaders with high MAB tend strongly toward increased scores on other KF competency measures including Decision quality, Global perspective, Organizational savvy, Being resilient, Situational adaptability, Strategic mindset, and especially Nimble learning (NLE) (KF, 2014). In fact, NLE is interestingly coupled with MAB due to the extent to which ambiguous circumstances make experimentation, strides for innovation, latitude for failure, and continual learning all crucial and common elements of modern senior management. In some measurement frameworks, NLE, MAB, and others are included together as subdomains of higher-order composite learning agility measures (Lominger International, 2007).

High MAB individuals are comfortable with uncertainty and the absence of concrete information or unequivocal decisions and plans. They foster an organizational climate that facilitates change, tolerates uncertainty, and nurtures flexibility. High MAB individuals are more tolerant of stress in many cases and facilitate the same in their teams and colleagues, especially in terms of stress related to uncertainty. They lay infrastructure that makes organizations and teams poised to stay on course, even in the face of unforeseeable and sometimes fast change. They set and communicate goals in ways that allow for directional and methodological adjustments (Sidhu, 2011), and proactively provide operational and social support for uncertainty and fast change in ways that increase adaptability, satisfaction, and performance among their teams, direct reports, and colleagues (Cullen, Edwards, Casper, & Gue, 2014). While MAB makes immediate reference to (self-efficacy for) behavior and skill, MAB and the previously discussed trait Tolerance of ambiguity (TA) are clearly closely linked (r = .50). As such, additional correlates and characteristics of high MAB leaders can be understood by reading the previous section on TA. Note, however, that because MAB makes reference to behavior and not disposition, the possibility of low scores on the former and high on the latter (or vice versa) can and has been observed, and has potential implications for understanding and describing KF4D-Ent respondents. For example, an individual may have a disposition characterized by tolerance of ambiguity, but may not be skilled at managing ambiguity. Our self-rated competencies and traits measures are designed to capture this and related differences.

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Self-development **(SDV).** Self-development measures the extent to which individuals actively seek new ways to grow and be challenged using both formal and informal development channels. In today's workplace, the skills an individual has now are unlikely to be enough in the future. Acquiring new skills plays an important role in an individual's long-term effectiveness and career success (Silzer & Church, 2009; Tannenbaum, 1997). SDV is especially crucial during job transitions—when individuals face new and unfamiliar situations. People who are committed to self-development look for ways to build skills that they will need in the future. They look to grow from experience, seeking out feedback and learning from others.

SDV is moderately difficult to develop and is positively associated with job performance for all position levels, but especially for entry-level contributors, for whom it is a top-five predictor of performance ratings and explains 27% of variability in job performance (KF, 2014). It also predicts promotability and (decreased) derailment risk across levels, although its positive relationship with performance ratings is higher than its relationship with both promotability and derailment risk.

Not surprisingly, SDV is notably related to other competencies in the Self factor, including, Nimble learning, Being resilient, Demonstrates self-awareness, and Situational adaptability. SDV also has a strong positive relationship with Values differences. This is perhaps because SDV and VDI both tap into an individual's "openness."

Situational adaptability **(SAD).** Situational adaptability is primary a *social* adaptability, and involves individual skill vis-à-vis effectively adapting approach and demeanor across circumstances, individuals, and/or groups. Like MAB, SAD is a markedly difficult competency to acquire and develop, and notably high SAD leaders are rare across management levels. SAD predicts job performance, promotability, and (lower) derailment risk across position levels, and especially in roles involving people-management broadly defined. High SAD individuals also tend to effectively communicate and collaborate. They effectively manage conflict, tend to be more resilient, have higher self-awareness, and value diversity. They inspire others, have higher interpersonal savvy, persuade effectively, and build more effective teams (KF, 2014). SAD is clearly a correlate or component of EI (Martinuzzi, 2014) and has even been conceptualized as a "meta-competency" which can serve as a determinant of one's ability to effectively develop and employ other competencies and skills (Briscoe & Hall, 1999). High SAD leaders can effectively adapt their leadership style to best serve a broad range of situations and challenges (Pulakos, Arad, Donovan, & Plamondon, 2000) and help to promote adaptable organizational structures and systems that keep companies poised, relevant, and competitive in volatile markets and circumstances.

Drivers

Work motivation has been a central focus of organizational research for many years. The high level of interest in work motivation can be attributed to the long-held belief that individual behavior is influenced by a mix of different factors, including ability, motivation, and situational constraints/facilitators (Campbell & Pritchard, 1976). In human resource management, this is referred to as the AMO framework. In essence, the AMO framework proposes that employee performance (P) is a function of the employee's ability (A), motivation (M), and opportunity (O) to perform (Boselie, Dietz, & Boon, 2005; Boxall & Purcell, 2008). The AMO model is premised on the idea that organizational interests are best served by the HR system that attends to and optimizes the configuration of these three critical elements.

Work motivation is a set of forces that interact with the situation to initiate work-related behavior and to determine its direction, intensity, and duration. This definition highlights the fact that

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motivation can be seen in the choices individuals make among goals to pursue (i.e., direction), the amount of effort they put forth toward attaining the goals (i.e., intensity), and persistence of action (i.e., duration). In the workplace, notable achievements are rarely the outcome of random activities. Rather, they typically involve a combination of choices concerning what to do, how much attentional effort to devote to specific activities, and when to shift direction and levels of effort. Understanding what motivates individuals at work and what organizations can do to maintain or increase the motivation of their employees can have significant impact on personnel and organizational success.

There have been a variety of ways to conceptualize and investigate motivation. Theories of motivation, however, have converged on the idea that different concepts of motivation can be arranged or organized into frameworks. A particularly notable framework that integrates different motivation theories involves Kanfer's (1990) distinction between distal and proximal motivations. Various motivation constructs differ in terms of their proximities to behavior and action. Motivations that have immediate and direct impact on behaviors are proximal. For instance, goal setting has been widely adopted by managers. Goals can focus attention toward goal-relevant activities and away from irrelevant activities (Locke, 1978). When individuals are committed, goals will energize individuals and initiate the execution of action plans toward attaining the goals. Goal commitment, therefore, is a proximal motivation. On the other hand, whether or not one is committed to a goal set or guided by the organization depends on other individual and situational considerations. Are the expected outcomes of goal attainment important to the person (i.e., valence)? Does the person believe the goals are achievable (i.e., expectancy)? Factors that influence these considerations are more distal than goal commitment with regard to their impact on behaviors. For instance, when the expected outcomes of goal attainment satisfy an individual's needs, the person is more likely to be motivated to take actions in pursuing the goal. Needs, in this case, represent a set of distal motivations. Proximal motivations guide conscious processes and behavior at a given point in time and situation. In contrast, distal motivations affect action goals through proximal motivations. The impact of distal motivations tends to span longer time frames and across situations. The same need can be satisfied through the pursuit of different action goals.

With KF4D-Ent, we strive to identify and assess motivations that can predict and explain individuals' relatively enduring behavioral patterns. To distinguish between proximal motivations, we refer to and measure distal motivations as "drivers." As such, a driver is an unobservable force originated from within that directs, energizes, and sustains behavior over time and across changing circumstances.

The benefits of assessing drivers

Assessing drivers facilitates some degree of evaluation of fit between an individual and an organization (we discuss this more in later sections). One of the major tasks of the HR function is to establish and maintain the configuration or fit between the person and the work environment through activities such as assessment, deployment, and development. There are multiple aspects of fit, e.g., person-job fit and person-vocation fit (Kristof-Brown & Guay, 2011). One specific type of fit that has been found to have an impact on individual and organizational outcomes is person-organization fit. Aspects of individuals, such as values and expectations, interact with organizational features, such as cultures, to affect the individuals' attitudinal and behavioral responses. Empirical research has demonstrated the positive outcomes of person-organization fit including perceived organizational attraction (Yu, 2014), job satisfaction and organizational commitment (O'Reilly, Chatman, & Caldwell, 1991), organizational citizenship behavior (Cable & DeRue, 2002; Lauver & Kristof-Brown, 2001), and support for organizational change (Lamm, Gordon, & Purser, 2010). Assessing drivers facilitates evaluating fit between individuals and organizations.

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Taxonomy of drivers

Unlike other individual attributes (e.g., the Big Five model of personality), a consensus and widely adopted framework does not exist for measuring motivational constructs. There are different approaches to conceptualizing and measuring distal motivations. To identify relevant drivers, we drew on research on both needs and values. They are foundational to motivation theory and commonly inform related choices.

Needs are variable internal states that, when activated or aroused, energize and direct behavior (Pittman & Zeigler, 2007). A need affects behavior when there is a discrepancy between one's current state and a desired state. The discrepancy leads to the experience of an internal tension that energizes behavior, leading individuals to pursue things in their environment that can help reduce the discrepancy. Although it is not always well supported, Maslow's (1954) Hierarchy of Needs is perhaps the most well-known needs theory.

In contrast, *values* are standards or criteria for selecting among alternatives. They serve as the base for making choices. Values underlie and affect attitudes, which in turn underlie and affect behavior. To consider values in the workplace is to probe the very reasons people work and why they behave in the ways they do in their jobs. A value is an enduring belief that a specific mode of conduct or end state of existence is personally and socially preferable to alternative modes of conduct or end states (Rokeach, 1973). Therefore, values entail attention to both means (how to do) and ends (what to pursue). For instance, two individuals may both have a desire to influence others. However, one may choose to rely on formal power, the other may take a participative or deferential approach. This implies the difference between needs and values. Whereas needs are considered to be at least partially biologically based, values are shaped to a larger extent by social factors such as perceived relative status and also by culture.

Needs and values, nonetheless, are and remain closely related. Values represent the expression of needs. When an individual has a strong need for something, the individual places high value on situations that enable them to satisfy this need. As such, needs and values tend to be used interchangeably in the work motivation literature (Kooij, De Lange, Jansen, Kanfer, & Dikkers, 2011). This is revealed by the fact that measures of needs and values often contain the same test items. For this reason, we reviewed both lines of research to establish a taxonomy of drivers.

While numerous models of needs and values have been developed, our thematic analysis of models suggested that they commonly share notable similarities. There were key components that repeatedly emerged in different models of needs and drivers. Based on this observation, we concluded that a limited number of universal dimensions can be identified to construct an overarching framework of drivers for applied use.

The KF4D drivers framework is a research-based, comprehensive taxonomy of six work-related motivational drivers comprised of 18 subdomains. First, items from several motivational assessments (from PDI Ninth House and Global Novations) were sorted into rational themes. Next, seven subject-matter experts (SMEs)[10] reviewed the results. They collapsed and refined the themes to a list of six, with several subdomains derived by clustering the items within each theme. The SMEs also carefully reviewed the research literature to ensure that the framework was complete and covered all work-relevant motivations. Table D1 presents our taxonomy of drivers and the defining themes for each of the drivers.

[10] On average, the SMEs had more than 15 years of experience designing and/or using work-related assessments, as well as graduate level education in measurement, statistics, and/or assessment. SMEs had served as internal and/or external consultants; many had worked directly with leaders.

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Table D1. KF4D-Ent driver definitions and categorizations

CATEGORY	DOMAINS AND DEFINING THEMES		
	Independence	**Power**	**Challenge**
Promotion focused	• Being creative, preferring the freedom to cultivate one's own ideas and abilities	• Motivated by personal advancement	• Stimulated by new and stretch assignments
	• Being autonomous, preferring the freedom to determine one's own actions	• Seeking influence and control over others	• Learning and developing new capabilities
	• Contributing independently and self-reliantly	• Pursuing status	• Pursuing high standards, achieving difficult goals
	• Acting according to personal principles and ethics	• Desire for being respected	• Excited by winning and outperforming others
	• Preferring the freedom from situational constraints	• Expecting financial reward, seeking control over resources	
	Collaboration	**Structure**	**Balance**
Preservation focused	• Need for affiliation and social acceptance by others	• Preferring predictability, continuity, and stability	• Preferring working in a relaxing and comfortable environment with low pressure
	• Being a loyal member and identifying with a group	• Respecting tradition, following consistent work procedures	• Preferring the flexibility to set working schedule and location
	• Committed to collective goals and common good	• Complying with norms and rules	• Balancing between work and life
	• Relating to others with respect, integrity, and trust	• More comfortable working in a secure environment	• Enjoying the opportunities to pursue personal interests outside of work
	• Partnering with others and working in a collaborative way		

We further observed that these universal drivers can be divided into two contrasting categories which reflect two high-level motivation tendencies—promotion focused (approaching a desired state) or preservation focused (avoiding an undesired state) (Higgins, 1997). These two systems of motivation are biologically based (Sutton & Davidson, 1997). The approach system moves the organism toward potentially beneficial stimuli, therefore promoting the growth of organisms. In contrast, the avoidance system moves the organism away from potential harmful stimuli, therefore increasing the chance of survival of the organisms. Both approaches have adaptive significance. Individuals have both systems of motivation. However, due to personal experience, one system may become more predominant than the other. Promotion-focused individuals are concerned with nurturance needs and approaching opportunities for personal growth. They experience eagerness with goal striving and joy with goal attainment. Individuals with a preservation focus are concerned with security and certainty. They are cautious during goal striving and tend to experience relaxation with goal attainment. The two categories of drivers reflect the inherent contradiction between different values (Schwartz & Bilsky, 1990). As we expected, drivers in the promotion-focused category are negatively correlated with the drivers in the preservation-focused category. For instance, the correlations in Table DCORR (in a later section in this technical manual) indicate that individuals who strive for independence have relatively less desire for collaboration. Similarly, people who pursue a balanced and low-stress working environment tend not to be stimulated by power and stretch assignments.

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Construct validity of our framework is further supported by the conceptual mapping with other models of needs and drivers. Two SMEs[11] independently mapped the six drivers with several conceptual and practical models. Table D2 shows that all the key components found in various models can be connected to the six drivers. This suggests the thoroughness and inclusiveness of our framework. A simple structure with six drivers provides a sufficient taxonomy of the motivation domain.

Table D2. Construct mapping of the six universal drivers to other models of motivation

DRIVER DOMAIN	MCCLELLAND MOTIVATION THEORY	DECI AND RYAN SELF-DETERMINATION THEORY	BARRICK, STEWART, AND PIOTROWSKI MOTIVATIONAL ORIENTATION INVENTORY	HOGAN MVPI	O*NET WORK VALUES	SCHWARTZ VALUE FRAMEWORK
Independence		Need for autonomy		Aesthetics	Independence	Self-direction-thought
				Science		Self-direction-action
Power	Need for power		Status striving	Power	Recognition	Power-dominance
				Commerce		Power-resources
				Recognition		Face
Challenge	Need for achievement	Need for competence	Accomplishment striving		Achievement	Stimulation
						Achievement
Collaboration	Need for affiliation	Need for relatedness	Communion striving	Affiliation	Relationship	Conformity-interpersonal
						Humility
				Altruism		Benevolence-dependability
						Benevolence/caring
						Universalism-concern
						Universalism-tolerance
Structure				Security	Working conditions	Security-personal
						Security-societal
				Tradition		Tradition
						Conformity-rules
Balance				Hedonism	Support	Hedonism

[11] Each SME has a doctoral degree and at least five years of experience in applied psychology.

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Descriptions and known correlates of specific drivers

In this section, we describe each of the six drivers in the KF4D framework, including their correlates. The three preservation-focused drivers are discussed first, followed by the promotion-focused drivers.

***Balance* (BALA).** Balance is the degree to which individuals are motivated by achieving a balance between work and personal life. High scorers prefer work-related flexibility, want opportunities to pursue interests outside of work, and prefer to avoid high-stress "life-defining" job roles. Low scorers place career as a top life-priority and a primary component of identity. Balance may otherwise invoke notions of prioritizing between work (career and achievement) and lifestyle (family, health, leisure, parenting, etc.).

The work-life balance issue has received wide attention in recent years due to the increasing number of dual-earner families. Early theories predicted the negative impact of work-life balance on achievement and career success (Greenhaus & Beutell, 1985). Such prediction is based on the scarcity or *depletion hypothesis*, viz., individuals have limited time and energy, and involvement in one activity means fewer resources available for others. Early studies confirmed related hypotheses. Managers who were work-centric received high ratings of promotion potential (Bray, Campbell, & Grant, 1974; Howard & Bray, 1988). In another study, managers who took leaves of absence for family or other reasons received fewer subsequent promotions than managers who had not taken leaves (Judiesch & Lyness, 1999). Jack Welch, former chairman and CEO of General Electric, made a widely publicized remark on this issue (Tuna & Lublin, 2009). In a speech at the Society for Human Resource Management's annual conference in 2009, Mr. Welch remarked that "there is no such thing as work-life balance. There are work-life choices, and you make them, and they have consequences."

Relatively recent publications, however, suggest a different perspective regarding the impact of work-life balance. Exposure to novel job situations and breadth of work experiences has been shown to foster development of new skills. Enrichment or *expansionist theory* posits that work-life balance and invested involvement in non-work roles and activities enhance managers' skills and adaptability in ways that allow them to advance in their careers (Barnett & Hyde, 2001). Using observational rating data from over 9,000 managers in 33 countries, researchers found that work-life balance related positively to advancement potential (Lyness & Judiesch, 2008).

It appears that the impact of the work-life balance motive may be moderated by individual and situational factors. For instance, people differ in their energy level. Individuals with a high level of energy might benefit from increased involvement in non-work-related activities. On the other hand, individuals with a low level of energy may find their involvement in non-work roles impeding their achievement at work. The benefit of enrichment experience likely depends on the nature of the job. If the job requires continuous development of new skills, what individuals learn from diversity of life experience may contribute to success at work.

Wang and Verma (2012) highlighted the importance of business strategy when evaluating work-life balance. They observed that companies pursuing a product leadership business strategy were more likely to adopt a work-life balance program. In contrary, cost leadership business strategy was negatively related to the adoption of these programs. Companies that follow a product leadership business strategy need to invest in their personnel in order to attract and retain the best employees. Culture may also play a role here. In a highly people-oriented culture, employees trying to balance the priorities between work and life are likely more normative. In a highly task-oriented and/or competitive culture, however, high BALA may be considered a sign of low job commitment and lack of personal investment in work.

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***Collaboration* (COLL).** Broadly, Collaboration refers to communion striving. It describes actions directed toward obtaining acceptance in personal relationships and getting along with others. Socioanalytic theorists (e.g., Hogan & Warrenfeltz, 2003) have argued that people have innate biological needs for acceptance and approval. Being connected to others, feeling a sense of relatedness, and desire for interpersonal attachment is a fundamental human motivation (Baumeister & Leary, 1995). Avoiding social isolation is typically a desired state for human beings. Loneliness generates a threat response, much the same as thirst, hunger, or fear, and even has physiological effects in ways measurably and surprisingly similar to pain (Eisenberger, Lieberman, & Williams, 2003).

COLL may have a non-linear relationship with leadership effectiveness. On the one hand, COLL is associated with conformity and conflict avoidance, which are not generally typical of leaders. In a longitudinal study, McClelland and Boyatzis (1982) found that the need for affiliation (a COLL-like measure) was negatively related to promotion and managerial level. In today's organizations, however, the pace of technological change, increased complexity, competitive demands, challenging economics, and risks involved in decision making have made it difficult for individuals to act alone and avoid nurturing interdependence. Leadership research increasingly emphasizes the collaborative approaches to leadership effectiveness (Yammarino, Salas, Serban, Shirreffs, & Shuffler, 2012). Some scholars even suggest that leaders develop and adopt "collective identities," which involve self-definitions based on group membership (Venus, Mao, Lanaj, & Johnson, 2012). High COLL leaders are motivated by internalizing group values and norms, fulfilling social roles and obligations, and contributing to the group's welfare. This typically cultivates trust among team members, which in turn results in increased team performance (Drescher, Korsgaard, Welpe, Picot, & Wigand, 2014). Collaborative leadership is increasingly characterized as key for innovation management. In our own data (e.g., D'Mello, 2015), we have repeatedly found collaboration (albeit characterized as a behavior more than a motive) to be one of the most salient predictors of innovation and related outcomes.

***Structure* (STRC).** One of the basic survival needs among any group or single organism involves avoiding threats to self and well-being. Early motivation theorists emphasized the centrality of safety and security as a basic motivator (Alderfer, 1969; Maslow, 1959), and related theories have long since been extended beyond basic notions of physical survival. Psychological well-being and integrity are arguably as important for individual survival as are physical needs, particularly among humans. Early research by Frederick Herzberg (1959) invoked the notion of "hygiene" factors (e.g., job security, working conditions, and company policy) and characterized them as central components to *workplace* survival and well-being rooted in predictability. According to Herzberg, the absence of the hygiene factors results in demotivation.

STRC refers to preference for work-related stability, routine, certainty, and predictability. Humans closely associate certainty with comfort and safety. Certainty and predictability facilitate control and personal agency and, where rewarding, will reinforce and stabilize behavior. Meeting and reaping rewards according to known and clear expectations generate even physiologically measurable outcomes, including dopamine levels in the brain, which are typically desirable (Schultz, 1999). In contrast, when patterns do not play out according to expectation, or when if-then reinforcement schedules are erratic, people tend to sense instability and threats to well-being.

High STRC is perhaps most adaptive and more cleanly reinforced in bureaucratic and regulatory environments and in job roles with relatively focused goals and processes. The modern economy is increasingly bereft of small-craft workmanship and specialization in favor of rapid and pervasive growth of large corporations. To deal with the increasing complexity, organizations have typically divided and defined job "functions" to clarify duties and responsibilities and to stay organized

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and efficient. On the other hand, formal and informal functional divisions can create problems and challenges for coordination, which has always been and is increasingly fundamental to organizational goal achievement—particularly in larger organizations with more complex and loftier goals. Coordinating is complicated by multiple and sometimes competing interests, and also by the complexity involved in creating efficient and related alignment vis-à-vis communication, goals, methods, and conceptualizations of group and individual priorities. Interdependence is also complicated by interactions between group and individual intentions, motives, and competencies. Many early organizational researchers and sociologists (e.g., Weber, 1947) regarded bureaucracy as perhaps the most effective form of organizational management, especially for large and/or complex companies, agencies, or group-based pursuits and activities. Bureaucratic organizing principles appealed perhaps most directly to notions of efficiency and rationality and the self-evident need to manage by rules and regulations; rules and regulations provide standards and clarity for operating procedures and facilitate consistency and standardization.

For better or worse, the realities of modern markets and organizations increasingly create conditions in which *certainty* and the *pursuit of certainty* are enemies of achievement. Contemporary organizational design emphasizes agility and adaptability, and increasingly rewards cross-functional efforts, related synergies, and comfort with ambiguity (Worley & Lawler, 2010). In a 2009 survey, 90% of executives, spanning all regions and industry sectors, ranked organizational agility and adaptability as crucial to business success and survival (Sull, 2009). Businesses and organizations are no longer built to last, but to change. Still, organizational change efforts are difficult, and can and do fail. A meta-analysis of large-scale change efforts suggests that positive outcomes occur less than 40% of the time (Porras & Robertson, 1992). In another study, researchers at the Harvard Business School tracked the impact of change efforts among the Fortune 100 and found that only 30% of the change programs initiated between 1980 and 1995 produced an improvement in bottom-line results (Pascale, Millemann, & Gioja, 1997). These findings, which are highly similar to more recent estimates (Shin, Taylor, & Seo, 2012), have implications for STRC and its status as an adaptive motivator.

Clearly, individuals who value routine, security, and order are more resistant to and disconcerted by change (Oreg, Vakola, & Armenakis, 2011). For these and other reasons, high scores on STRC-like measures are increasingly associated with decreased success, particularly among high-level executives. High STRC managers and leaders, however, will likely continue to thrive and be preferable in certain roles and contexts, particularly those characterized by strict regulations, well-defined processes, and where the effects of not being precise, correct, and thorough are negative and relatively serious.

***Power* (POWR).** A drive for Power involves a strong desire to influence others. Individuals driven by power enjoy being held responsible for other people and broader group results. They aspire to achieve higher status and even a prestigious title or rank. They are energized by visibility and strive to gain rewards and recognition for their efforts. Motivation for power is arguably among the most critical for leadership success. The essence of leadership itself is embodied in the act of influencing others, and a weak drive for power means a lack of interest in influence and impacting others (McClelland, 1965; McClelland & Burnham, 1976). In Winter's (1987) study of US presidents, power motivation was significantly correlated with historian ratings of "greatness." The same power motivation scores have also been linked to ratings of certain aspects of presidential performance, as well as charisma (House, Spangler, & Woycke, 1991). After reviewing the literature, Zaccaro (2001) cited power motivation as a key and incremental predictor of leadership charisma. However, the impact of drive for power may be moderated by a variety of job, individual, and organizational factors.

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Using longitudinal data from AT&T managers, McClelland and Boyatzis (1982) found that moderate to high power motivation was related to managerial success 8 and 16 years later for non-technical managers only. No relationship was found for technical managers responsible for engineering-related duties, suggesting that the type of job moderates the size of the relationship between POWR and leadership outcomes. Using the same longitudinal dataset, Winter (1991) found that the relationship between POWR and managerial success 16 years later increased when the manager was also rated as highly responsible. The relationship between POWR and desirable outcomes also may differ depending on the culture and type of organization. For instance, the interaction between power and responsibility in predicting ratings of charismatic leadership was stronger in voluntary organizations than in for-profit organizations (De Hoogh et al., 2005). High POWR is also perhaps more beneficial in hierarchical organizations than organizations that are more "flat," egalitarian, and participative.

Table DRDEF. KF4D-Ent driver names and definitions

DRIVER	DEFINITION
Balance	The degree to which individuals are motivated by achieving a balance between work and personal life. High scorers prefer work-related flexibility, broadly defined self-development, and prefer to avoid high-stress life-defining job roles. Low scorers place career as a top life-priority and a primary component of identity.
Collaboration	The degree to which individuals prefer work-related interdependence, group decision making, group-based goal setting and pursuit. High scorers prefer to be part of teams, build consensus, share responsibility, and rely on social behavior for work-related success. Low scorers prefer work characterized by limited reliance on social behavior, independence, and being primarily responsible for their own work and decisions.
Power	The degree to which individuals are motivated by work-related status, influence, and the ability to make an impact on the organization. High scorers seek to climb to higher levels of visibility and responsibility within an organization, and to acquire a high degree of influence. Low scorers are driven by intrinsic interest in one's work and prefer to avoid high-visibility and high-influence job roles.
Challenge	The degree to which individuals are motivated by achievement in the face of tough obstacles. High scorers prefer challenging and competitive work assignments and environments that often preclude operating comfortably and in familiar ways. Low scorers prefer non-competitive environments and work that allows them to stick to their strengths.
Structure	The degree to which individuals prefer work-related stability, predictability, and structure. High scorers seek job security, known problems and solutions, and jobs that more often require depth and specialized knowledge/skill. Low scorers prefer work characterized by meritocracy, breadth, ambiguity, variety, and unpredictability.
Independence	The degree to which an individual prefers independence and an entrepreneurial approach to work activities. High scorers prefer freedom from organizational constraints, setting and pursuing their own vision, and value employability more than job security. Low scorers prefer pursuing group-defined goals, structured organizations, and prefer to identify strongly with a particular organization and its collective vision.

***Challenge* (CHAL).** Individuals driven by Challenge prefer new and difficult projects that stretch their abilities. High CHAL individuals tend to thrive on learning and pushing their limits to acquire new proficiencies. They are excited by the prospect of making a difference and are typically willing and eager to put forth discretionary effort in pursuit of accomplishing goals. High CHAL individuals are also typically driven by competition and the desire to win.

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Increased CHAL has been linked to a variety of outcomes. Meta-analytic evidence links CHAL-like ratings to outcomes including income, job performance, community leadership, and sales success (Spangler, 1992). In their meta-analysis, Collins, Hangins, and Locke (2004) found that CHAL was related to choosing an entrepreneurial career as well as entrepreneurial performance. In contrast, McClelland and Burnham (1976) reasoned that high scores on CHAL-like measures may not be associated with leadership success because high CHAL individuals are more concerned with personal accomplishment and competitiveness than with taking on tough challenges through others. Previous findings suggest that CHAL is positively linked to leadership success, but more so at lower levels where the contributions and accomplishments of individuals are seen as more important than influence over others (McClelland & Boyatzis, 1982). Studies of higher-level managers have presented mixed results and may indicate the presence of often unexamined moderating factors. House, Spangler, and Woycke (1991) and Deluga (1998), for example, found negative or zero relationships between CHAL and presidential performance and greatness. In contrast, Zaccaro and colleagues (1997) found that CHAL was positively linked to senior leadership-potential ratings, career achievement, and organizational level in a sample of army civilian managers. Industry, job function, and/or position level may moderate the nature and magnitude of CHAL's predictive utility for success, although the notable extent to which CHAL is related to or proxy for measures like KF's Need for achievement trait may render CHAL's impact on work and leadership outcomes largely unmoderated (Barrick et al., 2001).

***Independence* (INDY).** Individuals driven by Independence prefer to set and pursue their own vision and tend to eschew organizational constraints, rules, and limits. They enjoy exercising personal agency, exploration, and creativity in pursuit of new ideas and work-related methods. Autonomy, self-reliance, self-accountability, and independent contribution are critical for high INDY individuals. They also prefer to act and pursue vocational outcomes according to their own personal principles and work ethic.

Autonomy is one of the five job dimensions of Hackman and Oldham's (1976) job characteristics model that emphasizes intrinsic work-related motivation. More specifically, five job dimensions including skill variety, task identity, task significance, feedback, and autonomy facilitate psychological states which result in greater internal motivation. Autonomy is most linked to a greater personal sense of responsibility for task outcomes because autonomous individuals make decisions and, hence, have more at stake. The presence of autonomy on the job has been linked to many beneficial job outcomes including job satisfaction, commitment, job involvement, job performance, and motivation to achieve (Spector, 1986). The Spector (1986) meta-analysis also found that higher autonomy on the job was linked to fewer physical symptoms, role stress, emotional distress, absenteeism, and turnover.

Although few scholars have examined the relationship between an autonomy motivation and workplace outcomes, the need for responsibility construct has been linked to career achievement among military officers (Connelly et al., 2000). A similar type of trend has been reported by Stogdill (1974) and Bass (1990a) in their detailed reviews of research on key leader attributes. In addition, some scholars have argued that higher levels of legitimized autonomy precludes worry over whether one is liked and/or accepted by others, which will likely reduce stress and work-avoidance for some—particularly those high INDY individuals who are not markedly affiliative or driven by collaboration (McClelland, 1965; McClelland & Burnham, 1976). These individuals are able to freely make decisions according to their own principles, which at the extreme, could serve as a detriment to their leadership abilities. The link between INDY and role performance is thus likely moderated by the nature of the role. If there is a lack of direction, someone with high INDY could do a great job of

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providing a mission and vision for others based on their own ideas and principles. On the other hand, if the organization is highly collaborative or rule-oriented, a weaker INDY drive might be preferable. Individuals with strong independence drive are likely best suited to higher-level positions in which they have more freedom and fewer constraints than that allowed by lower-level positions. High INDY individuals will also likely fit best in more flexible and innovative cultures.

In addition to autonomy-preference, creativity is another major aspect of INDY. In their meta-analysis, Lee and Xia (2006) found that organization size was positively related to the adoption of innovation, except for non-profit organizations. Department size had an even larger positive link to innovation adoption, and hence may favor high INDY employees.

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SECTION 4
Role assessment – Culture and role variability

Organizational culture

KF4D Enterprise takes organizational culture into account as part of the assessment process. This enables comparison of individual assessment results, particularly drivers results, against target profiles that are informed by theories and empirical evidence for culture/motive congruence. Before describing Korn Ferry's conceptualization of culture, an overview and key questions about organizational culture are considered below.

The benefits of assessing organizational culture

Are good employees transportable? In other words, will a successful employee in one company also be successful in another? At the executive role level, the cross-organization and even cross-industry success of some high-profile executives would suggest that leaders are transportable in a non-trivial number of cases (Karaevli & Zajac, 2013). On the other hand, empirical research suggests that cross-institutional moves are complex and that, among other things, organizational culture and culture fit may play a notable role in determining whether new leaders will be successful (Groysberg, McLean, & Nohria, 2006). Organizational cultures and/or within-organization business-unit cultures have potential to impact the extent to which leaders' motives and values are congruent and adaptive for success. Related theories emphasize that people tend to seek out and excel in environments that are compatible with their interests and that allow them to implement and invest their own skills, values, and inclinations as strengths (Holland, 1959; Saks & Ashforth, 1997). Individuals who value rules and norms as a primary organizing principle are attracted to regulatory organizations that emphasize norms, assimilation, standard processes, and efficiency. Those who primarily value collective well-being are attracted to collaborative organizations. Individuals who primarily value self-determined vision and purpose are attracted to competitive and innovative organizations, as are those who emphasize winning and competition (Gardner, Reithel, Cogliser, Walumbwa, & Foley, 2012). In general, individuals are more attracted to vocations, career choices, and roles consistent with their personalities and values because they often contain inherent and self-sustaining goal and reward structures (Holland, 1973). And, as we have discussed, person-organization fit is perhaps increasingly vital among high-level leaders due to their potential to have large and direct impact on organizational cultures (O'Reilly, Caldwell, Chatman, & Doerr, 2014; Berson, Oreg, & Dvir, 2008). Hence, one of the benefits of utilizing organizational culture in assessment is, at a minimum, to invoke discussion of person-environment fit and offer empirically supported insight.

Culture and organizational fit can be conceptualized in different ways. Leaders, for example, may fit with a current culture, or they may facilitate the development of an ideal culture. Our research-based point of view is that finding the right person for a given role can be approached in increasingly informed ways and, among other things, a value-added systematic process involves simultaneous analysis of the role, the organizational culture or ideal culture, and candidate skills, values, and traits (Eaton, 2015). Later in this technical manual, we discuss in more detail how the nature of jobs and contexts can moderate the desirability of scores or score profiles on KF4D-Ent and KF4D-like measures. Organizational culture and/or within-organization business-unit cultures should be and are among related considerations because they impact the extent to which candidates' trait and motivational profiles are desirable and adaptive. The literature in organizational psychology has a long tradition in this area, which is variously referred to as the person-job and, perhaps most specifically in terms of culture, the person-environment fit literature (Lewin, 1951; Ahmad, 2010).

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Among the many assumptions inherent to the related literature is that job environments interact with person-level traits, motives, attitudes, and skills to impact or facilitate a variety of environmental and/or person-level outcomes, including job success, job performance, self and third-party satisfaction, optimism, self-efficacy, psychological well-being, quality of life, and various conceptualizations of fit (Edwards, 1991; Kristof, 1996; Spokane, Meir, & Catalano, 2000; Verquer, Beehr, & Wagner, 2003; Greene-Shortridge, 2008). Early and ongoing person-environment fit research (e.g., Caplan, 1987; Kristof-Brown & Guay, 2011) emphasizes that person *values* and *needs* interact with environmental *supply* to create person-environment harmony and, ultimately, person-environment fit. As such, we emphasize our drivers as the closest analog to values and needs and examine them as key variables of interest when handling culture in empirical models. We do assert, however, that traits and skills can and do add value to related considerations as well.

Culture is a defining aspect of what it means to be human. Human beings are social animals. We are wired for culture. Any group of people working or living together for a longer period of time will develop its own culture. It is the social programming of the mind that distinguishes members of one group of people from another.

The same is true for organizations. Organizations are more than just buildings, machines, inventories, or balance sheets. They are human entities. Step into any grocery store and then into some bank branch. Besides the differences in physical layout, you will also notice how staff interact with their customers differently. You instantly recognize they have distinct behavioral styles. Culture is to organizations what personality is to individuals. Organizational culture can, among other things, be perceived in the distinctive ways people behave across organizations.

Every organization has culture, whether explicit or implicit and whether desirable or undesirable. Because culture shapes and is shaped by employee behavior, it can play a big role in organizational successes or failures. The business press today is littered with references to organizational culture. An Amazon.com search for “organizational culture,” returns over 40,000 publications on this topic. In the past, management was more typically a rational and analytical enterprise. Culture and its invocation were often considered to be “too soft” or perhaps amorphous. Managers today, however, cannot ignore culture. Successful managers will routinely consider cultural issues when deciding hiring, strategic changing, M&A, or even venture capital investing. Therefore, KF4D-Ent takes into account organizational culture.

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What is organizational culture?

While there is common agreement that organizational culture plays a vital role in impacting and shaping behaviors in organizations, there have been various and sometimes competing definitions of organizational culture among organizational researchers and related practitioners. The following list identifies some of the common definitions:

- The way things are done around here (Deal & Kennedy, 2000).
- A collection of overt and covert rules, values, and principles that are enduring and guide org behavior (Burke & Litwin, 1992).
- Glue that holds together an organization through shared patterns of meaning (Martin & Siehl, 1983).
- Shared values and beliefs interact with an organization's structures and control systems to produce behavioral norms (Uttal, 1983).
- A set of symbols, ceremonies, and myths that communicate the underlying values and beliefs of the organization and its employees (Ouchi, 1981).
- A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (Schein, 1990).

As can perhaps be seen, scholars and practitioners target at different aspects of culture in ways that at least partially reflect their specific interests or needs. Some focus on behaviors, others more directly investigate the mechanisms that shape patterns of behavior. While a single definition of organizational culture is elusive, people generally agree that organization culture exists at different levels of abstraction. Schein (1985, 1992) concludes that there are three fundamental layers at which culture manifests itself: observable artifacts, espoused values, and basic underlying assumptions. Using an iceberg as a metaphor, artifacts are the most superficial and observable layer and are "above the water." They include symbols, organizational languages, narratives (e.g., stories and legends), rites and ceremonies, and organizational practices. Artifacts make culture live. Culture is behavior and behavior is culture (Hammerich & Lewis, 2013). How the company communicates, how the leaders make decisions, how employees work together—all these are more or less observable, and they reflect the culture of the organization.

Immediately below the artifacts are values. Values are general criteria, standards, or guiding principles that people use to determine which types of behaviors, events, situations, and outcomes are desirable or undesirable. Sometimes values are explicit. They are espoused and formally endorsed by the organizations. Company websites, for example, often contain explicit and formal value statements. Some value statements are aspirational, describing what the companies want to achieve. Some are fashionable, because they seem to catch social favoritism at a given historical moment. When values are actually internalized by employees and manifested in their behaviors, they become *enacted* values.

Deep in the iceberg, below the surface of the water, are assumptions. They're an implicit part of organizational culture. Assumptions are the core of culture and are difficult to change or challenge because they are deeply engrained and sometimes hard to identify. Most organizational culture theories and models recognize both the observable and less observable components of culture. At

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Korn Ferry, we conceptualize organizational culture as *a set of shared values, beliefs, and norms that can be observed through practices, behaviors, and artifacts*.

Where does organizational culture come from?

Many theories and writings emphasize the impact of organizational leaders, sometimes with particular emphasis on organizational founders. A company's culture, particularly during its early years, is inevitably tied to the personality, background, values, and visions of its founder or founders. When founders start their businesses, "the way they want to do business" shapes and determines the organization's rules, its structure, and its hiring decisions. Southwest Airlines provides an example. The mission of Southwest Airlines is dedication to the highest quality of customer service delivered by creative and happy employees. The company's relaxed and friendly culture can be traced directly to its former CEO and co-founder Herb Kelleher. Kelleher encouraged employees to be very informal and have fun at their jobs. Kelleher fostered this type of culture by engaging in unusual acts, such as arriving at shareholder meetings on a motorcycle, wearing jeans and a t-shirt.

But culture is typically not static. It doesn't spring up and live fully mature at the beginning. It grows and can evolve over the life cycle of an organization (Childress, 2013). Schein (1990) posited that culture is closely linked to organizational survival in two important ways, viz., *external adaptation* and *internal integration*. While there are themes and issues common across companies, each company ultimately faces unique internal and external market-based realities. The latter is typically posited to be the single greatest influence in shaping company culture (Deal & Kennedy, 2000). When the environment changes, organizations must find a way to adapt and integrate in order to learn and survive. Values and beliefs mostly come from experience and from trial and error in the business environment. Culture is largely developed and evolved through joint and collective learning via an organization's experiences (Kotter & Heskett, 1992). All corporations follow a similar business life cycle. Each phase in the life cycle presents a specific set of business challenges. Hammerich and Lewis (2013) observed that organizational culture evolves in predictable ways as organizations transition from one phase to another.

How does culture impact performance?

Culture impacts performance by serving as an informal control system that communicates expectations. Informal control can be more effective than formal control because it is more likely to involve *internalized* values and impassioned behavior and action.

Culture affects organizational performance in several ways. First, culture signifies how and where the organization should focus their attention. The number one function of organizational culture is external adaptation. Organizational culture embodies what it takes for the organization to succeed in the environment. If customer intimacy is critical to success, the culture will be one that increasingly encourages customer services. If cost efficiency is required, lean philosophy may be adopted throughout the organization. Effective culture increasingly aligns collective behavior to externally influenced strategic imperatives. Second, culture implies and prescribes normative behavior. Organizational success relies on coordinated efforts. When employees are clear about what is expected, fewer hours and resources are spent and potentially wasted toward understanding proper behavior and courses of action. A strong organizational culture can thus reduce coordination costs, and it is one of the competitive sources not easily emulated or copied. Third, organizational culture drives employee engagement. Culture carries aspirational elements. When employees internalize core organizational values, they tend to sense increased fit, personal ownership, and personal responsibility. These, in turn, increase engagement and dedication among general personnel and leaders.

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The Venn diagram in Figure VC depicts the relationship between strategies, culture, and employees.

Figure VC. Relationship between strategies, culture, and employees

Researchers have tried to investigate the relationship between culture and performance outcomes. The underlying assumption is that some cultures will be superior to others in terms of driving organizational success. In a review of 10 studies examining the link between organizational culture and firm performance in over 1,000 companies, researchers suggested that there was no definitive proof of the link between the two (Wilderom, Glunk, & Maslowski, 2000). Culture certainly matters, but it is a value-neutral concept. In other words, culture is less about being good vs. bad, or positive vs. negative. It is more about having the right culture. Two companies in the same business could have very different cultures, but be equally successful.

Culture is a strategic enabler. Organizational culture markedly affects the formulation and execution of strategy; they are highly interrelated (Higgins & McAllaster, 2004). An organization's capacity to execute its strategy depends not only on its "hard" infrastructure, but also on its culture and norms (Bhide, 1996). In one study, companies with highly aligned cultures and innovation strategies had 30% higher enterprise value growth and 17% higher profit growth than companies with low degrees of alignment (Jaruzelski, Loehr, & Holman, 2011; Higgins & McAllaster, 2004; Bhide, 1996).

Is a strong culture always beneficial?

In a seminal work, Deal and Kennedy (1982) hypothesized and argued that value-driven enterprises that were strongly united around shared values would outperform competitors. Years later, some of the companies they cited as being exemplary in this way have continuously shown success, while others have stumbled or failed. As such, people continue to question if a "strong" and markedly distinctive culture is always or more often beneficial. The average life span of a Fortune 500 company is less than half a century. Yet there are companies around the world that have been in business for several centuries. In studying what facilitates company longevity, de Geus (2002) concluded that enduring companies have a personality that allows them to evolve harmoniously. They know who they are and have core purposes, but remain sensitive to the environment and understand how they fit and need to fit into the world. "These personality traits manifest themselves in behaviors designed to renew the company over many generations" (de Geus, 1997, p. 52). So, culture has purpose, but the purpose needs to address *both* external adaptation and internal coordination to ensure organizational survival (Schein, 1990). While Deal and Kennedy's (1982) "strong" culture facilitates internal coordination, it can also impose risk if markets and business environments quickly

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change. In other words, even companies with strong internal cultures are at risk for obsolescence vis-à-vis external adaptation, and the key to an effective culture is environmental alignment as much or more than strength, visibility, explicitness, or type (Jaruzelski et al., 2011). Hence, even a strong and distinctive culture becomes obsolete and/or problematic when shared values continue to guide behavior in ways that are no longer helpful or adaptive in the new market conditions and/or business environments. Market changes render certain cultural-based norms and behaviors obsolete and/or ineffective in ways that increase the possibility of organizational failure. Today, most companies or divisions of major corporations find that they must undertake moderate organizational change at least once a year and major changes every four or five years (Kotter & Schlesinger, 2008).

In many cases, change management does not work as intended. In a telling statistic, leading practitioners of radical corporate reengineering efforts report that success rates in Fortune 1000 companies are well below 50%; some say they are as low as 20% (Strebel, 1996). Change is threatening. It requires people abandoning old habits and adopting new behaviors. Unless something is done to reduce the threats and support the transition from the old to the new, an old and inert culture can undermine a strategic change effort. When the culture is strong, there is strong pressure for individuals to fit in. A strong culture may impose a great barrier to change.

The well-known demise of telecommunications technology company Nortel Networks Corporation perhaps illustrates this well. Nortel was a Canadian-based technology giant that at its peak in 2000 was the ninth most valuable corporation in the world. By June 2009, however, Nortel announced that it would sell all its business units and effectively end its over 100 years of operation. Nortel's rigid culture played, perhaps, the primary role in the company's demise and inability to react to industry changes. Calof et al., (2014) found that the company's history as a strong industry leader ultimately was also the source of its failure to adapt. Nortel's strong cultural identity and even related *pride* created markedly problematic inflexibility in its latter days. Ultimately, the company was unable to respond to evolving and even quick-changing market needs, they ignored emerging trends, and did not accept what the market and customers wanted.

Related risks involve groupthink—the desire to seek harmony and conformity among the members in a group—and its increased likelihood in strong organizational cultures. When there are very cohesive, widely shared, and strongly held organizational norms and values, it may produce groupthink. Strong organizational cultures can become dysfunctional when employees promote groupthink and avoid confronting or challenging organizational mindsets and norms for fear of being perceived as poor team members or outcasts. Groupthink may lead to poor decision making and excessive behavioral consistency that undermines flexibility, adaptability, and innovation (Tushman & O'Reilly, 2002). Janis (1982) believed that high cohesiveness does not always produce groupthink. If a highly cohesive organization welcomes opinions and ideas and invites alternatives, it is likely that problematic groupthink will be avoided even in a highly cohesive organization.

Enron's culture has been cited as an example of problematic groupthink (Haasen & Shea, 2003). Groupthink at Enron was built on almost total emphasis on increasing shareholder equity and maximizing individual profit. Diversity of thought was not welcomed and perhaps not tolerated at Enron. Individuals found it hard to challenge the organization's strategies and behavior, as the pressure was on for everyone to conform. Thus, ethics and integrity were compromised, which contributed notably to Enron's fall.

For continuous success, companies need to align their cultures with the changing business environment. For most organizations, however, formal examination of culture tends to be among secondary considerations at best, with most management focused on formal procedures such as

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budget planning, structuring, and manufacturing. Most leaders realize they need to be strategically agile. They periodically revisit their strategies to ensure their competitiveness in the market. They also restructure their organizations accordingly to implement new strategies. Cultural considerations and the utility of related well-developed theoretical lenses and insights are often overlooked or disregarded (Fealy, Oshima, Sullivan, & Arian, 2011). Cultures naturally evolve and develop, but natural evolvement tends to lag behind the frequently changing business strategies and related considerations that *are* the focus among top management (Hammerich & Lewis, 2013). When culture is allowed to develop by default, it can and often will become misaligned with strategy and structure over time. Childress (2013) described this misalignment as "cultural drift." Unless there is deliberate activity and decision making to reshape corporate culture, old and habitual behaviors can derail new and emerging strategic initiatives. Hence the increasingly popular business proverbs: "culture eats strategy for breakfast" (e.g., Aulet, 2014; Katzenbach & Leinwand, 2015),[12] and "culture eats structure for lunch" (Serewicz, 2013).

The role of leaders

Schein (1983) describes a number of mechanisms by which leaders and founders impact organizational culture. These include things like written philosophies or creeds, socialization materials, designs of physical places, deliberate role modeling, reward systems, and via stories/legends about important individuals and benchmark occurrences in the organizational history. Culture may also be shaped and communicated by leaders via what they attend to and measure, how they react to crises, how they communicate the role of hierarchy in the organization, how they share information, and by the criteria they use and support in making people decisions. These mechanisms can be explicit and implicit, and may depend largely on the personality, skills, experiences, and motivations of the leader. A leader's personality and values impact what a follower observes as being important and reinforced, which, in turn, helps followers understand the culture (Barrick & Mount, 2005; Parks & Guay, 2009). The mechanisms can loosely be clustered into communication, behavior modeling, and the introduction of new decisions, procedures, and behaviors/actions.

A leader's ability to communicate their ideas, vision, and values to the entire organization likely determines how strong and pervasive an organization's cultural identity will be. Values can be *espoused values* that individuals are supposed to hold but do not necessarily internalize. Values can otherwise be *enacted values*, which individuals do internalize, act upon, and/or use as cognitive filters in ways that are more than perfunctory. Leaders who impact culture most are effective communicators who are able to both pass along their vision (espoused values) and lead managers and employees to internalize them (enacted values). Research shows that leaders who are more honest, provide a consistent message, and share more information with others tend to foster stronger cultural identity throughout an organization (Gonzalez-Roma, Peiro, & Tordera, 2002; Zohar & Luria, 2004). Transformational leaders tend to be relatively charismatic and effective at fostering self-determined buy-in among organizational members and are, thus, typically more effective at creating a strong cultural message and related cohesion (Bass, 1990b; Burke et al., 2006; Shamir, House, & Arthur, 1993). They also tend to be more autonomy-granting and have higher expectations, which also have been linked to increased performance and "cultural assimilation" among subordinates and organizational members (e.g., Berlew & Hall, 1966; Stedry & Kay, 1966). Leaders who effectively communicate vision and related implementation plans have colleagues and subordinates who more effectively set goals, have higher self-efficacy, and generally perform better (Kirkpatrick & Locke, 1996). Culture can also be communicated through behaviors that leaders demonstrate to their followers. House (1977) suggested that those who are perceived as more nurturing, successful, and

[12] This statement is originally attributable to Peter Drucker.

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competent are more likely to be viewed as behavioral role models to others. Leaders may not only be seen as role models, but can and do shape organizational members' internalized values, emotional responses, and attitudes to their role models (Bandura, 1969), and this kind of influence is among the foundational notions of what transformational leaders ultimately accomplish.

The psychological tendencies, social behavior, and leadership styles of few or even a single senior leader can have considerable impact on organizational cultures. Organizational members attend to and process how leaders deal with crises, what types of decisions they make, and what kinds of behavior they reinforce with rewards and recognition (Bass & Avolio, 1993a). Change-oriented visionary leaders foster cultures where members care about organizational vision and are more emotionally invested in their work. Leaders focused on efficiency, stability, and process improvement emphasize more formal controls, agreements, and rewards, which can have characteristic, predictable, desirable and/or undesirable effects on culture as well (Bass & Avolio, 1993a). Increased locus of control among senior leaders is associated with organizational strategies and membership that value risk and innovation at relatively high levels (Miller, Kets de Vries, & Toulouse, 1982). O'Reilly, Caldwell, Chatman, and Doerr (2014) found evidence for several relationships between CEO personalities and culture types, including that CEO personalities and motivational profiles affect organizational culture in ways that have demonstrable implications for financial performance, revenue growth, Tobin's Q (the ratio between a physical asset's market value and its replacement value), and analysts' stock recommendations. O'Reilly et al. (2014) demonstrate that flexible and explorative CEOs foster more adaptive cultures. Extraverted and people-oriented CEOs foster results-oriented cultures, while CEO Stability (reversed) and Agreeableness are negatively associated with results orientation. Conscientious CEOs foster cultures that value and emphasize detail orientation. Other empirical studies demonstrate similar relationships and have additional potential implications for person-environment fit. Berson, Oreg, and Dvir (2008) also find close links between CEO values, organizational cultures, and organizational outcomes. CEOs who value security and certainty, for example, have more bureaucratic organizations, while CEOS valuing benevolence and cohesion have organizations with more supportive and people-oriented cultures. Lewin and Stephens (1994) proposed a number of additional hypotheses regarding the link between leader traits—such as need for achievement/power, egalitarianism, risk propensity, and moral reasoning—and strategic action.

Not only do leaders influence culture, but the culture can also impact how a leader leads (Bass & Avolio, 1993a). For instance, a leader may struggle to transform an organization to be more innovative and risk embracing if the existing culture is more cautious and compliant. In order for leaders to be successful in managing culture, they must be able to change their leadership styles quickly or exhibit different styles simultaneously to keep up with major cultural changes (Cameron & Quinn, 2006). If a leader wants to steer the organization's culture toward more of the clan culture type, they must open up the lines of communication, including listening to the needs of employees (Cameron & Quinn, 2006, p. 88). The leader must demonstrate sincerity and concern for employees, while promoting teamwork and self-management (Cameron & Quinn, 2006). Existing cultures and organizational demographics dictate the amount of latitude a leader has in changing the culture. Leaders may be better able to make major changes when the external environment is more favorable (e.g., economic growth [Cyert & March, 1963]), when there is greater competition in the industry, and when leaders are earlier in their tenures and are more readily accepted and viewed as change agents (Lewin & Stephens, 1994).

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Assessing organizational culture

Korn Ferry adopts the competing values framework (CVF) (Quinn & Rohrbaugh, 1983) to assess and think critically about organizational culture. The CVF framework identifies four organizational culture types that are derived from two main dimensions. Each dimension describes two sets of competing values. The first dimension reflects the competing demands of change and stability. One end of the dimension represents an emphasis on flexibility and discretion, whereas the other represents a focus on stability, control, and order. The other dimension reflects the conflicting demands created by the internal organization and the external environment. In responding to the conflicting demand, an organization could be internally focused or externally oriented. The four resulting culture types are clan culture, adhocracy culture, market culture, and hierarchy culture.

Tools designed to tap CVF constructs have been administered widely in organizations (Cameron et al., 2014) and researched extensively (Hartnell, Ou, & Kinicki, 2011). Empirical studies have repeatedly supported the construct validity of the competing values framework (Howard, 1998; Kalliath, Bluedorn, & Gillespie, 1999). For example, using structural equation modeling, Kalliath and colleagues (1999) found support for the four-factor structure of CVF. We describe each culture type below and, in our KF4D-Ent assessment, refer to the four Cameron & Quinn (2014) culture types as Collaborative, Innovative, Competitive, and Regulatory, respectively.

***Collaborative* (CCL).** Collaborative organizations tend toward a long-term focus on building and maintaining cohesion, community, belonging, and empowerment among members. They are people oriented and emphasize continuous development and training, particularly among internal members and stakeholders. In Collaborative cultures, the quality, morale, and commitment of human capital are most often seen as key indicators of success, as is the general sustainability of the organization. Collaborative cultures are found in all industries and markets, but often include organizations where members work toward some known social cause, shared mission, or ideal. Collaborative organizations tend to have leaders who are more likely to be characterized as facilitators, mentors, and/or community builders than bosses or supervisors.

***Innovative* (INN).** Innovative organizations focus on change, expansion, creating the new and different, and market disruption. They are often market oriented, with an emphasis on being first to market, and/or introducing novel products or ideas in ways that create growth, competitive differentiation, and advantage. They often embrace experimentation and risk, and allow individuals and business units reasonable latitude for failure in pursuit of innovation. Leaders within Innovative cultures are often seen as markedly versatile, tolerant of ambiguity, and adaptable. High achievers and typical leaders are likely to be described as imaginative, creative, entrepreneurial, artistic, and/or visionary.

***Competitive* (CMP).** Competitive organizations tend toward long- and short-term focus on profitability and earnings. They are customer and market oriented and emphasize goal setting, goal achievement, and driving for results. Success within Competitive cultures is most often defined in terms of profits, contract acquisition, sales, revenue, growth, and/or market share. They are often seen as meritocracies, and their leaders are likely to be characterized as those who work harder, drive for results, and skillfully motivate individuals and groups within the organization to do the same in pursuit of productivity, getting the job done, and focusing on the bottom line.

***Regulatory* (REG).** Regulatory organizations are characterized by the need for accountability, efficiency, and adhering to standards. They tend to be improvement and stability oriented, with an emphasis on creating efficient and reliable systems and processes. High-performance individuals are typically characterized as having cut operation costs, minimized mistakes, improved efficiency, and

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paid close attention to related details. Regulatory organizations also tend to have leaders whose rank is more clearly defined, and whose backgrounds and roles are characterized by deep knowledge and specialization that will facilitate monitoring, ensuring continuity, maximizing productivity, increasing quality, and maintaining compliance with policy and regulation.

Cultural features are not mutually exclusive. While it is not unusual for organizations to have a dominant culture, we emphasize that the four types are not mutually exclusive and—even when evaluated comprehensively—are not typically measured in a way that forces, seeks, or expects exclusivity (Heritage, Pollock, & Roberts, 2014). While the four cultural types are built on the competing cultural dimensions, they can and do coexist in single organizations. No organization's culture is characterized by one pure culture type; rather, most organizations have attributes of more than one type. In fact, many organizations may try to strike a balance through simultaneously emphasizing the collaborative culture along with the competitive culture, or the regulatory culture along with the innovative culture, for example. This is supported by a recent meta-analytic research (Hartnell et al., 2011). Results based on data from 84 empirical studies did not show negative relationships among the four culture types. The researchers suggested that organizational cultures included unique aspects from multiple culture types.

Prevailing business challenges often play a large role in determining the types of culture organizations adopt, *de facto* or *de jure*. Whether an organization has a strong dominant culture or a balanced cultural profile depends, in part, on business needs and the strategies chosen to meet them. Consider, for example, two potentially contrasting types—Regulatory and Innovative. A company that does manufacturing outsourcing for other companies may compete on the scale of economy. Coordination, standard processes, and control are highly influential in determining the company's success. In this case, a strong regulatory culture is likely to be dominant. In another company that considers product differentiation as the key to its success, the culture likely will emphasize flexibility, creativity, and innovation. Management scholars have described the differences between organic and mechanistic organizations. A regulatory culture characterizes the mechanistic organization, whereas the innovative culture tends to portray the organic organization. While early management theories proposed the inherent trade-offs or incompatibility between these two types of organizations and others (e.g., Thompson, 1967), more recent research suggests that they can and do coexist across time or simultaneously. The term "organizational ambidexterity" reflects this kind of thinking (March, 1991) and refers to an organization's ability to be efficient in its management of prevailing business demands while being adaptive to changes in the environment at the same time. Effective ambidexterity is achieved by balancing exploration that allows the organization to be creative and adaptable and exploitation where the organization relies on more traditional, proven methods of production and doing business (Tushman & O'Reilly, 2002). As such, organizations and/or units within organizations may have cultures that are more appropriately described as hybrid types. Organizations or units may be Regulatory Innovative, Collaborative Competitive, or Regulatory Collaborative, among others.

O'Reilly and Tushman (2013) identified and discussed three types of organizational ambidexterity. The first one is *sequential ambidexterity* and involves, for example, situations where an organization temporarily creates an organic and innovative environment when the exploration of new ideas is needed, and then switches to the mechanistic and regulatory environment when executional efficiency is desirable. Laplume and Dass (2012) described the evolution of a company over a 65-year period and suggested that during the first 25 years the firm emphasized sequential ambidexterity.

The second is *simultaneous ambidexterity* and refers to simultaneous pursuit of both exploration and exploitation. Organizations create separate business units or functions to deal with different business

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issues. Sub-cultures may form to reflect the common problems, goals, and/or experiences that members of a unit share. For instance, the manufacturing department of a large organization may thrive and operate according to regulatory conceptualization of culture, whereas the research and development department may be characterized as an innovative culture. Sub-cultures are more likely to develop in large and mature organizations that encompass a variety of functions and technologies. Reported conditions at the Otsuka Pharmaceutical Company provide an example of simultaneous ambidexterity. To spark innovation, Tatsuo Higuchi, president of Otsuka, emphasized the need for experimentation and out-of-the-box thinking, saying its research laboratories "put a high value on weird people" (Landers, 2003). In Otsuka units that manufacture pharmaceuticals, however, routine and precision are of primary importance, and the company prefers to have high detail orientation personnel that emphasize safety and process while rewarding and valuing employees who are comfortable following explicit rules and standard procedures. NASA may also conform to a company whose culture is simultaneously and/or sequentially regulatory and innovative in different ways (e.g., Greenberg & Baron, 2010).

The third approach is *contextual ambidexterity.* Gibson and Birkinshaw (2004) argued that organizations could be ambidextrous by designing features of the organization to permit individuals to decide how to divide their time between exploratory and exploitative activities. The environment enables and encourages individuals to make their own judgments about how to divide their time between the conflicting demands for alignment and adaptability. At Toyota, for example, workers perform routine tasks like automobile assembly, but are also expected to continuously change their jobs to become more efficient (Adler, Goldoftas, & Levine, 1999). Similarly, 3M has been known for more than 60 years to allow and encourage employees to use 15% of their paid time to pursue their own ideas.

These three forms of ambidexterity underscore the complexity of assessing and understanding organizational culture. At Korn Ferry, we do offer comprehensive solutions by which we can measure, explicate, give recommendations, and facilitate change vis-à-vis company culture. Within the context of leadership assessment, however, we take a different approach. Our cultural assessment for the typical search and selection engagement is relatively brief. It helps structure the information-gathering process and offers descriptive utility that can be leveraged when making recommendations about candidates in low volume, high touch search situations, as well as providing insights about individuals for other human resource needs, such as selection, development, succession planning, and high potential identification. This utility is enhanced by the empirical findings described later in this manual about the relationships among culture and the KF dimensions of leadership. These results have demonstrable implications for person-environment fit, which can inform diverse recommendations about individuals in organizations.

As mentioned earlier, our research-based point of view is that a value-added systematic process of talent management involves simultaneous analysis of the role, the organizational culture or ideal culture, and candidate skills, values, and traits (Eaton, 2015). Organizational culture and/or within-organization business-unit cultures should be among the key role and organizational characteristics considered during an assessment process, as they impact the extent to which individuals' motivational profiles are desirable and adaptive.

We expect our Challenge driver to be positively related to important outcomes across contexts and cultures and to be moderated by cultures or role variables in ways that rarely (if ever) preclude the positive predictive magnitude of Challenge. Given its emphasis on competition, however, we may expect to see elevated Challenge scores in the Competitive culture type. Given collaboration is consistently cited as major skill needs among employers (e.g., Levy & Rodkin, 2015), we expect that

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the Collaboration driver is positively predictive of job outcomes and fit, and that individuals driven by Collaboration find more success in Collaborative cultures or companies who want to increasingly promote a Collaborative culture. In similar ways, the Structure driver is likely to proliferate and be increasingly rewarded in Regulatory cultures or companies that seek to develop a culture with strong regulatory features. The Independence driver is likely to do the same in Innovative cultures or companies that seek to develop increasingly innovative cultural features. These and related context-based hypotheses are discussed and examined in more detail later in this technical manual.

Role variability

KF4D-Ent takes the nature of jobs into account as part of the assessment process. This enables comparison of individual assessment results against target profiles that are informed by theories and empirical evidence for role/trait, role/competency, and role/driver congruence. Before displaying and discussing empirical results, we turn to a discussion of the nature of job roles and their potential to systematically vary. Our discussion intends to focus on the nature of job *roles* and not on the psychological constitution of *employees* themselves per se, although clearly, and as we will increasingly demonstrate, the two concepts are linked in important ways. After describing our point of view concerning job roles and the importance of understanding variability in job roles, we turn to discussion of empirical findings in which we increasingly underscore that the nature of job roles can moderate the salience and sometimes the interpretation of psychological assessment scores in applied use.

Job roles are often similar. They typically involve having some degree of decision-making discretion, having some scope of responsibility, and having some degree of accountability for job-related outcomes. Throughout this technical manual, however, we also have variously made reference to the ways in which roles and role contexts can vary, and how related variability can sometimes impact the desirability of score profiles on assessments.

So how do roles vary? Consider, for example, that some are tasked with making broad organizational changes to improve efficiency or productivity, or to help guide organizations in ways that will facilitate growth and sustainability in the face of market or economic volatility. Some roles require higher levels of expertise than others, while some rely more heavily on breadth and/or social behavior for success. Some roles are characterized by clearly defined reporting relationships, while others have loosely defined or lateral relationships among co-workers, co-leaders, and stakeholders. Some roles are more strategic. Some are more tactical. Some are both. Some involve tackling quick-changing, volatile, and multiple objectives, while others focus on maintaining stability and making improvements or efficiency increases toward accomplishing well-defined, stable, or more limited objectives. In short, despite all the similarities that may exist, job roles are often markedly diverse, and inter-role differences may render particular assessment profiles more or less desirable (Lewis & Landis, 2015; Lewis & Jones, 2016; Lewis, Goff, & Hezlett et al., 2015; Tett & Guterman, 2000).

In the discussion that follows, we review related studies and later analyze data to more closely examine how roles vary in ways that are potentially meaningful vis-à-vis Korn Ferry's Four Dimensions of Leadership and Talent model, with particular attention paid to three of the four quadrants including traits, drivers, and (self-efficacy for) competencies.

A model of role differences: Architects and Builders

Recent work by Tropman and Wooten (2013), offers a compelling model explaining differences in roles/contexts and provides fodder for understanding how those differences can moderate the effectiveness of different psychological and competency profiles. Job and perhaps especially

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managerial roles,[13] they assert, are either made to be *Builders* or *Architects*. Moreover, they suggest, as have others using a similar lens (e.g., Denis, Langley, & Cazale, 1996) that the concerns of the former and the concerns of the latter are in perpetual *opposition* and *tension* to some degree. Builders and Builder evaluations depend on being organized and attuned to details and efficiency. They are focused on tactics and execution, task-orientation, maintaining the flow of operations as well as environmental control and monitoring. Signs of success for the Builder typically evoke notions of reliability, avoiding operational crises, and for management, effectively maintaining or strengthening an organization's current or legacy strongholds. Architects and Architect success, on the other hand, are far more connected to strategy and vision than with tactics and execution. The Architect eschews tactics and related details in favor of strategic vision, future orientation, and averting strategic and "directional" crises. The Architect is primarily concerned with changing, innovating, flexing, and revolutionizing than with maintaining, securing, and evolving. According to Tropman and Wooten (2013), the Architect leader role provides that the successful incumbent "does the opposite of what the organization is strong at, at the moment" (p. 327) and is, unlike the Builder, oriented to the role in a way that rarely involves deference to formal status, rank, or job title as a way of motivating and influencing.

We suggest and clarify that roles or leaders more consistent with the Tropman and Wooten (2013) Builder type are also more likely to be depth- and single-focus and legitimized as such, while Architects are likely more oriented toward breadth, quick-changing objectives, and more complex social demands. The former, given its emphasis on execution and maintenance, is also more likely characterized by (even communicated) clarity and/or pursuit of clarity in goals and solutions, while the latter is more oriented toward ambiguity, flexibility, and novelty (Avery, 2004). Denis et al. (1996) draws similar distinctions that, among other things, underscore the sometimes-opposing nature of the related types. Demands involving ambiguity, flexibility, and change are associated with models emphasizing integration, lateral and integrated role designations, collective decision making, and decentralization (Zhang et al., 2014). Stability and maintenance orientations are more associated with making consequential and clear distinctions between roles. These distinctions may emphasize the dominion of individuals with certain formal credentials, experience, or professional status based on specialized, single-focus, and/or deep and/or narrow expertise, among other things. Stability orientation to roles and management, while sometimes desirable, is nevertheless sometimes described as "defensive" and "protectionist," and promotes conditions that may be effective but are generally sub-optimal for innovative pursuits, particularly when transactionally oriented employees lack adaptive emotional constitution (Liu et al., 2011). Stability orientations are more oriented toward change as containable and incidental, and may even sometimes regard strategic and innovative orientation as irresponsible, stress inducing, illogical, threatening, unprovable, irrational, or even subversive. Nonetheless, stability and rules-oriented leadership and orientation are still sometimes optimal (Kotter, 1990) and positively or more positively predictive of desired outcomes in general or in some contexts, even managerial contexts (Harms & Crede, 2010). It's likely more effective, for example, for small groups and *quantitative production-related* outcomes than is visionary-change management (Lowe, Kroeck, & Sivasubramanian, 1996). It is also still found at high levels among even top executives (Brown & Moshavi, 2002; Harms & Crede, 2010).

Common sense and the extant literature clearly support that any model, and perhaps especially a two- (and sometimes mutually opposing) type model of job and management roles is limited and will likely fail to capture general or domain-specific ways in which types are not mutually exclusive or adequately described. Research has found, for example, that despite early and even persistent theoretical leanings, *transactional* and *transformational* leadership (e.g., Builders and Architects in leadership) styles are not

[13] Discussion more pertinent to all and lower levels of the management pipeline is undertaken below.

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mutually exclusive even within individuals, and neither style clearly holds a monopoly on effectiveness across or perhaps even within a given context or characterization of a context (Bass, 1985). A given job or managerial role may very much require, for example, both strategic and tactical input and preoccupation. A role or leader characterized in general or in emphasis as an Architect likely still needs to invoke both formal rank and lateral informal influence to motivate and lead at different times. Any manager called upon to make significant organizational changes may do so primarily by building and strengthening relationships, securing broad consensus, influencing with social/emotional appeal, and facilitating widespread internalized agreement and collective values that motivate and evoke increased discretionary effort and commitment in others. Other change-oriented managerial roles, however, may necessarily involve firing people, radically and deliberately restructuring, and/or making rank-legitimized implied or explicit ultimatums to groups or individuals. Some change agents may need to do both. As such, KF4D roles and role variability adopts and allows for a lens shaped by related theories and seeks primarily to describe individuals and jobs in terms of *balance* or *relative emphasis* on related variables. Roles may have a clear mix of stability and transformational demands, or they may require relative emphasis on one or the other in various ways.

Measuring the nature of job roles for KF4D-Ent

How should the diverse demands of job roles be understood and characterized? That is, given clear evidence of role variability, what methods are appropriate for analyzing the requirements of roles? Traditionally, in I-O Psychology, a systematic job analysis is conducted to understand the nature of a job role and what it requires in terms of skills, abilities, and/or knowledge for success (Brannick, Levine, & Morgeson, 2007). Related practices were originally developed primarily for task-based personnel and often involve things like measures of manual dexterity, physical ability or strength, and/or clearly defined experiences and "hard skills" that are either of little importance to managerial roles or are otherwise established via resume, background, and reference checks. Traditional job analysis is often atheoretical, can create difficult challenges to generalizability across jobs and organizations (May, 1996), and often involves repeatedly administering survey instruments with many hundreds of items (e.g., Johnson & Carter, 2010; McCourt & Eldridge, 2003).

More recent thinking characterizes traditional job analysis as increasingly obsolete (Sanchez & Levine, 2011). In their review, Atchison, Belcher, and Thomsen (2013), for example, characterize traditional job analysis, saying "...the future of job analysis is in doubt...(because jobs) are now more fluid and flexible...(and) more generic...(job descriptions are now designed) to accommodate the growth of the individual... There is (now) greater concern with the person aspects of job analysis, such as personality traits required for success or competencies and interpersonal relationships, than with traditional work-related topics." Similarly, Singh (2008) argues that traditional job analysis is linked to an outdated perspective on what a "job" is—one that assumes jobs to be "encapsulated" and clear-cut, relatively distinct entities that are relatively static and have clear boundaries. As such, Singh (2008) maintains that assumptions underlying traditional job analysis reflect, among other things, increasingly problematic and outdated distinctions between "managers" and "laborers."

In light of emerging research on job analysis, we choose to make a distinction between traditional task-oriented job analyses and what high-profile researchers have otherwise referred to as trait- or values-based job analyses (Costa, McCrae, & Kay, 1995; Tett & Burnett, 2003). The latter is relatively congruent with emerging consensus on job analysis (Atchison et al., 2013) and is based on notions of situation-trait relevance, person-situation interactionism, and related frameworks (e.g., Tett & Guterman, 2000), asserting that *psychological* dispositions and individual motives are important to the extent that environments provide cues and needs that allow for or require their expression. Building on this and relating theories, Tett and Burnett (2003) argue that any trait or trait-like

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measures used for supplemental determination of fit or for predicting success in jobs is best and most appropriately employed in conjunction with a related work-analysis used to determine the extent to which measured dispositions are in demand and required for success in the role under consideration. The importance of utilizing work-analysis variables is underscored by the previously reviewed studies showing that the nature of job roles moderates the extent to which a given disposition or measure is related to success, and related moderation can render a particular construct or construct-profile positively, negatively, or even unrelated to job performance, satisfaction, fit, turnover, or any other outcome of interest.

Elsewhere (Lewis, Goff, & Hezlett et al., 2015), we have explicated a six-dimensional model of work-analysis for use with high-level executive search engagements. Here (in KF4D-Ent), we seek a more parsimonious and scalable model for use with *all* levels of management and contributors in the workplace. To do so, we make reference to the career interests literature (Holland, 1973; Borgen, 1986) which has a long history and is well developed within applied psychology. Although the model was originally developed to explicate the nature and variability in career *interests*, we offer, as have many within the field of Functional Job Analysis (e.g., Fine & Cronshaw, 1999; Gatewood & Field, 1991), that its language, concepts, and utility also extend into application for work analysis and, for our purposes, represents a more parsimonious version of our executive-level six-factor model while maintaining flexibility and potential for diverse application.

Holland's model (1959; 1973) and critical extensions by Prediger (1982) provide that job roles can be described according to a two-dimensional framework, wherein one bipolar dimension taps the extent to which jobs involve *Ideas* vs. *Data*, and another bipolar dimension taps the extent to which jobs involve *People* vs. *Things.* Ideas jobs involve abstract problems that often require innovation, intuition, creativity, imagination, big-picture orientation, ambiguity, lack of structure, and lack of immediate clarity. Conversely, jobs involving data tend toward more concrete problems, stability-orientation, detail-orientation, and single focus. They more typically involve clear instruction, known processes and solutions, routine, and conventionality. Individuals having ideas jobs are thinkers, creators, and—in cases with a marked social component—they are also "helpers" (Tracey & Rounds, 1995). Individuals in data jobs include doers, organizers, and—in cases with a marked social component—"persuaders." People jobs involve mentoring, negotiating, instructing, consulting, supervising, persuading, discussing, speaking, influencing, and serving. Individuals in people jobs may develop talent, counsel, manage people, teach, lead, collaborate, provide customer service, and/or help to facilitate goals or provide resources for others. Conversely, individuals in jobs involving things tend to work primarily with objects and in ways that evoke notions of precision, methodology, operating, driving, preparing, manipulating, tending, and doing maintenance to things such as machinery, computers, or anatomies.

Prediger's (1982; also see Prediger & Swaney, 2004) two-dimensional bipolar model was built upon Holland's (1959; 1973) older "RIASEC" model, which purported that career interests were usefully described in terms of 6 types, viz., Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. Although various discussions have qualified his assertions (e.g., Tay, Su, & Rounds, 2011; Rounds & Tracey, 1993), Prediger (1982) argued that each type can be described according to a single position on the aforementioned two bipolar continua. More recent work by Tracey and Rounds (1995) empirically demonstrates that the Holland (1973) 6-type taxonomy is ultimately arbitrary, and that an 8 group, 16 group, and potentially other taxonomies can be reasonably fit using the ideas/data and people/things continua. "The number of…[types] is a matter of convenience" (Tracey & Rounds, 1995, p. 431) they argue and empirically demonstrate while discussing the relative utility of different taxonomies in different contexts. Figure JT below is modified from Tracey and

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Rounds (1995) and shows their proposed 8-type taxonomy represented by an octagon surrounding Prediger's (1982) poles. Note that, among other potential taxonomies, an additional outer circle or hexadecagon containing 16 types can also be included, as can the 6-type RIASEC model with an inner circle or hexagon. These are not shown. Ultimately, the ideas/data and people/things continua can be employed to support a variety of taxonomies. In the sections that follow, we make primary use of Tracey and Rounds (1995) 8-type, but display also the RIASEC and other types in Table TAX below for completeness and clarity, and to explicate how ideas/data and people/things continuous (*z*) scores might and can be situated to create different types. Table TAX also shows typical management levels for each type as implied, using a simple model wherein management level is regressed on both the ideas and people (*z*) scores.

We employ (in addition to management level) the two-dimensional model of work-analysis that describes role variability. These work-analysis variables are expected to interact with assessment profiles to inform person-role fit. To review, we assert that roles are more or less ideas vs. data oriented. The former involves goal setting, vision, and ambiguity, while the latter involves driving execution and carrying out strategic initiatives, prescriptive tasks, and is more often unifocused. Second, roles are either people or things oriented. Some roles may be more or less characterized by a need for skilled and adaptive social behavior as a common component and key to success, while others are not. We further posit that the poles of each conceptual continuum taken together tend to contribute to roles that loosely conform to notions of transformational or Architect roles (strategy, change, nonprescriptive, social influence, ambiguity) or transactional/stability roles, viz., Tropman and Wooten's (2013) Builder type (prescriptive execution, relatively low social demands and clarity).

Figure JT. Concentric representation of vocational types with alternative names. Adapted from Tracey & Rounds (1995)

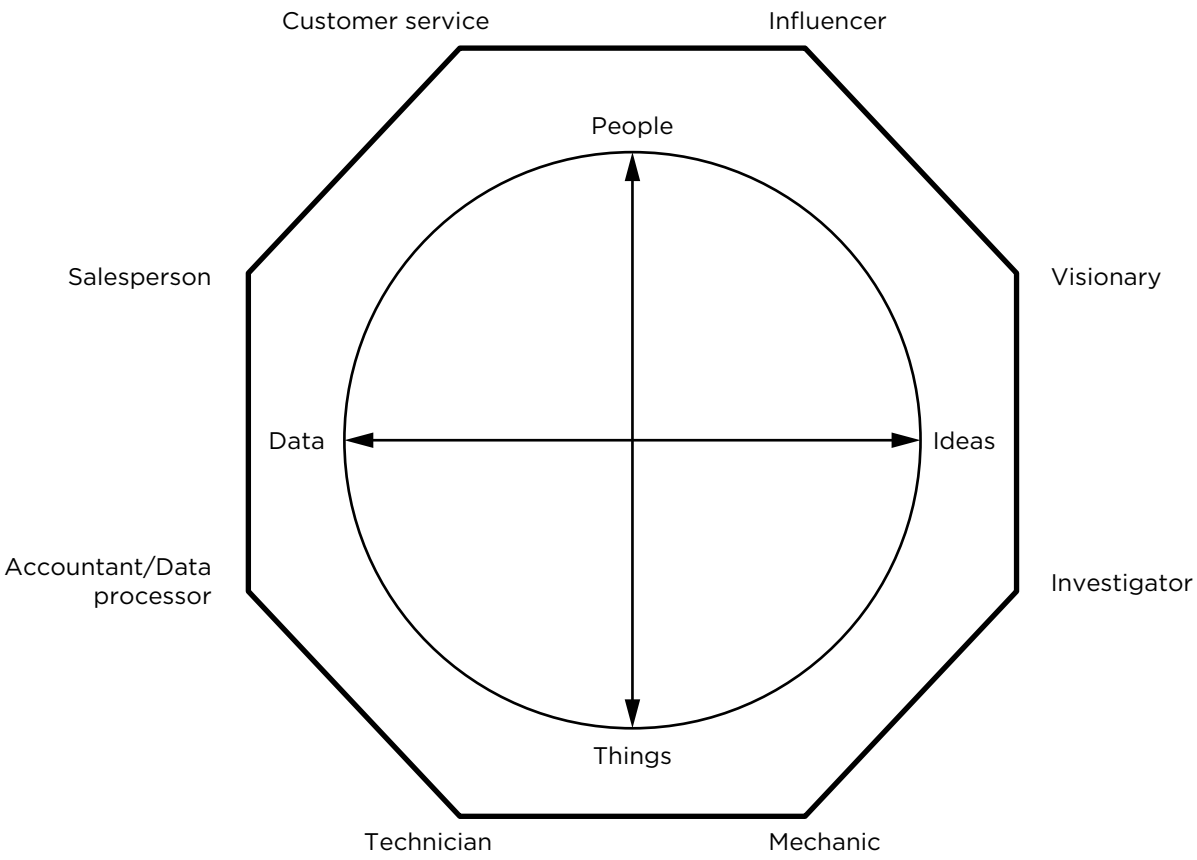

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Table TAX. Different type expressions of Ideas/Data and People/Things continua

	IDEAS (DATA)	PEOPLE (THINGS)	TYPICAL MANAGEMENT LEVEL	ALTERNATE TYPE NAMES
Tracey & Rounds Types				
Helping	1	2	4.60	Influencer
Artistic	2	1	4.66	Visionary
Investigative	2	-1	3.99	Investigative Scientist
Mechanical	1	-2	3.26	Mechanic
Technical	-1	-2	2.48	Technician
Business Detail	-2	-1	2.42	Accountant/Data Processor
Business Contact	-2	1	3.09	Salesperson
Service	-1	2	3.82	Customer Service
Holland RIASEC Types				
Social	0	2	4.21	--
Artistic	2	1	4.66	--
Investigative	2	-1	3.99	--
Realistic	0	-2	2.87	--
Conventional	-2	-1	2.42	--
Enterprising	-2	1	3.09	--
Tropman & Wooten Types				
Builder	-1	1	4.50	--
Architect	2	2	7.00	--
Tracey & Rounds 16 Types				
Counseling	0.5	2	4.40	--
Psychology	1	1.5	4.43	--
Language Arts	1.5	1	4.46	--
Creative Arts	2	0.5	4.49	--
Life Sciences	2	-0.5	4.15	--
Hard Sciences	1.5	-1	3.79	--
Engineering	1	-1.5	3.43	--
Mechanics	0.5	-2	3.07	--
Electrical	-0.5	-2	2.68	--
Contracting	-1	-1.5	2.65	--
Data Processing	-1.5	-1	2.62	--
Accounting	-2	-0.5	2.59	--
Banking	-2	0.5	2.93	--
Sales	-1.5	1	3.29	--
Personnel	-1	1.5	3.65	--
Serving	-0.5	2	4.01	--

Note. Negative ends of each continuum appear in parentheses. Ideas and People are *z*-scores. Typical Management levels for the first two and final taxonomies are model implied from an analysis wherein Management level is regressed on both Ideas and People. For the Tropman & Wooten types, Management level is imputed. For Management level, 0 = Entry level Individual Contributor and 8 = CEO.

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SECTION 5
Measurement methods

Measurement and datasets

In forthcoming sections, we begin to test hypotheses and describe empirical results and findings related to KF4D-Ent measures, how they impact and correlate with outcomes and work-analysis variables, and how related relationships are moderated in expected and intuitive ways. Before we do, however, we first turn our attention to explicating our measurement models for each of the traits, competencies, and drivers which we have described in previous sections. Then, before moving on to correlational and empirical findings, we describe the various and primary samples that were secured and analyzed in pursuit of construct and criterion-related validity.

Measurement models

Addressing the problem of faking

Psychometricians are increasingly concerned with known response distortions associated with prevailing Likert-style response formats in psychological measurement (Stark, Chernyshenko, Chan, Lee, & Drasgow, 2001). As evidence of the validity of personality assessments for predicting job performance has accumulated, their use has increased, spurring applicant interest in gaining an advantage on them. The growing availability of self-coaching materials and use of unproctored internet-based tests has further contributed to the potential for faking to be increasingly problematic (Sliter & Christiansen, 2012).

Psychological measurement professionals, where applicable, have long developed and employed social desirability and/or "faking scales" in order to detect faking and deal with related problems. When detecting faking in this way, however, it is difficult to know how to proceed. In research settings, a completed assessment that appears to suffer from intentional response distortion may simply be thrown out. In applied settings, coaches and decision makers faced with using assessment results may simply be warned that the results are perhaps untrustworthy and to proceed with caution. Yet others have attempted to use results from faking detection or social desirability scales to adjust observed scores in diverse ways (Goffin & Christiansen, 2003). Such methods, however, have been repeatedly criticized as being arbitrary and difficult to validate (McCrae & Costa, 1983; Goffin & Christiansen, 2003).

Ipsative response formats also have been developed and employed to combat faking. These formats force respondents to make choices between items and endorsement magnitudes. For example, respondents may be asked to choose which of two statements is more like them. They do not allow for extreme high or extreme low endorsement of *every* item and, as such, have been variously developed and employed to combat faking (Sackett & Lievens, 2008). In addition to combating faking, ipsative measurement can markedly reduce response bias, "halo" or leniency effects, and response variance attributable to individual response styles not immediately associated with item content (Bartram, 2007; Cheung & Chan, 2002). For example, on a Likert-type scale, some respondents are just more likely to use the extreme anchors and, consequently, more "strongly agree" or "strongly disagree" with things that they would otherwise endorse (or not endorse) more moderately. Scale scores based on Likert-type items are likely to contain related variance in addition to construct true-score variance. Although ipsative response formats offer a means to address faking and response bias problems, when used in combination with pervasive classical scoring methods,

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traditional forced-choice response formats produce scale scores that are problematically auto-correlated and interdependent (Brown & Maydeu-Olivares, 2011). In other words, ipsative response data scored with traditional and pervasive methods ensure that estimated person-scores on particular constructs are, in very large part, a direct and artificial reflection of person-scores on the other constructs contained in forced-choice response dichotomies or multi-item blocks (Heggestad, Morrison, Reeve, & McCoy, 2006). This dependency makes normative comparisons across individuals difficult and violates the assumptions of many commonly used statistics.

Forced-choice IRT models

For decades, researchers in psychological measurement have sought to tackle related problems associated with ipsative measures. Stark, Chernyshenko, and Drasgow (2005) developed a pairwise preference ideal point model that addresses most related problems by pairing and presenting items with similar levels of social desirability and by employing scoring and parameter estimation methods that are shown to perform well under certain conditions vis-à-vis eliminating ipsative auto-correlation. To obtain person-scores with markedly high relative efficiency, Stark & Chernyshenko (2007) point out that the number of pairwise preference ratings needed to obtain reasonable person-score standard errors may be particularly high in non-adaptive testing situations. Hence, the Stark et al. (2005) pairwise preference model works best and is markedly more efficient with computer assisted adaptive testing administration, wherein item presentation is customized according to real-time response patterns, both in terms of item/block presentation and the number of items/blocks presented prior to estimating final construct score estimates. Where fixed form administration is optimal or necessary, test administration and reliability using the Stark et al. (2005) model may require many more items than desirable and may generally limit its (perceived) feasibility. Also, Brown and Maydeu-Olivares (2010) point out limitations associated with the model's reliance on an ideal point measurement framework. These limitations include the relative difficulty of writing items, the lack of invariance in parameter estimates and model fit when reversing item coding, and the apparent reduced accuracy of item parameter estimation (Maydeu-Olivares, Hernandez, & McDonald, 2006).

As an alternative, Brown & Maydeu-Olivares (2011) developed a structured multidimensional forced-choice IRT model that addresses problems associated with faking, response bias, and ipsativity while also addressing some of the limitations of the paired preference Stark et al. (2005) model. The authors describe a linear model that is linear in differences between latent traits. The latent states are directly manifest by binary comparisons of items that are otherwise presented in ipsative/forced-choice blocks. The model rearranges forced-choice responses into a series of exhaustive binary comparisons, thereby allowing for components of non-ipsative trait measures to drive parameter estimation, scoring, and interpretation of person-scores. The model is novel in that it creates a relative independence among otherwise predictably auto-correlated forced-choice based construct scores. It is flexible in terms of forced-choice block sizes and is feasible in that parameters and scores can be estimated using existing popular statistical software packages, including Mplus (Muthen & Muthen, 2010). We also have developed a related *R* package (Zes, Lewis, & Landis, 2014) that similarly estimates the Brown & Maydeu-Olivares (2011) model and related extensions of it.

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KF4D-Ent IRT model

Our measures of traits, drivers, and competencies are all administered in forced-choice response format in order to decrease potential problems associated with faking and response bias. Each construct type is grouped together in its own test form. Traits are measured with traits, drivers with drivers, and competencies with competencies. Construct scores are estimated using a modification (Zes et al., 2014) of the Brown and Maydeu-Olivares (2011) Forced-Choice Item Response Theory (FCIRT) model to arrive at construct estimates whose correlations are based on the nature of the constructs and not according to forced-choice item response format artifacts.[14] Eight items were designed to tap each trait, and trait response blocks contain four items each. Competencies are tapped using eight items as well, and each driver is measured using ten items. Response blocks for these domains contain seven and six items each, respectively. An example of a forced-choice multi-item block from the drivers test form is shown in Figure FC1. This example illustrates that each response block is comprised of items measuring multiple scales within the domain. That is, for each trait, competency, or driver response block, there is no more than one item from each scale.

Figure FC1. Example six-item block

Item 1	Well-defined work objectives.
Item 2	Situations without a winner and a loser.
Item 3	Having high status within the organization.
Item 4	Avoiding meetings so I can focus on my work.
Item 5	Developing myself beyond work.
Item 6	Consistent direction in my career.

Upon seeing a block of items, candidates are tasked with ranking the items from "Most" to "Least" on some continuum. Specifically, in this example, candidates would be asked to rank the items from "Most preferred" to "Least preferred."[15]

[14] In early developmental efforts, we administered and scored forced-choice based trait scales and Likert-based trait scales of the same items and constructs to the same individuals and found, much as Brown & Maydeu-Olivares (2011) did, that alternate-form correlations between the same constructs typically had magnitudes consistent with most conceptualizations of alternate test form construct convergence (e.g., $r > .70$ in every case).

[15] For the competency and trait dimensions, candidates are asked to rank blocks of items from "Most like me" to "Least like me."

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To set the stage for the FCIRT model, assume that we have a test composed of several six-item blocks (as with the drivers test form, which has 10 six-item blocks) where each item in a given block measures a unique construct or dimension (much like the example in Figure FC1). Further, assume that candidates are asked to rank the items from "Most preferred" to "Least preferred." To model this setup using FCIRT, we first employ a Thurstonian Comparative Model (Brown & Maydeu-Olivares, 2011; for the origin of this model, see Thurstone, 1927). Using this model, for a given block of six items, there are six latent utilities/thresholds, t_i. If a candidate prefers or ranks item *i* larger than item *j*, then the utility for item *i*, t_i is larger than the utility for item *j*, t_j. This information can be coded in a comparative task as

$$y_l = \begin{cases} 1 & \text{if} \quad t_i \geq t_j \\ 0 & \text{if} \quad t_i < t_j \end{cases} . \qquad (1)$$

Using this coding, if the latent utility for item *i* is larger than the latent utility for item *j*, the observed response, y_l is represented by 1 (i.e., $y_l = 1$ denotes that item *i* is ranked higher than item *j*). Then, for a block of six items, there are fifteen possible comparative tasks. With this setup, we can model the comparative tasks a latent factor model. To do so, we first note that the observed response, y_l, is dependent on a difference of two item utilities. This difference can be represented as a latent comparative response, $y_l^* = t_i - t_j$, such that

$$y_l = \begin{cases} 1 & \text{if} \quad y_l^* \geq 0 \\ 0 & \text{if} \quad y_l^* < 0 \end{cases} . \qquad (2)$$

Because we are assuming that the items measure a latent construct, we can model each item's utility as a linear function of the underlying latent construct as

$$t_i = \mu_i + \lambda_i \eta_a + \epsilon_i, \qquad (3)$$

where μ_i denotes the mean of the latent utility, λ_i denotes a factor loading/discrimination, η_a denotes a common latent factor underlying the utility t_i, and ε_i denotes a unique factor. Moreover, we assume that each item measures one and only one latent trait, that the common and unique latent constructs are orthogonal and normally distributed, and that unique factors across items are orthogonal.

Notice from (1), (2), and (3) that we have a nested latent structure. Specifically, we have modeled each observed binary response as being dependent on a latent comparative response, which, in turn, is dependent on a linear combination of an underlying latent trait. This nested latent structure is typically referred to as a second-order factor model. As is well known (Takane & De Leeuw, 1987), many IRT models are equivalent to factor models of dichotomous variables. As shown by Brown and Maydeu-Olivares (2012), we can recast the second-order factor model as a first-order Thurstonian IRT model via reparameterization.

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To reparameterize the model, we rewrite each latent comparative response as

$$y_l^* = (u_i - u_j) + \lambda_i \eta_a - \lambda_j \eta_b + e_i - e_j. \quad (4)$$

If we assume for the moment that the two traits are known, or conditioned on, and recalling the assumption that the traits and unique factors are normally distributed, then the item characteristic function for preferring item *i* over item *j* for a person can be written as

$$P(y_l = 1 | \eta_a, \eta_b) = N_{CDF} \left(\frac{(u_i - u_j) + \lambda_i \eta_a - \lambda_j \eta_b}{\sqrt{\Psi_i^2 + \Psi_j^2}} \right), \quad (5)$$

where ψ_i^2 is the variance of item *i* uniqueness. Notice that the function is a standard normal ogive, which in this case is an IRT model that is dependent on two latent traits. Using this setup, the observed ipsative measurement model is transformed and effectively becomes a normative latent IRT model.

Traits and drivers correlational analyses sample

Measurement calibration for our traits and drivers assessments have been described elsewhere (KF, 2015-2016) and the same parameters have been applied throughout this manual to score incumbents and secure raw IRT scores on all KF4D traits and drivers measures. KF4D IRT raw means and standard deviations from the sample described below served as parameters for creating the *z*-scores (*M* = 0, *SD* = 1) and percentiles reported throughout this technical manual.

For our correlational analyses, we secured demographics, work-related variables, and trait/driver scores from 27,699 professionals completing assessments as part of client-funded human resource initiatives from 2013 through 2016, primarily from engagements using the Korn Ferry Assessment of Leadership Potential described elsewhere (KFALP, KF, 2015-2016). We refer to this as Sample 1. Participants were individual contributors and managerial professionals who were primarily full-time or part-time employees of companies with a range of sizes and revenues and personal income levels. Participants described themselves as male (68.19%) or female (31.81%), and reported ethnic backgrounds including Black or African American (4.26%), Asian, (10.45%), Hispanic-Latino (4.92%), Native American (<1%), Pacific Islander (<1%), White (77.76%), or two or more races (2.16%). Participants' self-reported choice of ordinal managerial levels included individual contributors (12.86%), team leads (5.88%), first-level leaders (10.05%), mid-level leaders (16.61%), functional leaders (17.94%), business-unit leaders (17.48%), senior/top functional executives (12.22%), senior/top business-unit executives (5.26%), and CEOs (1.71%). Participants also reported their nationality, which yielded a list of over 110 countries. Twelve relatively high-number nations (>2% of the sample) accounted for approximately 70% of the incumbents. These included the United States (22.30%), Great Britain (4.04%), India (7.24%), France (2.26%), Japan (6.99%), Spain (3.94%), China (7.75%), Germany (2.47%), Canada (2.78%), Brazil (2.87%), Australia (2.55%), Argentina (2.10%), and Saudi Arabia (4.29%).

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Competencies measurement calibration and correlational analyses sample

Measurement calibration and correlational analyses for KF4D competencies were based on a single sample of 1,669 respondents who took the assessment in English and reported demographics, work-related variables, and competency forced-choice item responses. We refer to this as Sample 2. Participants, again, were secured from clients pursuing human resource initiatives involving self-report assessments data and were primarily full-time or part-time employees with variable income (minimum = $10,000; maximum = $3,100,000 annual base salary) and of companies with variable size and revenue. Participants described themselves as male (70.03%) or female (29.97%), and (some) reported ethnic backgrounds including Black or African American (2.30%), Asian, (5.29%), Hispanic-Latino (2.60%), Native American (0.40%), Pacific Islander (0.30%), White (88.01%), or Other (1.10%), while some declined to indicate (0.60%). Participants' self-reported selection of ordinal managerial levels included entry-level individual contributors (5.33%), mid-career individual contributors (9.53%), top-practitioner individual contributors (3.54%), first-level supervisors (11.98%), those who manage first-level supervisors (15.70%), functional leaders (24.39%), business-unit leaders (11.56%), senior/top functional executives (10.31%), senior/top level group executives (5.09%), and CEOs (2.58%). Participants reported their nationality, which yielded a list of over 85 countries. Six high-number nations (>3% of the sample) accounted for approximately 70% of the incumbents. These included Australia (15.66%), the United Kingdom (10.14%), the United States (25.74%), France (5.83%), China (5.41%), and Brazil (4.37%). Managers of first-level supervisors score means and management-level referenced pooled standard deviations served as parameters for creating the *z*-scores (M = 0, SD = 1) and percentiles for competencies utilized and reported throughout this technical manual.

Results, IRT parameters and reliabilities

Traits. All 20 traits were modeled simultaneously. They all show acceptable discriminations/loadings for each item ($\lambda \geq |.31|$) both in terms of magnitude and direction of effect, such that all negatively worded items and all positively worded items had negative and positive discriminations, respectively.

Higher-order trait factors were based on standardized mean composites of the *a priori* and previously discussed conceptually assigned subdomains of each. Traits were equally weighted in their respective mean composites. Figure TRCFA shows a confirmatory factor analysis (with a maximum likelihood estimator) for the 20 traits reduced into the previously discussed five higher-order trait factors. The pattern of loadings ($\lambda \geq .30$ in every case) and the acceptable fit (RMSEA = .05) of the model provide support for our grouping of traits, as such. The five-factor model accounted for between 11% and 54% of the variance in each of the trait subdomains (M = 30.73%). All constructs single-loaded onto higher-order factors, with two exceptions. The first exception involves the Focus measure, which dual-loaded onto both Agility and Striving, as expected, having a standardized loading of $\lambda \geq .30$ in both cases. Openness to differences also dual-loaded onto both Agreeableness ($\lambda = .39$) and Agility ($\lambda = .30$), as expected. We retain our *a priori* factor structure in light of the general patterns of loadings, the acceptable fit of the confirmatory model, the large corroboration of our expectations, and our desire to retain the conceptual basis and related descriptive utility of our *a priori* higher-order trait expectations.

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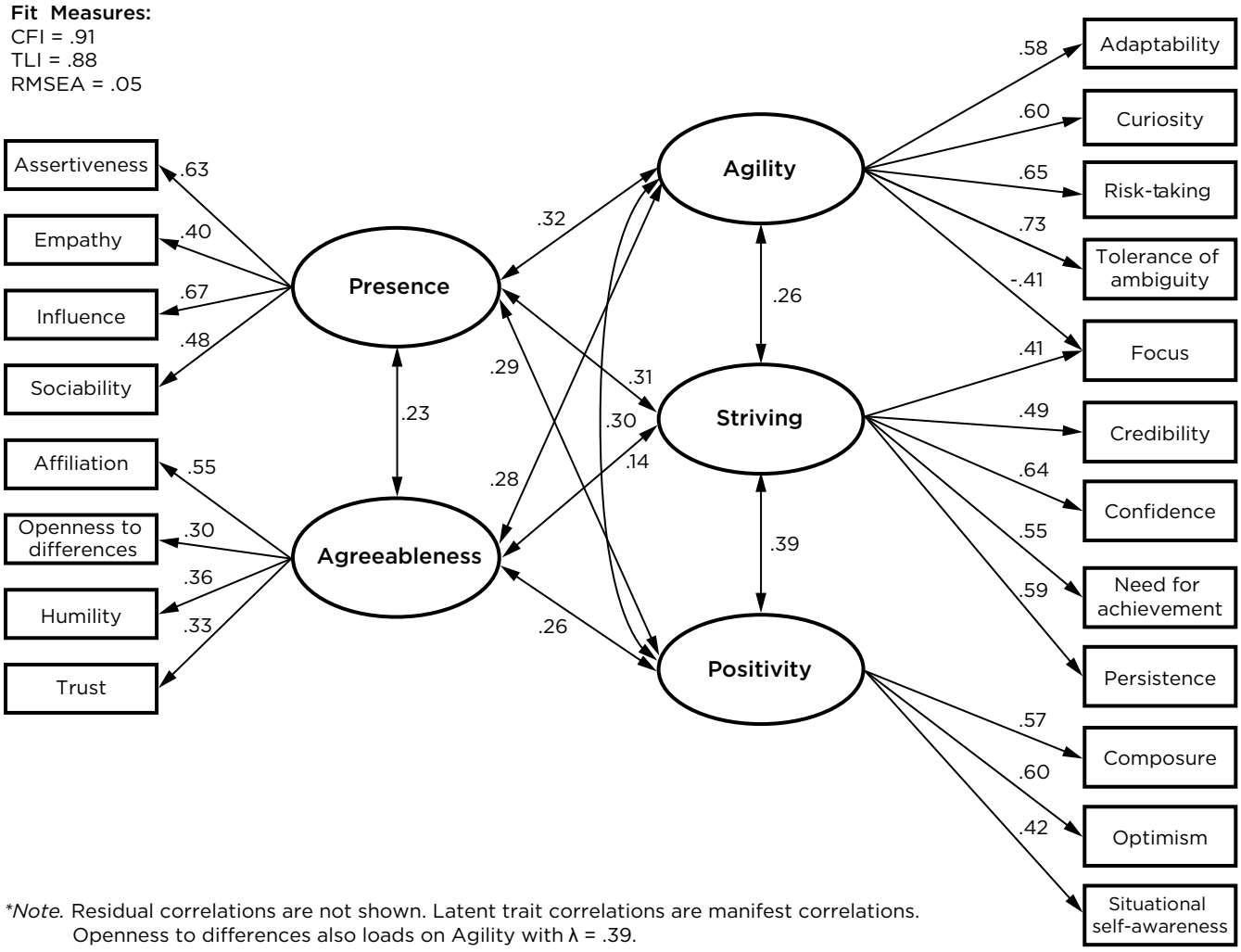
Figure TRCFA. Standardized confirmatory measurement model for constructs designed to tap higher-order trait dimensions*



Note. Residual correlations are not shown. Latent trait correlations are manifest correlations. Openness to differences also loads on Agility with λ = .39.

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Trait score reliability estimates (r'_{tt}) can be examined in Table RTRAIT. For each of the 20 subdomains, composite reliabilities were computed by averaging across all trait range reliabilities. Higher-order trait reliabilities were based on Mosier's (1943) method. Acceptable reliabilities were observed for each of the 20 traits and the five higher-order trait factors ($r'_{tt} \geq .65$ in every case).

Table RTRAIT. Composite reliabilities for traits

FACTORS	TRAITS	RELIABILITY ESTIMATE
AGILITY		
	Adaptability	0.74
	Curiosity	0.74
	Focus	0.75
	Risk-taking	0.73
	Tolerance of ambiguity	0.75
AGREEABLENESS		
	Affiliation	0.74
	Humility	0.70
	Openness to differences	0.76
	Trust	0.71
POSITIVITY		
	Composure	0.78
	Optimism	0.71
	Situational self-awareness	0.65
PRESENCE		
	Assertiveness	0.77
	Empathy	0.71
	Influence	0.76
	Sociability	0.77
STRIVING		
	Credibility	0.72
	Confidence	0.74
	Need for achievement	0.75
	Persistence	0.78
HIGHER-ORDER COMPOSITES		
	Agility	0.89
	Agreeableness	0.82
	Positivity	0.82
	Presence	0.86
	Striving	0.86

Note. Subdomain reliabilities are average trait range reliabilities from estimated IRT scores. Composite score reliabilities are Mosier (1943) reliabilities.

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Drivers. IRT parameters for drivers show acceptable discriminations/loadings ($\lambda \geq |.56|$) for each item both in terms of magnitude and direction of effect, such that all negatively worded items and all positively worded items had negative and positive discriminations, respectively. Reliabilities for drivers can be examined in Table RDRIVE, and again show acceptable test reliability for each ($r'_{tt} \geq .70$ in every case).

Table RDRIVE. Composite reliabilities for drivers

DRIVER	RELIABILITY ESTIMATE
Balance	0.77
Challenge	0.78
Collaboration	0.80
Independence	0.77
Power	0.77
Structure	0.70

Note. Reliabilities are average driver range reliabilities from estimated IRT scores. Based on simulations, an empirical adjustment of -.05 has been added to each reliability.

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Competencies. As for traits and drivers, IRT parameters for all 30 competencies were modeled simultaneously and, like both traits and drivers previously, results show acceptable discriminations/loadings ($\lambda \geq |.51|$) for each item both in terms of magnitude and direction of effect, such that all negatively worded items and all positively worded items had negative and positive discriminations, respectively. Six competencies were constructed as equally-weighted mean composites of other competencies. These included: (1) Action oriented (Ensures accountability, Courage, Decision quality, Directs work, Drives results), (2) Interpersonal savvy (Collaborates, Manages conflict, Values differences, Situational adaptability), (3) Being resilient (Ensures accountability, Manages ambiguity, Manages conflict, Drives results, Situational adaptability), (4) Builds effective teams (Collaborates, Develops talent, Values differences, Directs work, Drives engagement), (5) Optimizes work processes (Decision quality, Directs work, Plans and aligns, Resourcefulness), and (6) Communicates effectively (Collaborates, Values differences, Directs work, Situational adaptability). Constructs comprising composite competencies were selected according to guidance given elsewhere (KF, 2014); composites were used in order to manage the length of the assessment. For non-composite constructs, as with traits and drivers, reliabilities were computed by averaging across all trait range reliabilities. Composite construct reliabilities were based on Mosier's (1943) method. Reliabilities for competencies can be examined in Table RCOMP, and again show acceptable test reliability for each ($r'_{tt} \geq .72$ in every case).

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Table RCOMP. Composite reliabilities for competencies

FACTOR	COMPETENCY	RELIABILITY ESTIMATE
THOUGHT		
	Balances stakeholders	0.78
	Cultivates innovation	0.76
	Customer focus	0.79
	Decision quality	0.77
	Global perspective	0.76
	Strategic mindset	0.77
RESULTS		
	Action oriented	0.90
	Directs work	0.79
	Drives results	0.72
	Ensures accountability	0.78
	Optimizes work processes	0.88
	Plans and aligns	0.78
	Resourcefulness	0.77
SELF		
	Being resilient	0.88
	Courage	0.78
	Instills trust	0.75
	Manages ambiguity	0.78
	Nimble learning	0.79
	Self-development	0.81
	Situational adaptability	0.79
PEOPLE		
	Builds effective teams	0.89
	Builds networks	0.79
	Collaborates	0.79
	Communicates effectively	0.89
	Develops talent	0.79
	Drives engagement	0.78
	Interpersonal savvy	0.86
	Manages conflict	0.76
	Persuades	0.79
	Values differences	0.72

Note. Reliabilities are average competency range reliabilities from estimated IRT scores. Based on simulations, an empirical adjustment of -.08 has been added to each reliability. Composite score reliabilities are Mosier (1943) reliabilities.

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Construct correlations

In addition to results shown in Figure TRCFA and Table RTRAIT, correlations between trait constructs shown in Table TCORR provide additional support for the construct validity of our trait measures. Correlations are generally larger among traits under the same higher-order factor. Additional construct validity for drivers and competencies is also supported by general correlational patterns shown in Tables DCORR and CCORR, respectively. As mentioned earlier, drivers in the promotion-focused category tended to be negatively correlated with the drivers in the preservation-focused category, and vice versa. Competencies tended to be most strongly (although not exclusively) correlated with competencies conceptualized under the same higher-order factor.

Additional and notable cross-quadrant correlations were also observed in ways that support construct validity. While one is a driver/preference and the other conceptualized as a disposition/trait, Challenge and Need for achievement have similar descriptive utility and developmental history in the literature and are, thus, not surprisingly, notably correlated (r = .37). Tolerance of ambiguity and the related competency Manages ambiguity have a sizable correlation (r = .46), as do Drives engagement and Influence (r = .49). Adaptability and Situational adaptability are correlated but not very highly (r = .25), which is expectable because the latter, as we have noted, has much more particular reference to *social* behavior than the former, which is more general. Collaboration and Affiliation are markedly correlated (r = .33) and Focus's correlation with Structure is positive (r = .37) and among its larger bivariate relationships, being approached only by its *negative* relationships with a few Agility constructs, including Tolerance of ambiguity (r = -.26), Adaptability (r = -.19), and Risk-taking (r = -.21), which were all expectable and reflect thinking that even informed scale and construct design.

Table DCORR. Driver intercorrelation matrix

	BALANCE	CHALLENGE	COLLABORATION	INDEPENDENCE	POWER	STRUCTURE
Balance	1.00					
Challenge	-0.37	1.00				
Collaboration	-0.04	0.10	1.00			
Independence	0.07	0.08	-0.16	1.00		
Power	-0.26	0.28	-0.05	0.00	1.00	
Structure	0.11	-0.28	-0.21	-0.18	-0.13	1.00

Note. N = 27699. All non-zero correlations have $p \leq .05$.

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Table TCORR. Intercorrelations between traits

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Adaptability	1.00																			
2. Curiosity	0.33	1.00																		
3. Focus	-0.19	-0.07	1.00																	
4. Risk-taking	0.37	0.34	-0.21	1.00																
5. Tolerance of ambiguity	0.57	0.44	-0.26	0.48	1.00															
6. Affiliation	0.10	0.07	-0.07	0.13	0.11	1.00														
7. Humility	0.03	0.05	-0.06	0.06	0.06	0.19	1.00													
8. Openness to differences	0.34	0.32	-0.10	0.30	0.37	0.22	0.15	1.00												
9. Trust	-0.02	0.04	-0.09	0.06	0.02	0.20	0.17	0.15	1.00											
10. Composure	0.19	0.18	0.00	0.16	0.21	0.11	0.15	0.14	0.01	1.00										
11. Optimism	0.16	0.16	-0.07	0.21	0.22	0.10	0.10	0.23	0.14	0.32	1.00									
12. Situational self-awareness	0.12	0.16	0.00	0.15	0.18	0.11	0.06	0.18	0.03	0.27	0.22	1.00								
13. Assertiveness	0.24	0.22	0.00	0.31	0.25	0.07	-0.13	0.17	-0.11	0.13	0.14	0.12	1.00							
14. Empathy	0.10	0.11	0.00	0.00	0.11	0.16	0.13	0.21	0.13	0.10	0.03	0.24	0.06	1.00						
15. Influence	0.21	0.20	-0.04	0.24	0.25	0.17	-0.02	0.17	0.00	0.21	0.15	0.22	0.39	0.27	1.00					
16. Sociability	0.17	0.07	-0.08	0.14	0.14	0.22	-0.03	0.23	0.13	0.06	0.14	0.10	0.29	0.22	0.29	1.00				
17. Credibility	0.05	0.13	0.07	0.10	0.12	0.13	0.12	0.14	0.10	0.23	0.23	0.15	0.15	0.05	0.19	0.05	1.00			
18. Confidence	0.16	0.23	0.07	0.25	0.25	0.06	0.00	0.13	-0.02	0.26	0.30	0.17	0.27	0.01	0.28	0.14	0.24	1.00		
19. Need for achievement	0.19	0.24	0.13	0.24	0.24	0.02	-0.05	0.10	-0.03	0.17	0.09	0.05	0.28	-0.05	0.22	0.01	0.24	0.30	1.00	
20. Persistence	0.11	0.20	0.14	0.16	0.15	0.11	0.00	0.13	-0.03	0.22	0.21	0.17	0.20	0.05	0.28	0.09	0.23	0.36	0.34	1.00

Note. N = 27699. All non-zero correlations have $p \leq .05$.

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Table CCORR. Competencies intercorrelation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Balances stakeholders	1.00												
2. Cultivates innovation	0.06	1.00											
3. Customer focus	0.22	0.07	1.00										
4. Decision quality	0.30	0.07	0.18	1.00									
5. Global perspective	0.29	0.35	0.13	0.18	1.00								
6. Strategic mindset	0.17	0.27	0.12	0.25	0.36	1.00							
7. Action oriented	0.37	0.22	0.33	0.62	0.35	0.37	1.00						
8. Directs work	0.22	0.11	0.21	0.24	0.22	0.22	0.66	1.00					
9. Drives results	0.20	0.26	0.21	0.22	0.26	0.27	0.61	0.19	1.00				
10. Ensures accountability	0.33	0.04	0.31	0.32	0.23	0.19	0.73	0.43	0.27	1.00			
11. Optimizes work processes	0.35	0.14	0.30	0.66	0.28	0.30	0.77	0.68	0.31	0.53	1.00		
12. Plans and aligns	0.29	0.17	0.23	0.33	0.27	0.25	0.55	0.40	0.29	0.45	0.74	1.00	
13. Resourcefulness	0.14	0.03	0.20	0.24	0.08	0.09	0.29	0.22	0.14	0.23	0.63	0.26	1.00
14. Being resilient	0.47	0.31	0.29	0.42	0.42	0.33	0.74	0.35	0.59	0.64	0.55	0.46	0.25
15. Courage	0.17	0.26	0.18	0.26	0.26	0.31	0.67	0.31	0.37	0.34	0.38	0.33	0.12
16. Instills trust	0.30	0.10	0.25	0.31	0.19	0.15	0.42	0.20	0.26	0.40	0.35	0.27	0.16
17. Manages ambiguity	0.18	0.37	0.05	0.21	0.27	0.32	0.36	0.21	0.25	0.17	0.29	0.25	0.13
18. Nimble learning	0.24	0.07	0.13	0.25	0.12	0.11	0.23	0.11	0.15	0.18	0.24	0.14	0.15
19. Self-development	0.12	0.11	0.06	0.18	0.10	0.00	0.10	0.00	0.19	0.00	0.11	0.00	0.12
20. Situational adaptability	0.35	0.17	0.15	0.26	0.28	0.18	0.27	0.11	0.18	0.20	0.26	0.21	0.12
21. Builds effective teams	0.36	0.27	0.27	0.24	0.36	0.22	0.60	0.63	0.27	0.44	0.54	0.37	0.22
22. Builds networks	0.13	0.00	0.10	0.00	0.12	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.06
23. Collaborates	0.28	0.10	0.13	0.11	0.24	0.08	0.26	0.30	0.07	0.24	0.24	0.17	0.10
24. Communicates effectively	0.46	0.24	0.24	0.31	0.40	0.22	0.56	0.58	0.24	0.41	0.54	0.38	0.21
25. Develops talent	0.20	0.23	0.18	0.14	0.20	0.16	0.38	0.33	0.21	0.30	0.31	0.21	0.16
26. Drives engagement	0.12	0.20	0.22	0.11	0.20	0.16	0.38	0.32	0.21	0.29	0.28	0.19	0.15
27. Interpersonal savvy	0.49	0.22	0.20	0.31	0.39	0.16	0.39	0.22	0.21	0.33	0.36	0.29	0.17
28. Manages conflict	0.37	0.11	0.15	0.28	0.25	0.07	0.29	0.13	0.14	0.27	0.28	0.21	0.15
29. Persuades	0.17	0.22	0.09	0.18	0.24	0.33	0.36	0.16	0.35	0.15	0.22	0.21	0.00
30. Values differences	0.28	0.21	0.10	0.17	0.27	0.09	0.21	0.06	0.17	0.15	0.18	0.18	0.08

Note. N = 1669. All non-zero correlations have $p \leq .05$. Action oriented, Interpersonal savvy, Being resilient, Builds effective teams, Optimizes work processes, and Communicates effectively are composites created from other variables in the matrix and, therefore at times, have inflated correlations.

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14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1.00																
0.44	1.00															
0.46	0.22	1.00														
0.57	0.39	0.21	1.00													
0.34	0.06	0.30	0.16	1.00												
0.20	0.00	0.20	0.06	0.36	1.00											
0.63	0.13	0.24	0.25	0.28	0.21	1.00										
0.54	0.37	0.36	0.34	0.21	0.05	0.29	1.00									
0.09	0.00	0.06	0.00	0.13	0.22	0.10	0.14	1.00								
0.30	0.14	0.20	0.18	0.12	0.00	0.17	0.64	0.12	1.00							
0.66	0.29	0.36	0.35	0.29	0.14	0.63	0.83	0.13	0.66	1.00						
0.37	0.28	0.26	0.27	0.18	0.06	0.19	0.70	0.10	0.29	0.41	1.00					
0.29	0.32	0.22	0.17	0.00	0.00	0.13	0.67	0.13	0.27	0.34	0.41	1.00				
0.72	0.21	0.37	0.31	0.33	0.19	0.67	0.66	0.17	0.60	0.87	0.32	0.24	1.00			
0.61	0.13	0.29	0.14	0.25	0.12	0.31	0.28	0.09	0.24	0.38	0.14	0.10	0.69	1.00		
0.35	0.37	0.12	0.31	0.08	0.07	0.18	0.27	0.08	0.11	0.24	0.17	0.25	0.21	0.10	1.00	
0.38	0.15	0.26	0.25	0.22	0.14	0.30	0.51	0.13	0.17	0.62	0.21	0.13	0.67	0.28	0.16	1.00

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SECTION 6
Empirical findings

Associations with outcomes

The following sections of this technical manual are a description of empirical findings supporting each component of the KF4D prediction model. It is a complex model capturing rich nuances of variation in person, role, company culture, and outcomes that together establish the best possible fit of person to position. Each section builds upon the findings of prior sections. Taken together, they describe the empirical foundation for the dynamic model that ensures the utility of KF4D for any job role. Below, we provide a preview of these sections.

KF4D associations with work-analysis variables will discuss analyses that demonstrate how scores on the assessment person variables vary in important ways, depending on the leadership role types.

KF4D construct associations with outcomes will describe the critical outcome measures, work engagement and organizational commitment, and will discuss how traits, drivers, and competencies are notable univariate predictors of these outcomes. The findings are discussed in separate traits, drivers, and competencies sections.

Relationships between culture and drivers presents findings illustrating how drivers and culture interact to influence person-environment fit and success.

In **Additional multivariate considerations,** we discuss the use of multivariate profile models in order to arrive at more gestalt impressions of KF4D-Ent respondents.

In **Target scores on KF4D-Ent measures,** we detail the development of target score profiles for person measures based on moderators, outcomes, and related interactions. We demonstrate how, for any given configuration of work-analysis variables, an optimal score profile or range of scores can be described that indicate the best likelihood of superior outcomes. Positions have variable work-analysis scores, management level, and company culture, such that many or all of them have different and custom target trait and target driver profiles associated with each role. **Interpreting final equations** provides examples with substantive interpretations of profiles.

Target score vector distance tests demonstrates how the fit to the target profile is a powerful predictor of outcomes. Better fit is demonstrated to result in many times greater likelihood of superior outcomes than poor fit.

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KF4D construct associations with work-analysis variables

We secured 5-point continuous (2 decimal points) ratings on 11 work-analysis items from our Sample 1 (described above) of 27,699 professional incumbents with management levels ranging from entry-level individual contributors to CEOs. Incumbents rated their own jobs. We find acceptable fit (RMSEA = .06) for a two-factor confirmatory structure describing the correlations among these items, which were designed to tap the *Ideas* (vs. Data) (α = .64) and *People* (vs. Things) (α = .63) bipolar work-analysis dimensions. Additional confirmatory factor analysis details can be examined in Figure WACFA. Tables ITI and ITP display bivariate correlations between work-analysis item ratings, as well as item-total correlations with manifest sample-standardized (*z*-scores) mean *Ideas* (I) and *People* (P) composites, which are employed along with KF4D IRT scores in additional analyses described below.

Table ITI. Correlations among item designed to tap Ideas orientation of jobs

JOB ANALYSIS ITEM	1	2	3	4	5	6	7
1. Change	1.00						
2. Inobvious	0.30	1.00					
3. Prescriptive	-0.10	-0.12	1.00				
4. Steady/Unifocus	-0.11	-0.17	0.44	1.00			
5. Unfamiliar	0.25	0.31	-0.11	-0.19	1.00		
6. Vision	0.51	0.34	-0.09	-0.14	0.22	1.00	
7. IDEAS	0.38	0.39	-0.30	-0.38	0.33	0.38	1

Note. Cronbach's α = .64. Correlations with the composite IDEAS are item to total correlations.

Table ITP. Correlations among item designed to tap People orientation of jobs

JOB ANALYSIS ITEM	1	2	3	4	5	6
1. Bargain	1.00					
2. Collaborate	0.35	1.00				
3. Client facing	0.21	0.17	1.00			
4. Social skills	0.30	0.33	0.23	1.00		
5. Influence	0.28	0.31	0.10	0.27	1.00	
6. PEOPLE	0.43	0.43	0.25	0.43	0.34	1.00

Note. Cronbach's α = .63. Correlations with the composite PEOPLE are item to total correlations.

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Figure WACFA. Standardized confirmatory measurement model for items designed to tap Ideas and People work-analysis dimensions

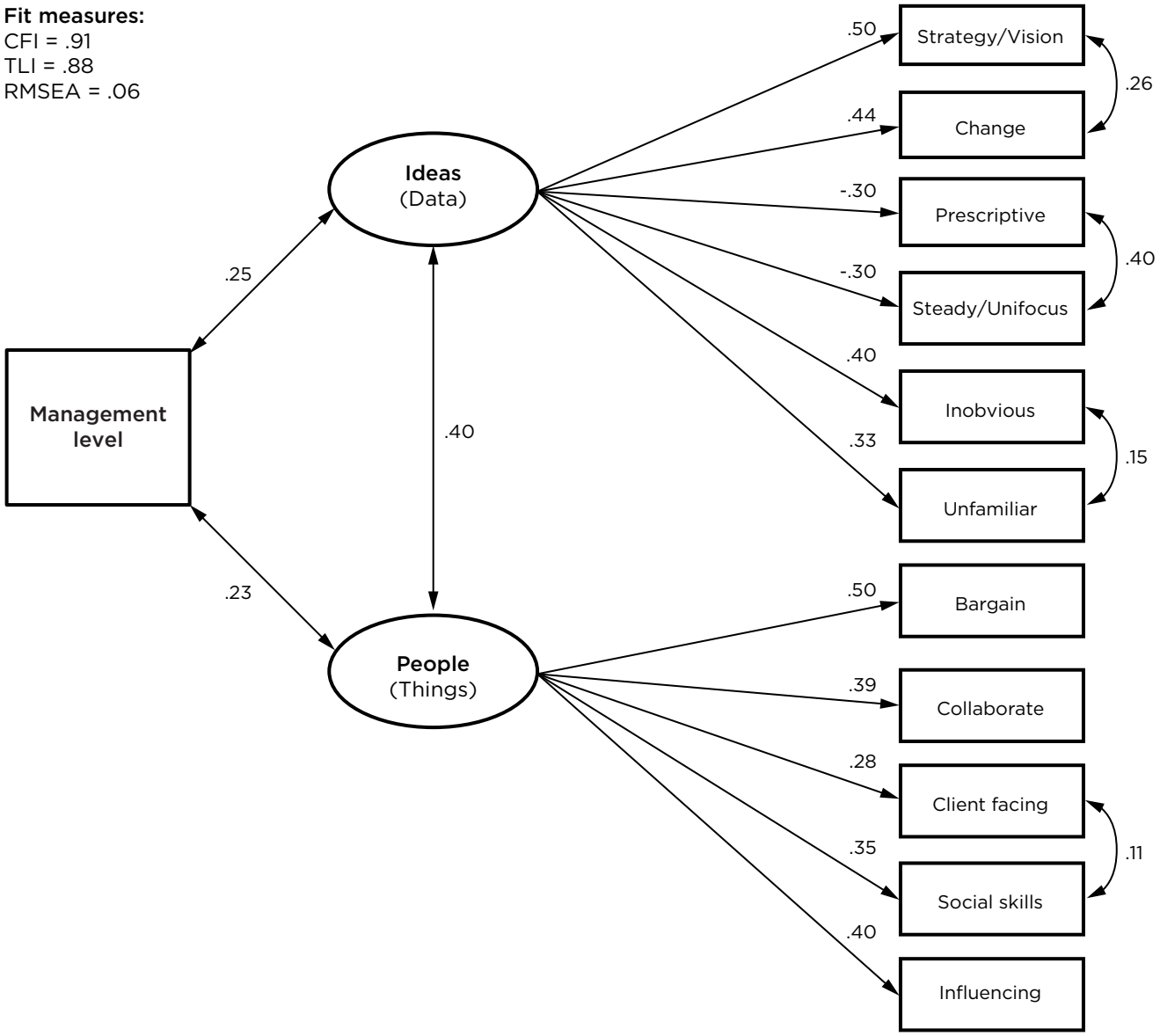

Table WAIM shows average I and P ratings across management levels and demonstrates that both the I and P work types tend to increase with management level. Table WAIA shows correlations between I and P composite ratings and Agility trait scores for the same incumbents. These findings lend support to the *trait* and *construct relevance* of our two work-analysis variables. Specifically, individuals with roles characterized by ideas-orientation, viz., increased need for change, ambiguity, and multifocus, tend to have elevated scores on Agility and related trait subdomains. They tend toward higher levels of curiosity and risk propensity, and they tend to be more adaptable and tolerant of ambiguity. Conversely, individuals having jobs characterized more immediately by data-orientation are more focused and detail oriented (FO), while being somewhat less agile.

Table WAIE shows similar results vis-à-vis the relationship between roles and Presence trait variables. Roles with I and P-orientation tend to be occupied by individuals having significantly increased assertiveness, empathy, influence, and sociability. I and P roles are also more likely to be occupied by

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individuals who are more confident, as well as individuals having higher results drive and preference for challenge, and preference for spontaneity and unpredictability in their work (negative Structure).

Although I and P variables are correlated with management level, they maintain clear and primary unique impact on traits and drivers, as demonstrated by partial correlations controlling for management level. All related results can be examined in Tables WAIP, WAIS, WAIG, and WAID, which show work-analysis correlations with all traits and drivers. Overall, the patterns of correlations observed between KF4D constructs and work-analysis variables support the notion of situation-trait relevance for our work-analysis variables.

In terms of competencies, we again see that jobs characterized by increased I-orientation are expected to have elevated scores on constructs in intuitively appealing ways. In Table WAITHT, for example, Global perspective (r = .48), Cultivates innovation (r = .48), and Strategic mindset (r = .47) have considerable positive correlations with I while having lower correlations with P. On the other hand, constructs with ostensibly increased relevance for issues surrounding People and social outcomes, viz., Balances stakeholders and Customer focus, have higher correlations with People than with Ideas. The same patterns are seen regardless of whether management level has been partialled. Additional patterns of correlations between all competency constructs and job variables, including management level, can be examined in Tables WAITHT, WAIRES, WAISEL, and WAIPPL.

KF4D construct associations with outcomes

The results in the upcoming Tables WAIA through WAIPPL show trait, driver, and competency relatedness of job variables and ultimately speak to average differences on traits and drivers across work-analysis variables. That job roles characterized by I and P components are more often more likely to be occupied by incumbents having characteristic scores on given traits and drivers provides needed but only introductory evidence that elevated scores on any trait, driver, or competency are more or less *desirable*, and/or more or less desirable in a given role context. Additional evidence of score desirability is the extent to which given scores are associated with outcomes of interest. To this end, Tables WAIA through WAIPPL also show correlations between trait and driver constructs, *work engagement*, and *organizational commitment*.

Organizational commitment and work engagement are often variables of particular interest to HR professionals and organizational scientists and are known to be markedly predictive of both organizational and person-level outcomes including service, sales, quality, retention, profits, shareholder returns, turnover, customer service, productivity, job performance, and others (Markos & Sridevi, 2010; Kruse, 2012; Harter, Schmidt, & Hayes, 2002; Harter, Schmidt, Agrawal, & Plowman, 2013).[16] Many also link collective worker engagement to industry and even national outcomes (Gallup, 2010). Work engagement reflects the extent to which professionals are satisfied with and emotionally invested in their jobs and whether they will expend discretionary effort for their organizations. Organizational commitment is closely linked to turnover and retention (Cohen, 1993) and involves the extent to which individuals identify with their organizations and are invested in their jobs and organizations in even psychologically measurable ways. Like our traits, drivers, and competency measures, our work engagement ($r'tt$ = .82) and organizational commitment ($r'tt$ = .79) measures are based on FCIRT format and scoring (Brown & Maydeu-Olivares, 2011; Zes et al., 2014) and, as such, have relatively favorable properties vis-à-vis faking and response bias, as previously discussed. Each of these measures is composed of ten items, with half worded positively and half

[16] Harter et al. (2013) report an r = .42 correlation between work engagement and composite business unit performance, and also report that organizations, industries, and countries scarcely, if ever, moderate the nature and magnitude of the relationship.

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negatively.[17] The organizational commitment (OC) items capture individuals' positive emotional attachment to and desire to remain a part of the organization. The ten work engagement (WE) items gauge discretionary effort, absorption with, and dedication to work.[18] In the following paragraphs, noteworthy observed relationships with organizational commitment and work engagement are highlighted.

A notable negative correlation between OC and INDY was observed (r = -.37), which has intuitive appeal due to INDY's status as a measure that speaks to entrepreneurial spirit, pursuing one's own vision, and a desire to perhaps work for oneself as much as or more than for an establishment or organization. Other negative correlations included OC and BALA (r = -.14) and a very small yet non-zero negative correlation between OC and the Agility composite (r = -.04). Relatively high magnitude correlations between OC and traits/drivers included its correlation with Persistence (r = .22), as well as Striving (r = .22), Affiliation (r = .20), and Collaboration (r = .21). Many other correlations between traits/drivers and OC were positive and modest, but significantly non-zero.

The highest zero-order bivariate trait correlations with WE are found among Striving and its subdomains, particularly NA (r = .43) and the Striving (r = .39) composite. WE is also notably and negatively correlated with driver BALA (r = -.33) and is also negatively correlated with driver STRC (r = -.13). Other notable WE correlations include its correlation with CHAL (r = .25), CF (r = .27), PE (r = .24), the Presence and Agility composites (r = .20, .21, respectively), as well as CU (r = .24), AD (r = .22), and TA (r = .24). All other correlations between traits/drivers and WE were positive and modest, but significantly non-zero.

Table WAIM. Incumbent work-analysis ratings standardized means and standard deviations across Management level

		IDEAS (DATA)		PEOPLE (THINGS)	
Management level	***n***	***M***	***SD***	***M***	***SD***
Individual contributor (0)	4511	-0.51	1.14	-0.50	1.17
Team lead (1)	1841	-0.28	1.02	-0.17	1.00
First level leader (2)	2890	-0.18	0.96	-0.17	0.97
Mid-level leader (3)	4582	-0.03	0.94	0.00	0.92
Functional leader (4)	4899	0.14	0.91	0.13	0.88
Business unit leader (5)	4700	0.23	0.90	0.24	0.85
Senior/Top functional executive (6)	3396	0.28	0.90	0.32	0.84
Senior/Top business group executive (7)	1615	0.40	0.83	0.37	1.19
CEO (8)	631	0.47	0.86	0.48	1.00

Note. N = 27699 job incumbents. Items are 5-point Likert with semantic differential indications implied in items. Descriptions appearing in parentheses correspond to the low end and descriptions appearing before parentheses corresponding to the high end of the scale. All variables are standardized mean composite z-scores.

[17] Examples of organizational commitment items are "I care about the success of the organization" and "It is hard to envision my future in this organization." Examples of work engagement items are "I am filled with energy when I do my work" and "I do as much work as I am paid to do."

[18] Our engagement measure in KF4D should not be confused with the more comprehensive measure(s) of employee engagement and enablement employed in other Korn Ferry / Hay Group applications.

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Table WAIE. Bivariate correlations between work-analysis constructs and Presence trait constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D traits	Ideas	People	Management level	Discretionary effort	Organizational commitment	Ideas	People
Presence composite	0.30	0.43	0.19	0.20	0.15	0.26	0.39
Assertiveness	0.30	0.34	0.22	0.18	0.05	0.26	0.29
Empathy	0.12	0.19	-0.04	0.03	0.09	0.13	0.21
Influence	0.30	0.42	0.29	0.18	0.14	0.23	0.36
Sociability	0.11	0.24	0.05	0.14	0.12	0.10	0.24

Note. N = 27699 job incumbents. Work-analysis scales are 5-point Likert item parcels, and traits are standardized IRT scores. All non-zero correlations have $p < .001$. Correlations are adjusted for measurement error.

Table WAIA. Bivariate correlations between work-analysis constructs and Agility trait constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D traits	Ideas	People	Management level	Discretionary effort	Organizational commitment	Ideas	People
Agility composite	0.57	0.40	0.22	0.21	-0.04	0.52	0.35
Adaptability	0.45	0.31	0.14	0.22	0.00	0.42	0.28
Curiosity	0.44	0.26	0.12	0.24	0.03	0.41	0.23
Focus	-0.22	-0.16	-0.07	0.08	0.16	-0.19	-0.15
Risk-taking	0.42	0.32	0.25	0.18	0.03	0.37	0.27
Tolerance of ambiguity	0.55	0.38	0.22	0.24	0.00	0.51	0.32

Note. N = 27699 job incumbents. Work-analysis scales are 5-point Likert item parcels, and traits are standardized IRT scores. All non-zero correlations have $p < .001$. Correlations are adjusted for measurement error.

Table WAIP. Bivariate correlations between work-analysis constructs and Positivity trait constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D traits	Ideas	People	Management level	Discretionary effort	Organizational commitment	Ideas	People
Positivity composite	0.18	0.19	0.14	0.17	0.17	0.15	0.17
Composure	0.16	0.17	0.11	0.14	0.17	0.13	0.14
Optimism	0.13	0.15	0.13	0.21	0.12	0.09	0.10
Situational self-awareness	0.14	0.16	0.09	0.06	0.10	0.12	0.13

Note. N = 27699 job incumbents. Work-analysis scales are 5-point Likert item parcels, and traits are standardized IRT scores. All non-zero correlations have $p < .001$. Correlations are adjusted for measurement error.

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Table WAIS. Bivariate correlations between work-analysis constructs and Striving trait constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D traits	**Ideas**	**People**	**Management level**	**Discretionary effort**	**Organizational commitment**	**Ideas**	**People**
Striving composite	0.29	0.26	0.22	0.39	0.22	0.23	0.22
Credibility	0.12	0.15	0.12	0.24	0.15	0.09	0.10
Confidence	0.20	0.21	0.19	0.27	0.14	0.16	0.16
Need for achievement	0.30	0.22	0.17	0.43	0.12	0.26	0.17
Persistence	0.21	0.21	0.15	0.24	0.22	0.17	0.17

Note. N = 27699 job incumbents. Work-analysis scales are 5-point Likert item parcels, and traits are standardized IRT scores. All non-zero correlations have $p < .001$. Correlations are adjusted for measurement error.

Table WAIG. Bivariate correlations between work-analysis constructs and Agreeableness trait constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D traits	**Ideas**	**People**	**Management level**	**Discretionary effort**	**Organizational commitment**	**Ideas**	**People**
Agreeableness composite	0.19	0.18	0.10	0.15	0.17	0.17	0.17
Affiliation	0.16	0.19	0.15	0.10	0.20	0.12	0.13
Humility	0.03	0.02	0.04	0.04	0.09	0.03	0.00
Openness to differences	0.29	0.25	0.03	0.16	0.05	0.29	0.25
Trust	0.03	0.04	0.04	0.07	0.13	0.01	0.03

Note. N = 27699 job incumbents. Work-analysis scales are 5-point Likert item parcels, and traits are standardized IRT scores. All non-zero correlations have $p < .001$. Correlations are adjusted for measurement error.

Table WAID. Bivariate correlations between work-analysis constructs and driver constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D drivers	**Ideas**	**People**	**Management level**	**Discretionary effort**	**Organizational commitment**	**Ideas**	**People**
Balance	-0.19	-0.15	-0.14	-0.33	-0.14	-0.16	-0.12
Challenge	0.34	0.27	0.14	0.25	0.06	0.31	0.25
Collaboration	0.14	0.21	0.04	0.14	0.21	0.14	0.21
Independence	0.18	0.07	-0.05	0.07	-0.37	0.21	0.08
Power	0.16	0.22	0.09	0.06	-0.06	0.14	0.20
Structure	-0.45	-0.35	-0.14	-0.13	0.08	-0.42	-0.32

Note. N = 27699 job incumbents. Work-analysis scales are 5-point Likert item parcels, and drivers are standardized IRT scores. All non-zero correlations have $p < .001$. Correlations are adjusted for measurement error.

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Table WAITHT. Bivariate correlations between work-analysis constructs and Thought competency constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D competency	Ideas	People	Management level	Discretionary effort	Organizational commitment	Ideas	People
Customer focus	0.11	0.35	0.00	0.24	0.14	0.13	0.36
Decision quality	0.18	0.20	0.00	0.22	0.10	0.20	0.22
Balances stakeholders	0.34	0.39	0.00	0.20	0.14	0.36	0.39
Global perspective	0.48	0.30	0.16	0.19	0.00	0.45	0.29
Cultivates innovation	0.48	0.19	0.19	0.16	0.00	0.42	0.16
Strategic mindset	0.47	0.26	0.17	0.19	0.07	0.42	0.23

Note. N = 1669 job incumbents. Work-analysis scales are 5-point Likert item parcels, and competencies are standardized IRT scores. All non-zero correlations have $p < .10$. Correlations are adjusted for measurement error.

Table WAIRES. Bivariate correlations between work-analysis constructs and Results competency constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D competency	Ideas	People	Management level	Discretionary effort	Organizational commitment	Ideas	People
Action oriented	0.50	0.36	0.23	0.37	0.22	0.42	0.34
Resourcefulness	0.09	0.16	0.00	0.17	0.11	0.12	0.18
Directs work	0.34	0.20	0.25	0.15	0.12	0.23	0.18
Plans and aligns	0.36	0.23	0.14	0.20	0.11	0.32	0.22
Optimizes work processes	0.35	0.30	0.12	0.27	0.17	0.32	0.28
Ensures accountability	0.30	0.27	0.15	0.30	0.25	0.24	0.24
Drives results	0.38	0.25	0.09	0.36	0.12	0.36	0.25

Note. N = 1669 job incumbents. Work-analysis scales are 5-point Likert item parcels, and competencies are standardized IRT scores. All non-zero correlations have p < .10. Correlations are adjusted for measurement error.

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Table WAISEL. Bivariate correlations between work-analysis constructs and Self competency constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D competency	Ideas	People	Management level	Discretionary effort	Organizational commitment	Ideas	People
Courage	0.50	0.29	0.32	0.24	0.15	0.39	0.24
Instills trust	0.26	0.26	0.00	0.19	0.13	0.29	0.26
Self-development	-0.12	0.05	-0.34	0.09	-0.09	0.07	0.12
Manages ambiguity	0.55	0.27	0.18	0.17	0.00	0.51	0.24
Nimble learning	0.09	0.12	-0.16	0.13	0.00	0.20	0.15
Being resilient	0.54	0.45	0.09	0.38	0.18	0.55	0.43
Situational adaptability	0.31	0.30	-0.08	0.14	0.00	0.38	0.31

Note. N = 1669 job incumbents. Work-analysis scales are 5-point Likert item parcels, and competencies are standardized IRT scores. All non-zero correlations have $p < .10$. Correlations are adjusted for measurement error.

Table WAIPPL. Bivariate correlations between work-analysis constructs and People competency constructs

	ZERO-ORDER BIVARIATE					MANAGEMENT LEVEL PARTIALLED	
KF4D competency	Ideas	People	Management level	Discretionary effort	Organizational commitment	Ideas	People
Collaborates	0.34	0.32	0.16	0.20	0.19	0.28	0.31
Manages conflict	0.16	0.26	-0.05	0.20	0.12	0.22	0.27
Interpersonal savvy	0.43	0.43	0.00	0.27	0.15	0.47	0.43
Builds networks	-0.07	0.28	-0.09	0.11	0.11	0.00	0.30
Develops talent	0.36	0.22	0.23	0.17	0.13	0.28	0.18
Values differences	0.34	0.24	0.00	0.17	0.10	0.39	0.25
Builds effective teams	0.50	0.41	0.27	0.30	0.22	0.42	0.38
Communicates effectively	0.51	0.43	0.12	0.26	0.17	0.51	0.42
Drives engagement	0.24	0.31	0.25	0.24	0.20	0.13	0.29
Persuades	0.42	0.35	0.11	0.24	0.00	0.39	0.34

Note. N = 1669 job incumbents. Work-analysis scales are 5-point Likert item parcels, and competencies are standardized IRT scores. All non-zero correlations have $p < .10$. Correlations are adjusted for measurement error.

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Of the 30 self-efficacy for competencies measures contained in KF4D-Ent, all of them had at least a modest positive correlation with WE. Six of the 30 were uncorrelated with OC and one was negatively correlated, while the remaining 23 had at least a modest positive correlation with OC. The modest but notable positive correlations between WE and all Thought competencies are shown in Table WAITHT. The highest among them included WE's correlation with both CFO (r = .24) and DQU (r = .22). Considerable correlations between Thought competencies and OC were also observed and most notably included OC's correlation with CFO (r = .14) and BST (r = .14). BET (r = .30), COM (r = .26), EIN (r = .24), and PER (r = .24) among the People competencies correlate considerably with WE, as do COL (r = .19), BET (r = .22), COM (r = .17), and EIN (r = .20) with OC. The largest correlation between any KF4D competency and WE was found for ACO (r = .37). Other notable correlations between Results competencies and WE include DRE (r = .36), EAC (r = .30), OWP (r = .27), and AEX (r = .20). The relationship between EAC and OC (r = .25) is relatively large among OC's correlations, as is its relationship with ACO (r = .22). Among the Self competencies, COU and especially BRE show notable positive associations with WE (r = .24, r = .38, respectively) as well as OC (r = .15, r = .18, respectively). Additional correlations between WE, OC, and competencies can be examined in Tables WAITHT, WAIRES, WAISEL, and WAIPPL.

Relationships between culture and drivers

Earlier in this technical manual, we invoked the *person-environment fit* literature and discussed expected relationships between organizational culture and KF4D-Ent measures, particularly drivers. In pursuit of related understanding and hypotheses, we conducted and report model-implied means from multilevel regression analyses for each driver in this section. Analyses were designed to examine and isolate the effects of company-level culture on KF4D drivers, which involved reflective aggregations of 9-point ratings of the four Cameron & Quinn (2006) culture descriptions (coded 0 to 8). Management level and each work-analysis variable served as controls to isolate culture effects, qualify inferences, and decreases in residual variances. The former was centered at mid-level leader (MLL) and the latter were standardized and centered at sample averages. Culture variables were entered into models as continuous variables. To represent each culture and extract model-implied means, we set the target culture to the highest possible value (= 8) and other cultures to their sample average means (M = 5.22, M = 5.80, M = 5.49, M = 5.97 for Innovative, Collaborative, Regulatory, and Competitive cultures, respectively).

Table CLT4 shows results that largely corroborate expectations and literature-based findings, viz., results suggest that professionals typically seek and occupy environments that are more or less compatible with their own values and motives (Holland, 1959; Saks & Ashforth, 1997; Gardner et al., 2012). Table CLT4, for example, shows that MLLs in Collaborative cultures are typically driven by COLL more than MLLs in any other culture type. Similarly, INDY driven MLLs are least likely to be found in Collaborative cultures. Innovative cultures are the most likely to have highly INDY driven leaders, as would be expected in light of the extent to which trial and error, pursuing one's own vision, and entrepreneurial spirit are seen as hallmarks of innovation (Cameron et al., 2014). POWR has its highest levels in Competitive and Regulatory cultures, which is intuitive, given the (relative) emphasis on influence and status in the former and the emphasis on hierarchy in the latter. CHAL is clearly highest among executives in Competitive cultures, which is congruent with Competitive culture emphasis on market-based *competition* and "star achievers" (Cameron et al., 2014). The findings with regard to BALA are perhaps the least intuitive, although the elevated levels seen among leaders in Collaborative organizations are consistent with existing theory—that leaders in Collaborative organizations are more likely than others to foster work-life balance (Cameron et al., 2014). Note also that Competitive cultures have lowest BALA scores, which may be seen as

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congruent with Competitive cultures' focus on results, achievement-drive, and profits. Effect sizes are generally considerable, such that reflective aggregations of culture ratings explained between 11% and 21% of the variance in drivers between companies. Additional results, including within-culture driver means and effect sizes can be examined in Table CLT4.

Table CLT4. Adjusted driver means across Culture types

	ADJUSTED COMPANY CULTURE MEANS				ROW-WISE EFFECT SIZES	
Driver	**Regulatory**	**Competitive**	**Collaborative**	**Innovative**	**Culture R^2**	**Culture *R***
Balance	0.21	-0.04	0.22	0.19	0.14	0.37
Collaboration	0.05	0.14	0.27	-0.20	0.11	0.33
Power	-0.11	0.03	-0.40	-0.14	0.11	0.33
Challenge	-0.18	0.29	-0.26	-0.43	0.21	0.46
Structure	0.24	-0.15	-0.10	0.15	0.20	0.45
Independence	0.05	0.06	0.00	0.34	0.13	0.36

Note. *N* = 27699 individuals nested in 663 companies. Culture means are adjusted for Management level and both Ideas and People work-analysis variables, which are evaluated at Mid-level leader (4) and sample means, respectively. Correlations are point-biserial and are computed to reflect the impact of Culture on Level 2 between-company Driver variance.

Additional multivariate considerations

The many relationships shown in the immediately previous sections (viz., Tables WAIA through WAIPPL) demonstrate the work relatedness of KF4D-Ent traits, drivers, and self-efficacy for competencies. Assessment scores are predictive of management level and mean levels of job characteristics. Results not only show that particular KF4D-Ent response patterns are more likely to be found in particular roles and levels of management, but they also show some support for KF4D-Ent's utility for predicting indicators of job success and for determining how and whether particular scores are more or less salient for success (via correlations with WE and OC). Most results explicated in previous sections (particularly in Tables WAIA through WAIPPL), however, are effectively and mostly bivariate and, therefore, tell a necessary but perhaps incomplete story vis-à-vis the potential for applied utility of individual KF4D-Ent score profiles. They also fail to capitalize on more multivariate and parsimonious statistical procedures that increase statistical power, decrease residual variance, and allow for additional examination of variable interaction and incremental utility of measures. KF4D-Ent is designed to be a system that, among other things, yields an overall descriptive and cohesive impression of respondents on traits, drivers, and competencies. It also offers insight into whether, given a pattern of responses across scales and sub-scales, a particular person is more or less well matched for a given job role. Analyses like those shown in Tables WAIA through WAIPPL are perhaps more immediately consistent with score-by-score perspectives on assessment and less suited for gestalt and "whole person" and/or "whole job" perspectives on the psychology of work.

Earlier in this technical manual, for example, we discussed that the extant literature has increasingly adopted more complex perspectives on the nature of jobs in ways more commensurate with multivariate and more nuanced interpretations of job roles. Despite our sometimes use of taxonomies in some cases below, job roles do not conform neatly to some level of any given taxonomy—perhaps even taxonomies that have notable degrees of complexity. Job incumbents are individuals tasked to contribute to organizations and organizational success amidst a potentially complex interplay

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of variables, some of which are measurable and lend themselves to value-added systems designed to supplement human resources activities, and some of which will likely remain unmeasured or unmeasurable, short of employing methods sure to be unfeasible and unacceptably invasive for common and wide applied use.

Nonetheless, scientific methods for description and prescription can and do, with virtually no exception, make use of limited taxonomies, incomplete information, and imperfect inferences that demonstrably add value to human endeavors, including personnel development and selection within organizations. Moreover, the development and explication of simple and intuitively appealing models persist in leadership psychology and beyond, and for good reason. George Box, former president of the American Statistical Association and fellow of the British Royal Society, famously announced that "all models are wrong, but some are useful" (Box & Draper, 1987). There is little doubt that Dr. Box and others of similar esteem would agree that a fair elaboration on his famous quote might assert that, "all applied *statistical* models explain variance in outcomes of interest, while retaining a numerically expressible and non-zero error term that reflects the (quantifiable) inevitability of being wrong in a non-trivial number of cases."[19] The power of statistical procedures, however, is rooted in the knowledge that decisions supported by a scientific model are certainly and demonstrably wrong in *notably fewer cases* compared to decisions based on random chance. With both inevitable imperfection and demonstrable value-added utility in mind, we continue our discussion of the KF4D-Ent measurement system in this section by explicating some gestalt and multivariate approaches to understanding KF4D-Ent's potential utility for applied use.

Target scores on KF4D-Ent measures

In many possible and informing analyses, we might conceptualize organizational commitment and/or work engagement as dependent variables in models designed to describe their association with KF4D-Ent variables or groupings and/or work-analysis variables or groupings. In other words, we might ask, "How do KF4D-Ent scores, work-analysis scores (including management level), and interactions between them predict (variables conceptualized as) outcomes—such as organizational commitment or work engagement?" Below, we use available data to do the opposite, viz., we examine how (variables conceptualized as) outcome variables can be used to predict KF4D-Ent scores in a way that yields target profiles on KF4D-Ent traits, drivers, and competencies. Target profiles are conceptualized as model-implied KF4D-Ent scores in the case that outcome variables are set to maximum or near-maximum levels (z = +2 throughout this manual; approximately the 95th percentile). In other words, we seek to answer the question, "Given a particular profile of work-analysis variables, what are the expected KF4D-Ent values for individuals with the highest scores on (variables conceptualized as) outcomes?"

Analytic strategy

To arrive at equations yielding desired target profiles, we first group trait, driver, and competency scores conceptually, as done throughout this technical manual. The five Agility traits, three Positivity traits, four Striving traits, four Agreeableness traits, four Presence traits, and five higher-order trait domains are grouped separately into six distinct repeated-measures analytical models. Similarly, the six Thought competencies, seven Results competencies, seven Self competencies, and ten People competencies are grouped separately into four distinct repeated-measures models. These groupings reflect our goal to arrive at multivariate and relatively parsimonious *profile* models commensurate with the intention that KF4D-Ent scores, where applicable and feasible, be considered together and

[19] This is particularly true perhaps in social and psychological sciences compared to physics, chemistry, and engineering. In the former, measures are rarely natural ratio-level measures but more typically interval-level at best, and in many cases key constructs are latent and not manifest (like speed or temperature).

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in a unified way that creates gestalt descriptive impressions of respondents. Utilizing ten separate models achieves this goal while keeping model complexity under control. Only drivers scores are not modeled as repeated-measures but rather are modeled separately in six distinct multilevel regression models. Modeling them distinctly reduces and makes manageable the otherwise increased model complexity, which is introduced due to including culture variables in the analyses. For drivers, traits, and trait higher-order measures, study participants are the previously described *N* = 27,699 Sample 1 (see previous sections) who had complete data on traits, drivers, work engagement, and self-rated work-analysis variables, including management level. For competencies, study participants were the smaller and previously described Sample 2 (*N* = 1,669) who had complete data on competencies, work engagement, and self-rated work-analysis variables.

Competencies models. For competencies, target profile equations were developed using repeated-measures multilevel regression modeling with occasions nested in individuals, where occasions were different within-model and sample standardized KF4D-Ent measures (Singer & Willet, 2003). All models were estimated using a restricted maximum likelihood estimator (Singer, 1998). Estimated random effects included an overall error term for Level 2 individuals, a random variance for Level 1 occasions, and a random variance for the linear engagement x individuals interaction.[20] Including the random effect for the linear engagement x individuals interaction addresses our central hypothesis in each model that the relationship between each KF4D-Ent measure and engagement varies systematically across the Level 2 individuals (the random effects hypothesis) and that the same variability is attributable to a notable extent to the nature of job roles as measured by our work-analysis variables (the fixed effects hypothesis).

Unconditional models having only random and no fixed effects were examined first to evaluate the random effects hypothesis and to establish a baseline by which fixed effects explanatory variance could be evaluated (Singer, 1998; Singer & Willett, 2003). Models having fixed effects covariates were examined subsequently. For competency models, these included main effects for linear management level, linear effects for each of the two work-analysis variables, linear engagement, and dummy-coded occasions. Two-way interaction terms included occasion x management level, occasion x each work-analysis variable, occasion x linear engagement, and linear management level x linear engagement. Three-way terms included occasion x each work-analysis variable x linear engagement and occasion x management level x linear engagement.

Model selection was conducted via manual backward elimination where the most complex (three-way) interaction terms were evaluated for retention first ($p \leq .10$) and decreasingly complex terms were evaluated subsequently (along with re-evaluation of more complex retained terms at each step, using $p \leq .10$ in all cases). Final solutions were extracted when all model terms had $p \leq .05$ or had $.05 < p \leq .10$ with Bayesian Information Criteria (BIC) values indicating a superior model fit (smaller values) for retaining the marginally significant term(s). Competencies raw IRT scores were standardized ($M = 0$, $SD = 1$) using the sample standard deviations and sample averages as the norm reference point. Work-analysis variables were also sample standardized ($M = 0$, $SD = 1$) and centered at the mean, as was WE. Fixed effects covariates (including work-analysis variables) were centered and coded, such that each model had an intercept reflecting typical reference occasion scores for entry-level individual contributors having sample average work-analysis variable values and sample average standardized work engagement ($M = 0$, $SD = 1$). Four repeated-measures multilevel models were constructed including a model for Thought competencies in which the Customer focus score served as the reference occasion and, hence, the measure represented in the intercept value. The

[20] We constrained residual covariance matrix off-diagonal elements to zero such that random variance model terms were uncorrelated. We estimated unstructured residual matrices as well, but found either superior model fit according to BIC in the simpler constrained models or encountered convergence problems in the unstructured cases.

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reference occasion for the Results competencies model was Action oriented. For Self competencies and People competencies, the reference occasions were Courage and Collaborates, respectively.

Drivers models. Each driver was modeled separately using separate multilevel regression models with 26,198 individuals nested in 663 companies (a subset of Sample 1 due to incomplete culture data). Cluster sizes ranged from 1 to 2,448 (M = 39.51). Aside from not modeling drivers with repeated-measures analyses, the multilevel models for drivers were very similar to those described above for competencies, but with key differences noted here. For drivers and not traits or competencies, we included the four 9-point culture ratings indicating the extent to which an incumbent's company culture was Competitive, Innovative, Collaborative, and Regulatory. These ratings were conceptualized and computed as reflective aggregations (Ludtke, Robitzsch, Asparouhav, Marsh, Trautwein, & Muthen, 2008) and, thus, served as Level 2 predictors. For each of the six models, the fixed effects of the four culture variables on the intercept was evaluated, as was each culture x linear engagement interaction, each culture x linear management level interaction, and each culture x work-analysis variable interaction. As before, the linear engagement x linear management level two-way interaction was also included. Three-way interaction terms included culture x linear engagement x each work-analysis variable, and culture x linear engagement x linear management level. With the exception of these modifications, the drivers models were developed in a way equivalent to the competencies models in every respect, including in terms of model selection procedures and the use of unconditional models with company (Level 2) and individual level (Level 1) random effects to establish a baseline.

Traits models. Traits were modeled using latent change analysis (LCM) or latent "shape and level" analysis (Raykov & Marcoulides, 2006; McCardle, 2009), which is largely equivalent to the multilevel repeated-measures mixed models with occasions nested in individuals (as done with competencies). A key difference is the lack of random effects specification, because the latent change model conceptualizes and mathematically handles individuals as a Level 1 variable and not at Level 2. The same main effects and interactions were effectively examined in these models as described for competencies. Another key difference here is the use of cross-validation. For each of the six trait LCMs, we randomly split the large (N = 29,966) sample in half (approximately) and conducted both calibration (n = 15,052) and cross-validation (n = 14,914) analyses.[21] The former employed model selection processes equivalent to those described for competencies. After extracting model parameters from the calibration sample, we imposed them on the cross-validation sample and assessed model fit according to five fit indices (χ^2, CFI, TLI, RMSEA, BIC). In the case that the cross-validation model having imposed parameters fit best, we retained it as the final model.[22] The cross-validation sample was also used to again freely estimate parameters and to estimate a model wherein only the coefficients from calibration that were removed due to non-significance (p > .10) were constrained (to zero). These provided the basis for comparison and also provided options for final model selection in the case that the most restrictive model did not fit best. A final difference between traits and competency models is that WE was not standardized here in the former, but left as a raw IRT score (M = .75, SD = .81).

[21] We do not cross-validate in our competencies analyses due to the relatively small (N = 1,669) data set available for competency modeling at the time of this writing.

[22] As detailed below, this occurred in every case, such that at least 3 of the 5 fit indices favored the most restrictive cross-validation model with imposed parameters from the calibration model. All regression weights and latent variable loadings were constrained to calibration values in cross-validation for Model 2 in Tables AGLCM, PRLCM, ARLCM, POLCM, STLCM, and SPLCM. Slopes and intercepts were re-estimated, as was the slope-intercept covariance.

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The use of model-implied scores. As mentioned above, all models employed KF4D measures as dependent variables and as sample-based *z*-scores. Models yielded typical case KF4D-Ent *z*-scores for the most highly engaged (95th percentile, or any other desired value of WE) individuals working under any configuration of work-analysis variables, management level and, in the case of drivers, culture. Below, these values are variously referred to as "target" values. In many cases, we converted model-implied *z*-scores to percentiles (using the cumulative distribution function) for descriptive purposes as shown in subsequent sections.

When management level serves as the focal point of a model-implied score demonstration, I and P values were set to their average at each management level, as shown in Table WAIM. When work-analysis variables are employed to define groups (as with the Tracey and Rounds (1995) types), management level is set to group level averages, as shown in Table TAX.

As done previously (e.g., Table CLT4) to represent each culture and extract model-implied means for drivers, we set the target culture to the highest possible value (= 8) and other cultures to their sample average means (M = 5.22, M = 5.80, M = 5.49, M = 5.97 for Innovative, Collaborative, Regulatory, and Competitive cultures, respectively) when doing related analyses. However, when culture is *not* the focal point of a drivers analysis, we set all culture values to their sample average means shown above to obtain typical case results.

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Traits latent change model results

For each of the six latent change models below, the calibration models in which parameters were freely estimated fit the data at least acceptably well and in many cases better (RMSEA ranging from = .01 to .06), as did the models in which calibration parameters were imposed upon the cross-validation sample (RMSEA ranging from = .02 to .04). The latter fit better on at least three of the five fit indices in every case compared to cross-validation sample analyses wherein parameters were freely estimated and the cross-validation runs in which only the non-significant parameters from the calibration data were simply set to zero. As such, the model in which calibration parameters were imposed was retained as the final model in each of the six latent change models. Related results with additional details can be examined in Tables AGLCM, ARLCM, POLCM, PRLCM, STLCM, and SPLCM. Path-analytic results for the profiles of KF4D traits measures regressed on covariates can be examined in Figures AGLCM, ARLCM, POLCM, PRLCM, STLCM, and SPLCM. To facilitate understanding, we discuss results and display model-implied values in various ways below.

Table AGLCM. Results of cross-validation for latent change models on Agility trait subdomains

	CALIBRATION DATA *n* = 15052			CROSS-VALIDATION DATA *n* = 14914		
Conditions	***df***	***q***	**Fit indices**	***df***	***q***	**Fit indices**
Model 1:						
Parameters freely estimated	28	27	χ^2 = 586.26	28	27	χ^2 = 697.99
			CFI = .972			CFI = .967
			TLI = .955			TLI = .947
			RMSEA = .037			RMSEA = .036
			BIC = 513341			BIC = 507576
Model 2:						
Parameters constrained to calibration values	--	--	--	42	13	χ^2 = 732.97
			--			CFI = .971
			--			TLI = .969
			--			RMSEA = .030
			--			BIC = 484334
Model 3:						
Only non-significant parameters fixed to zero	--	--	--	32	23	χ^2 = 714.99
			--			CFI = .967
			--			TLI = .954
			--			RMSEA = .038
			--			485990

Note. *q* = number of parameters freely estimated. Coefficients having *p* > .10 are set to zero in the Model 2 constrained cross-validation sample.

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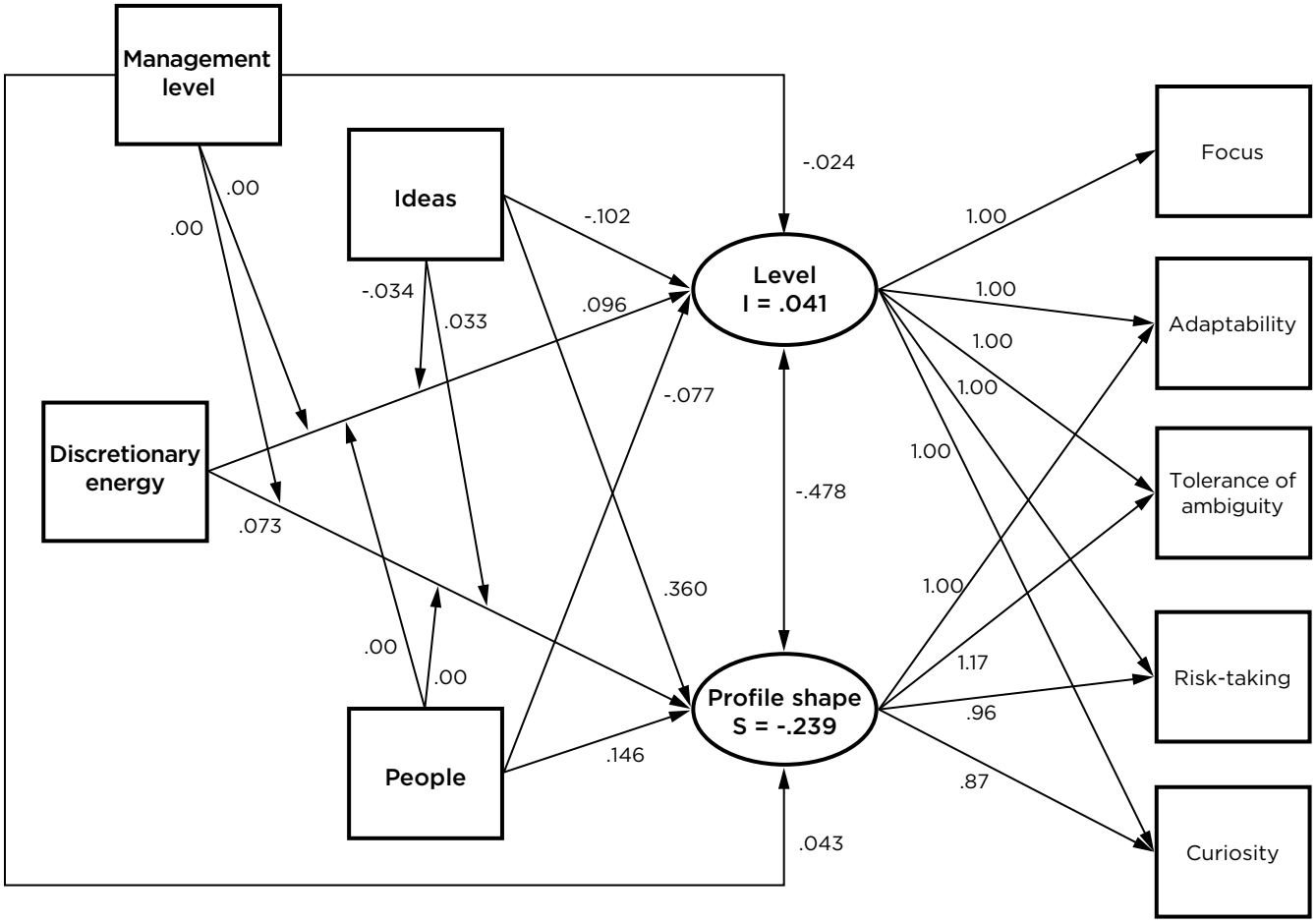
Figure AGLCM. Cross-validated latent change model examining the impact of covariates on profile of KF4D Agility subdomains

Fit measures:
CFI = .96
TLI = .96
RMSEA = .04



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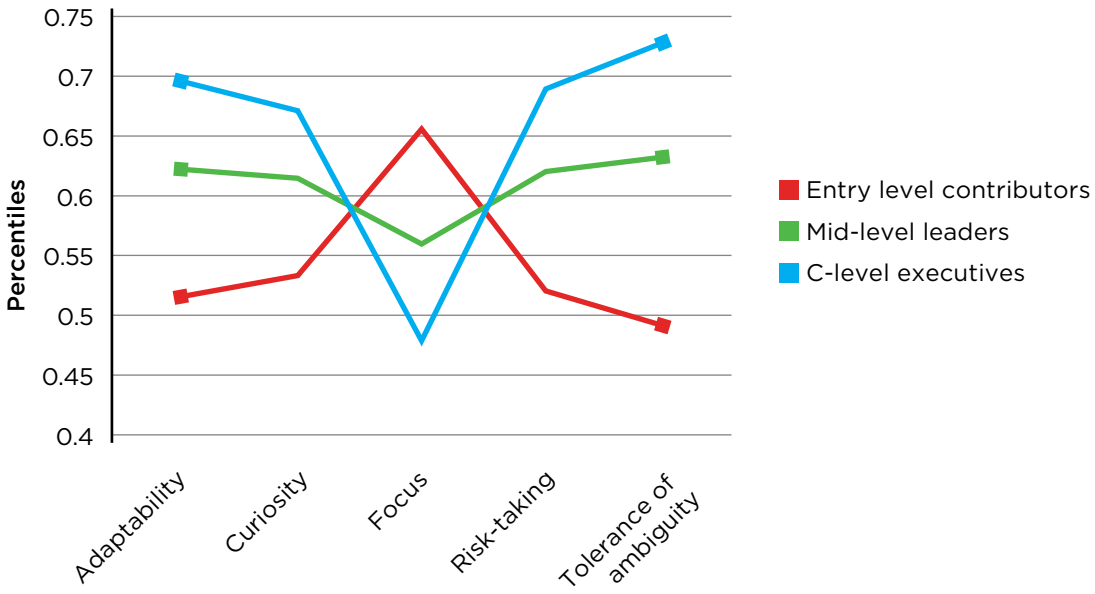
Agility traits. Results for the final model indicated that FO (the reference occasion) was positively effected by WE (t [.016] = 3.62, $p \leq .001$),[23] while, as would be anticipated, being negatively effected by the I (t [.009] = -12.65, $p \leq .001$) and P (t [.009] = -8.95, $p \leq .001$) variables as well as management level (ML) (t [.004] = -4.33, $p \leq .001$). Interaction effects indicated that the positive effect of WE on FO tends to decrease as the I variable increases (t [.009] = 1.65, $p \leq .10$), although management level and P had no analogous effect. The slope, or "profile shape," was positively impacted by all covariates including ML (t [.005] = 10.36, $p \leq .001$), WE (t [.021] = 4.71, $p \leq .001$), I (t [.013] = 28.63, $p \leq .001$), and P (t [.012] = 13.01, $p \leq .001$). The Slope x WE x I interaction was also significant (t [.012] = 2.07, $p \leq .05$), indicating that WE's positive impact on the slope becomes more positive as I increases. No other covariate effects on the slope or reference occasion were significant. Additional results, including loadings, can be examined in Figure AGLCM.

To facilitate understanding and underscore the KF4D system's utility in separating among highly engaged individuals *with different kinds of jobs*, we plot model-implied values for entry-level individual contributors (EICs), mid-level leaders (MLLs), and C-level executives (CLEVs) at approximately the 95th percentile of WE on all Agility subdomains in Figure AGLEV. Results in Figure AGLEV show that most engaged CLEVs tend to lead most strongly with AD and TA (and other positive-loading Agility subdomains), while particularly de-emphasizing FO to levels just below average. In notable contrast, EICs lead most strongly with FO levels around the 66th percentile, while de-emphasizing all other subdomains of Agility to near-average levels.

We also asked what the lowest and highest engagement MLLs tend toward in terms of Agility subdomain profiles. Figure AGMID shows again that mid-level leaders who are most engaged tend to look like CLEVs in terms of relative emphasis of variables while having lower scores (than CLEVs, see Figure AGLEV) on all Agility variables other than FO. Low engagement MLLs, however, like *high* engagement EICs tend to emphasize FO and de-emphasize the other Agility subdomains. They lead most strongly with Focus, while having below average scores on all Agility subdomains.

Figure AGLEV. Model-implied high performance target profiles for Agility subdomains across management levels



[23] Throughout this section, reported t values are from the calibration sample. Standard errors appear in brackets. Standardized beta weights are shown in the corresponding path-analytic diagram.

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Figure AGMID. Model-implied low and high performance profiles for Mid-level leaders on Agility subdomains

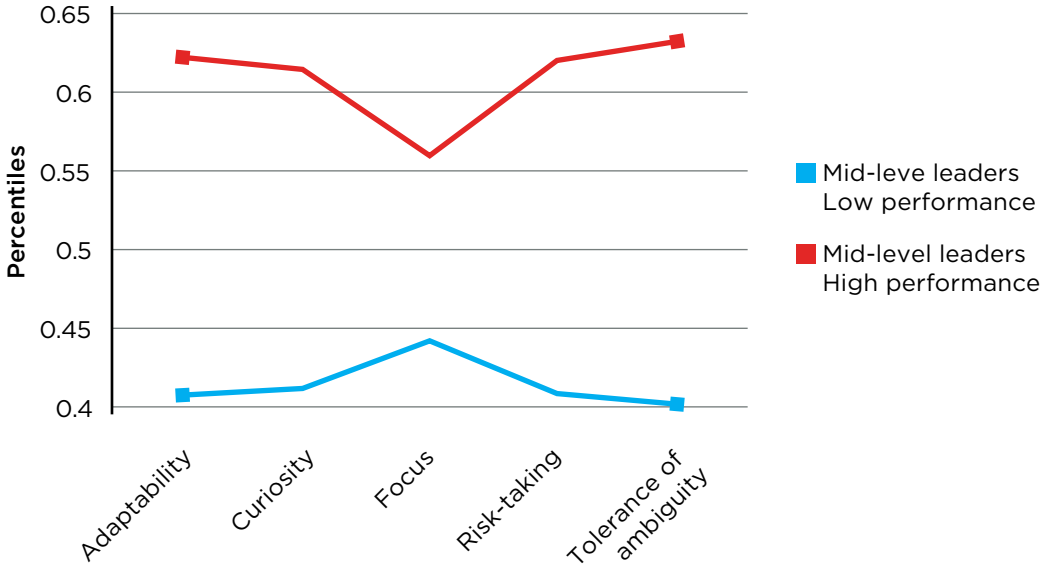

Figure AGTYP. Model-implied high performance targets across Tracey & Rounds (1995) job types

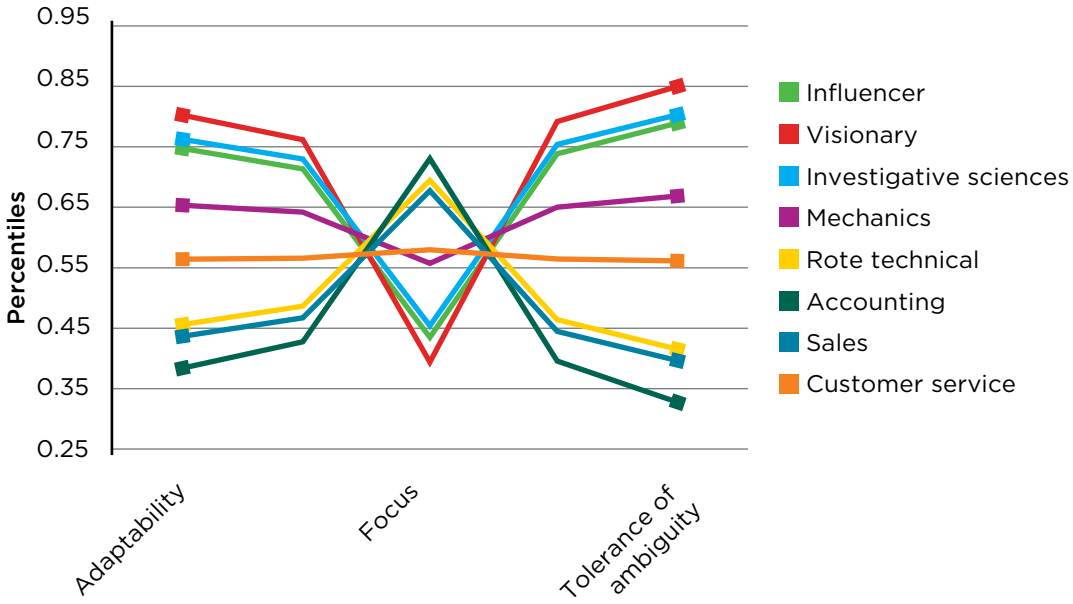

Figure AGTYP shows high engagement target scores for each of the Tracey and Rounds (1995) job types in mid-level management roles. In terms of Agility subdomains, individuals in accounting, sales, and rote technical roles do best when they lead with detail orientation (FO) and de-emphasize positive loading Agility constructs (AD, CU, RI, TA) to levels somewhat below the mean. Conversely, individuals who are influencers, visionaries, and investigators need to have, in most cases, positive loading Agility scores notably above the mean while de-emphasizing FO.

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Striving traits. Figure STLCM shows path-analytic results for the profile of Striving subdomains regressed on covariates. The impact of WE (t [.017] = 24.18, $p \leq .001$) on NA (the reference occasion) is notable and larger than any effect of WE observed on any trait, although at higher management levels, WE's impact decreases a small amount (t [.004] = 1.76, $p \leq .10$). Variables I (t [.011] = 10.55, $p \leq .001$), P (t [.011] = 5.18, $p \leq .001$), and ML (t [.005] = 5.00, $p \leq .001$) also have positive impact on NA. The negative effect of WE on the profile shape (t [.017] = 8.18, $p \leq .001$) indicates, among other things, that WE's impact is somewhat lower on the rest of the KF4D Striving subdomains in the model, although given the pattern of loadings, WE's effect remains positive at average levels of I and beyond. Elevated I-orientation of jobs impacts the profile shape negatively (t [.011] = -5.09, $p \leq .001$), while increased P-orientation impacts it positively (t [.011] = 4.27, $p \leq .001$). Similarly, the effect of WE on the profile shape increases with P (t [.010] = 3.90, $p \leq .001$) but decreases with I (t [.010] = 3.60, $p \leq .001$). ML has no effect on the profile shape nor on the effect of WE on the profile shape.

Table STLCM. Results of cross-validation for latent change models on Striving trait subdomains

	CALIBRATION DATA *n* = 15052			**CROSS-VALIDATION DATA** *n* = 14914		
Conditions	***df***	***q***	**Fit indices**	***df***	***q***	**Fit indices**
Model 1:						
Parameters freely estimated	17	25	χ^2 = 160.30	17	25	χ^2 = 231.98
			CFI = .986			CFI = .981
			TLI = .972			TLI = .961
			RMSEA = .024			RMSEA = .030
			BIC = 456054			BIC = 454948
Model 2:						
Parameters constrained to calibration values	--	--	--	33	9	χ^2 = 284.20
			--			CFI = .977
			--			TLI = .977
			--			RMSEA = .023
			--			BIC = 454847
Model 3:						
Only non-significant parameters fixed to zero	--	--	--	21	21	χ^2 = 241.22
			--			CFI = .980
			--			TLI = .968
			--			RMSEA = .027
			--			BIC = 454919

Note. q = number of parameters freely estimated. Coefficients having $p > .10$ are set to zero in the Model 2 constrained cross-validation sample.

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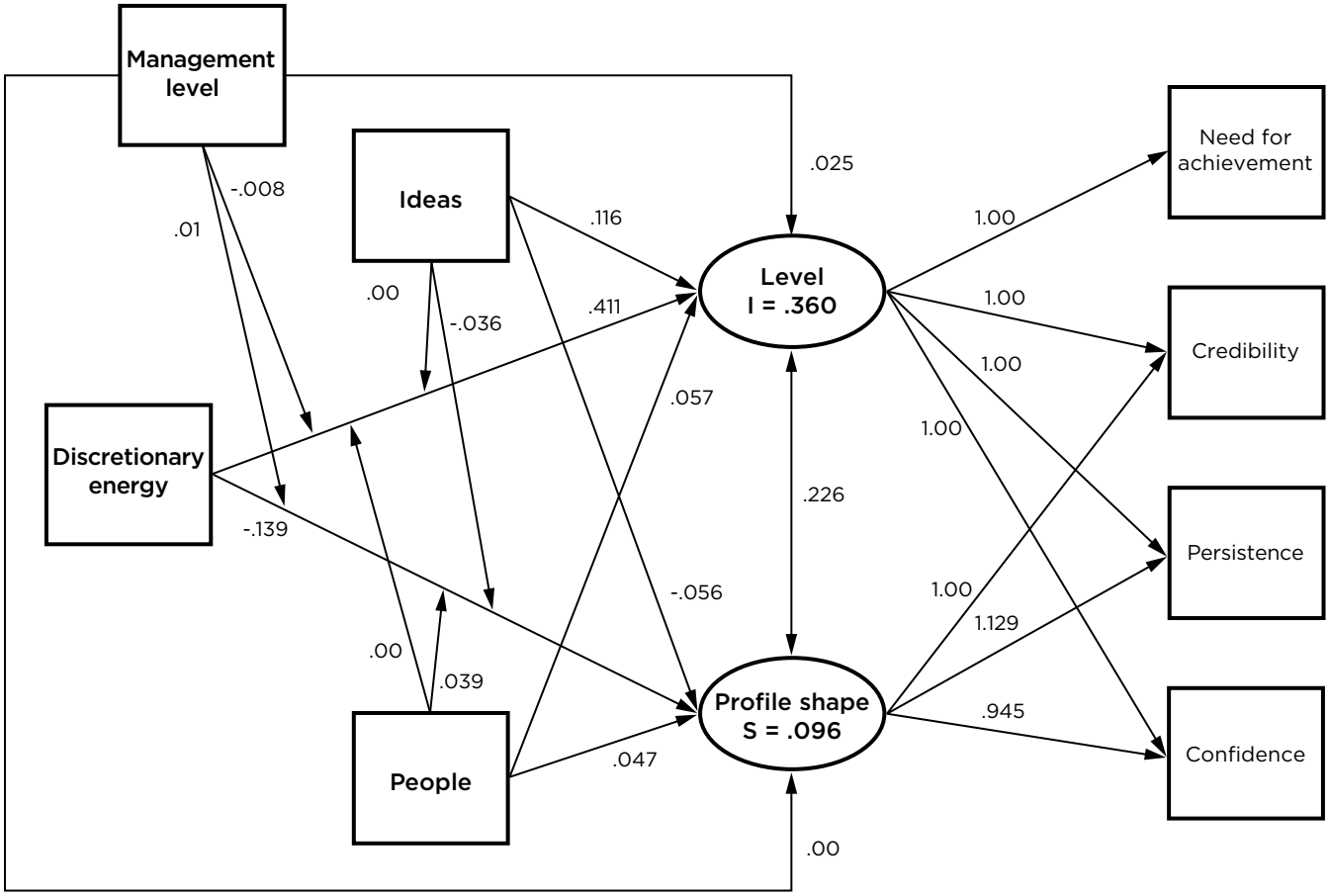
Figure STLCM. Cross-validated latent change model examining the impact of covariates on profile of KF4D Striving subdomains

Fit measures:
CFI = .98
TLI = .98
RMSEA = .02



Striving (our analog to Conscientiousness in the Big Five personality literature) has been purported to have the most consistent, well-documented, and positive predictive utility on workplace outcomes (Barrick & Mount, 1991; Hurtz & Donovan, 2000; Mount & Barrick, 1995; O'Connor & Paunonen, 2007); its predictive utility has also been called "trans-occupational." Our results, shown in Figure STLEV, provide corroboration and support for these notions. First, the effects of WE on Striving subdomains are relatively large (this can also be seen by comparing Table WAIS to Tables WAIA through WAID). Unlike in other traits instances, *all* high engagement targets for all management levels are above the 60th percentile. For each ML, NA is most emphasized, followed closely by all other Striving subdomains. We also observe in Figure STMID that the difference on all scores between high and low engagement MLLs is larger than observed for most or all other traits reported in this manual; generally speaking, Striving subdomains are the strongest predictors of WE among the KF4D traits.

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Figure STTYP shows model-implied high engagement targets across Tracey and Rounds (1995) types. All roles have NA targets near or above the 65th percentile. Relatively high targets are seen among influencers, visionaries, and salespeople. Customer service roles also have relatively high targets, although unlike all types except sales, customer service targets are higher for all Striving components compared to NA. As seen elsewhere, in some respects, some of the lowest targets are found among rote technical workers and accountants whose jobs are among the more likely to be predictable and have established reliable processes that are followed repeatedly.

Figure STLEV. Model-implied high performance target profiles on Striving subdomains across management levels

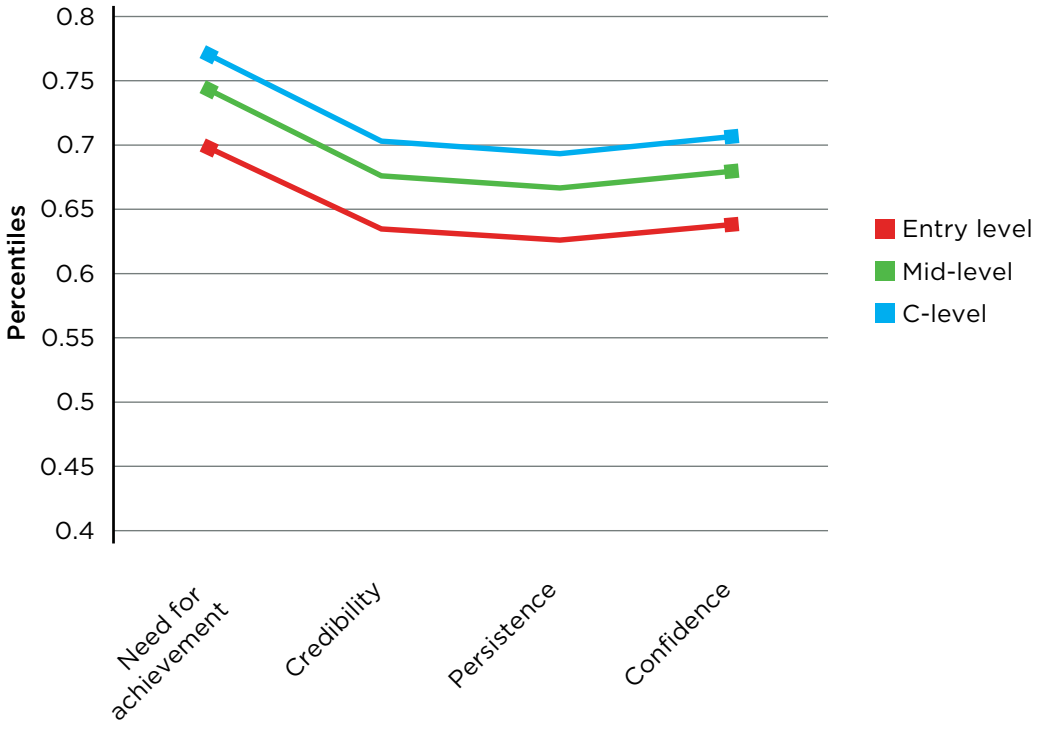

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Figure STMID. Model-implied low and high performance target profiles for Striving subdomains among Mid-level leaders

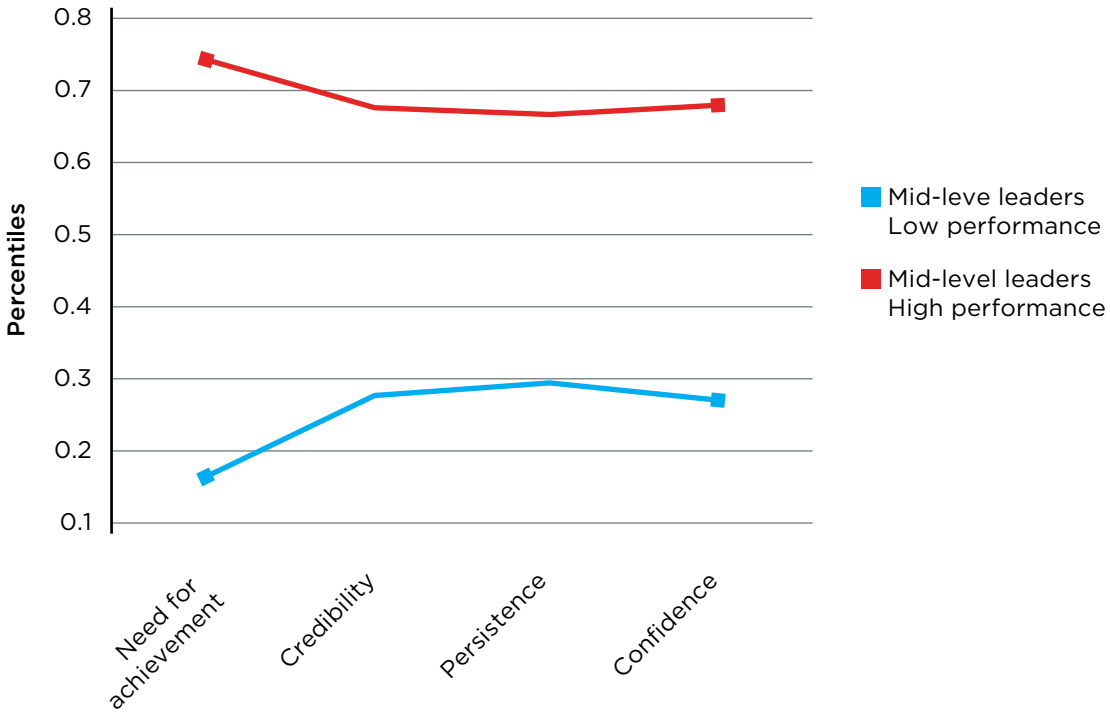
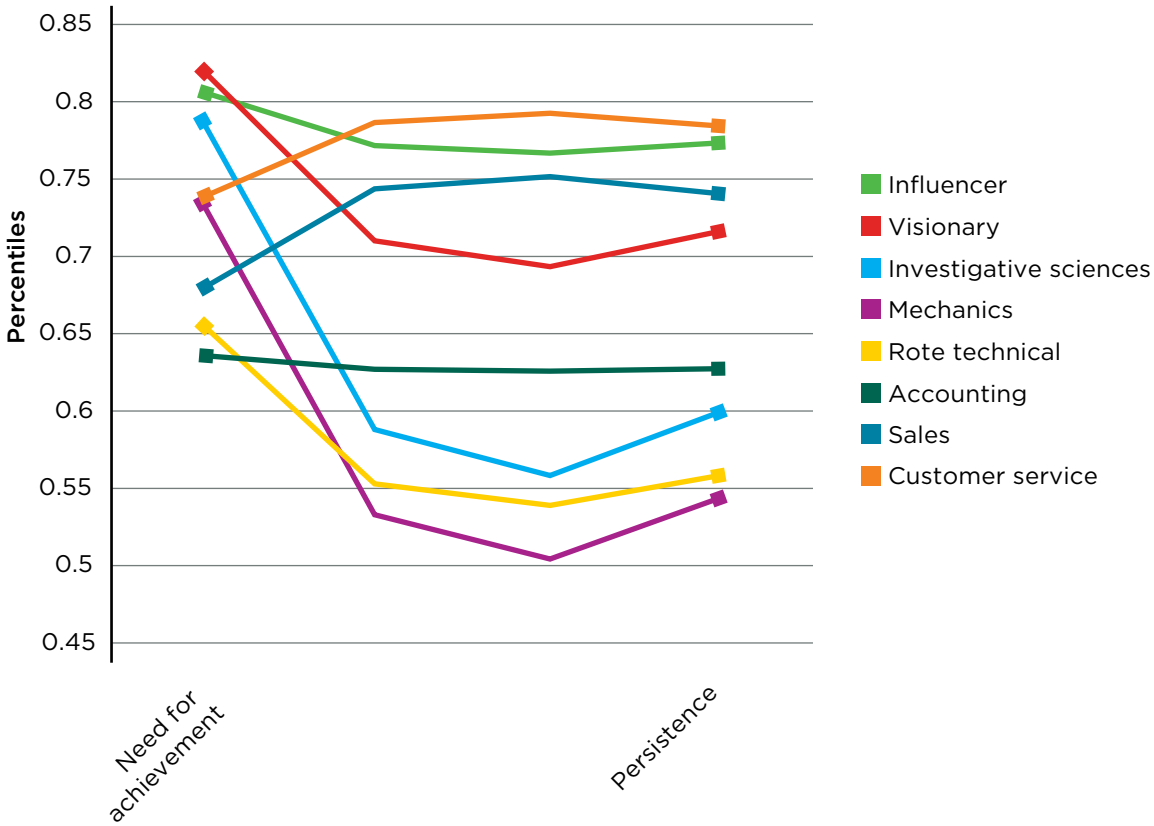


Figure STTYP. Model-implied high performance targets on Striving subdomains across Tracey & Rounds (1995) job types



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Positivity traits. Optimism is positively impacted by I (t [.011] = 4.12, $p \leq .001$), P (t [.011] = 7.79, $p \leq .001$), WE (t [.018] = 12.23, $p \leq .001$), and ML (t [.005] = 2.80, $p \leq .01$), as shown in Figure POLCM. The positive effect of WE on OP decreases as jobs become increasingly I-oriented (t [.010] = -3.09, $p \leq .01$). The effect of WE on OP increases as jobs become increasingly P-oriented (t [.011] = 4.66, $p \leq .001$), as might be expected, considering the nature of the Positivity measures. The effect of WE (t [.016] = -3.58, $p \leq .001$) on the profile shape is attenuated, and becomes increasingly so as P (t [.005] = 10.36, $p \leq .001$) increases, but less so as I increases (t [.005] = 2.48, $p \leq .05$). The significant Slope x ML x WE interaction (t [.005] = 10.36, $p \leq .001$) indicates that the effect of WE on the profile shape increases at higher levels of management.

Table POLCM. Results of cross-validation for latent change models on Positivity trait subdomains

	CALIBRATION DATA *n* = 15052			CROSS-VALIDATION DATA *n* = 14914		
Conditions	***df***	***q***	**Fit indices**	***df***	***q***	**Fit indices**
Model 1:						
Parameters freely estimated	7	23	χ^2 = 17.91	7	28	χ^2 = 54.38
			CFI = .997			CFI = .990
			TLI = .991			TLI = .964
			RMSEA = .010			RMSEA = .022
			BIC = 421128			BIC = 418886
Model 2:						
Parameters constrained to calibration values	--	--	--	22	8	χ^2 = 98.30
			--			CFI = .983
			--			TLI = .982
						RMSEA = .015
			--			BIC = 418776
Model 3:						
Only non-significant parameters fixed to zero	--	--	--	11	19	χ^2 = 55.67
			--			CFI = .990
			--			TLI = .978
			--			RMSEA = .017
			--			BIC = 418829

Note. q = number of parameters freely estimated. Coefficients having $p > .10$ are set to zero in the Model 2 constrained cross-validation sample.

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Figure POLCM. Cross-validated latent change model examining the impact of covariates on profile of KF4D Positivity subdomains

Fit measures:
CFI = .98
TLI = .98
RMSEA = .02

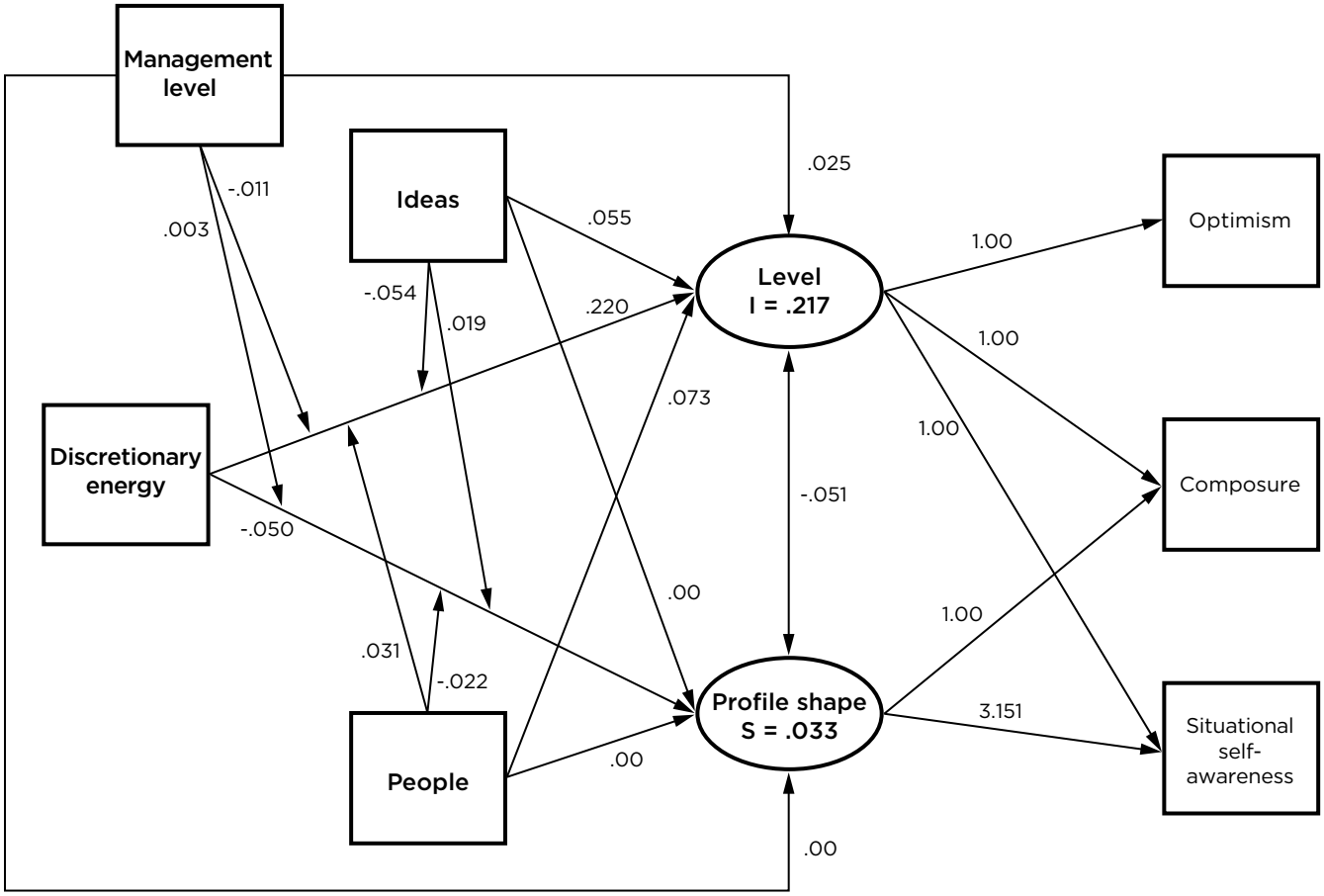

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Figure POLEV shows that all three Positivity subdomains tend to rise among maximally engaged incumbents as one moves up through the management pipeline. SS appears to be the most differentiating across the pipeline, such that the most successful EICs have SS scores notably below their OP and CP scores, while the most successful CLEVs have SS levels that approach the same levels seen in OP and CP. Note that all successful incumbents, regardless of management level, have OP, CP, and SS scores at or (usually) above the average on all the Positivity subdomains. Figure POMID shows that the most successful MLLs emphasize OP and CP, while having SS levels lower but still somewhat above the mean. Interestingly, the least successful MLLs emphasize SS most strongly with scores typically near the mean, while having OP and CP scores notably below the mean.

Some intuitively appealing results concerning the nature of high engagement target scores across Tracey and Rounds (1995) types are shown in Figure POTYP. Jobs with elevated P levels, such as customer service, sales, and "influencer" roles, tend to have high and the highest target scores on OP and CP. Roles with low P-orientation have lower target scores that are typically near the mean. SS seems to operate differently, being highest for investigative scientists and mechanics who have relatively low P-orientation and relatively high I-orientation, and whose targets are relatively low on OP and CP. Note, however, that all target scores for SS, OP, and CP are ultimately very near or above the mean, regardless of job type.

Figure POLEV. Model-implied high performance target profiles on Positivity subdomains across management levels

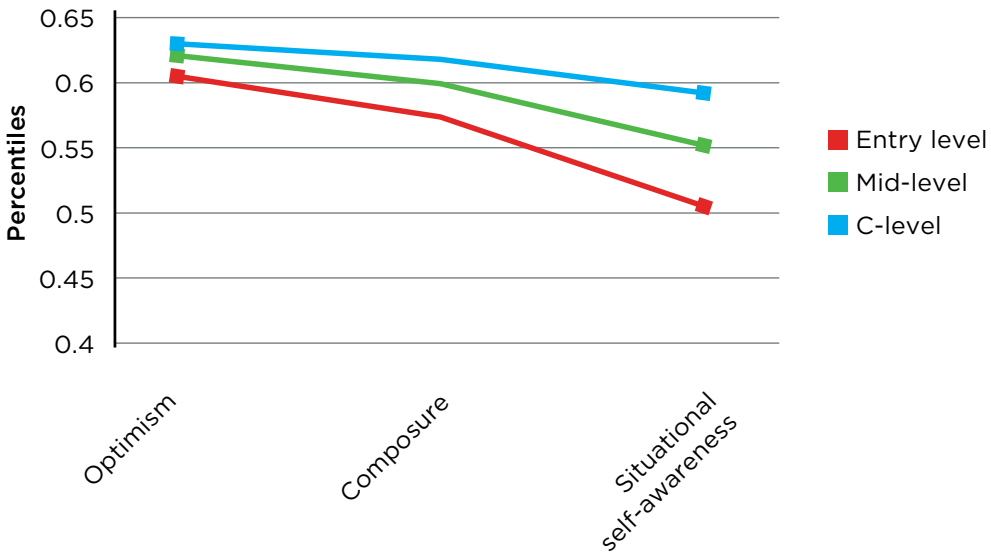

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Figure POMID. Model-implied low and high performance target profiles for Positivity subdomains among Mid-level leaders

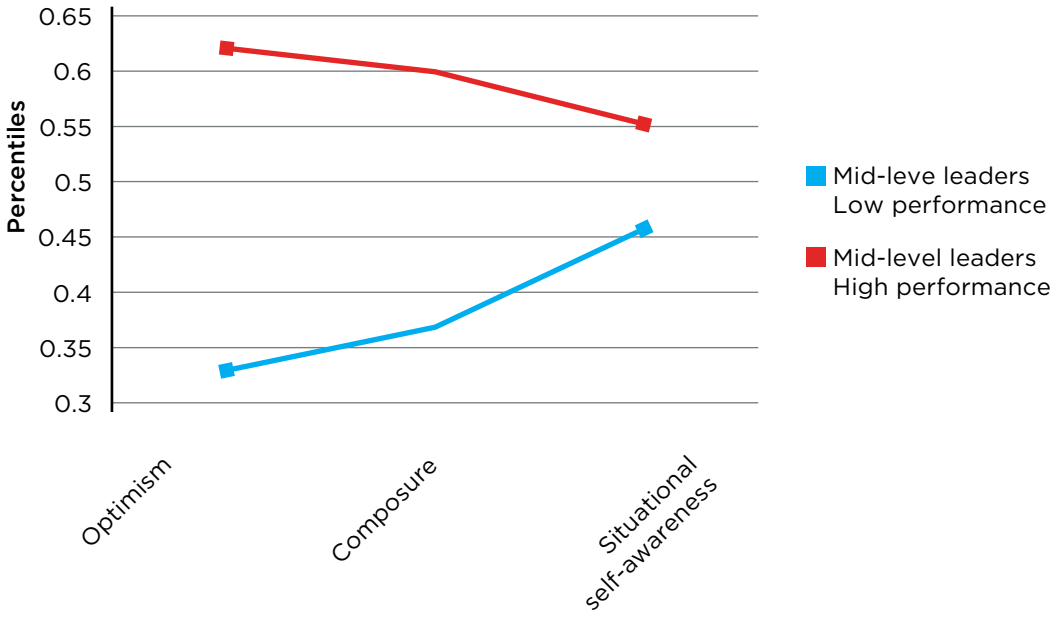
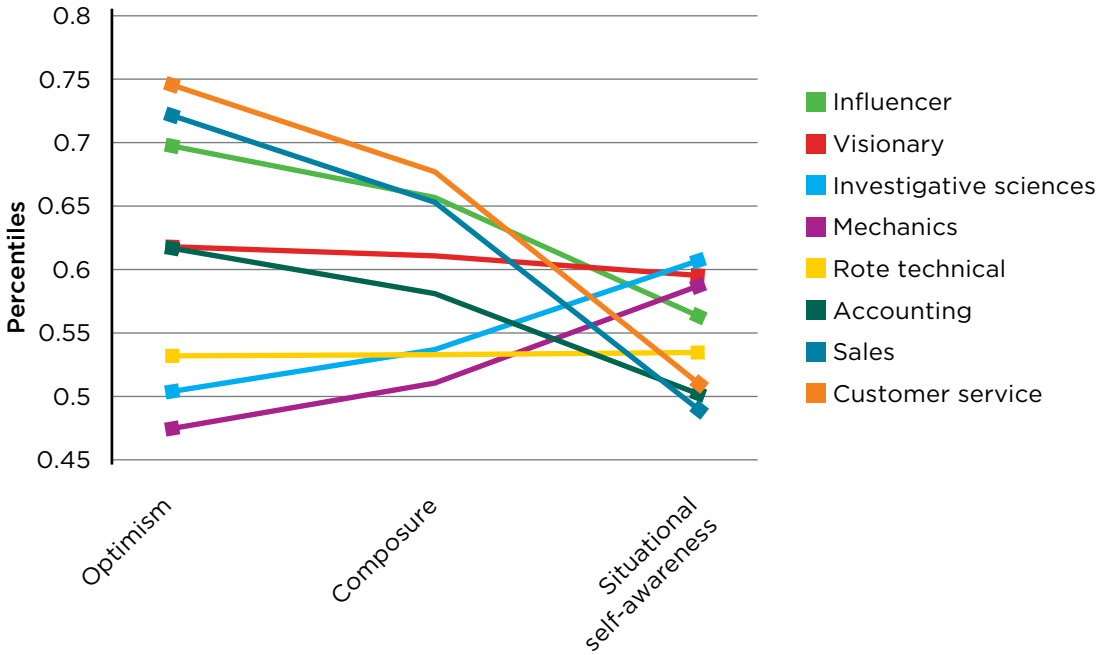


Figure POTYP. Model-implied high performance targets on Positivity subdomains across Tracey & Rounds (1995) job types



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Presence traits. Results for the final model indicated that EM (the reference occasion) was positively effected by WE (*t* [.017] = 3.19, $p \leq .005$) and, as would be expected given the "people nature" of EM, it is also positively impacted by P (*t* [.011] = 12.80, $p \leq .001$). The I (*t* [.011] = 1.73, $p \leq .10$) variable and ML (*t* [.005] = 9.60, $p \leq .001$) show negative impact on EM. There were no interaction effects on the reference occasion. The profile shape was positively impacted by all covariates including ML (*t* [.006] = 17.78, $p \leq .001$), WE (*t* [.019] = 6.32, $p \leq .001$), I (*t* [.012] = 3.67, $p \leq .001$), and P (*t* [.012] = 5.50, $p \leq .001$). The Slope x WE x P interaction was also significant (*t* [.011] = 4.09, $p \leq .001$), indicating that WE's positive impact on the slope becomes more positive as P increases, as would be expected given the nature of the KF4D scores in this set. The Slope x WE x ML interaction was also significant (*t* [.005] = 2.00, $p \leq .05$) and indicates that the effect of WE on the profile shape decreases by -.01 at each ML.[24] No other covariate or interaction effects on the slope or reference occasion were significant. Additional results, including loadings, can be examined in Figure PRLCM.

Table PRLCM. Results of cross-validation for latent change models on Presence trait subdomains

	CALIBRATION DATA *n* = 15052			CROSS-VALIDATION DATA *n* = 14914		
Conditions	***df***	***q***	**Fit indices**	***df***	***q***	**Fit indices**
Model 1:						
Parameters freely estimated	14	28	χ^2 = 115.25	14	28	χ^2 = 133.68
			CFI = .990			CFI = .988
			TLI = .975			TLI = .971
			RMSEA = .022			RMSEA = .024
			BIC = 456359			BIC = 454980
Model 2:						
Parameters constrained to calibration values	--	--	--	30	12	χ^2 = 204.96
			--			CFI = .983
			--			TLI = .980
			--			RMSEA = .020
			--			BIC = 454498
Model 3:						
Only non-significant parameters fixed to zero	--	--	--	18	24	χ^2 = 144.45
			--			CFI = .987
			--			TLI = .976
			--			RMSEA = .022
			--			BIC = 454933

Note. *q* = number of parameters freely estimated. Coefficients having $p > .10$ are set to zero in the Model 2 constrained cross-validation sample.

[24] We believe that this is partly a result of range restriction at higher levels of the management pipeline. On many KF4D scores, particularly those positively correlated with ML, scores increase and variances decrease at higher levels of ML such that high ML incumbents tend to have higher scores and less variance. This allows for less impact for the WE variable.

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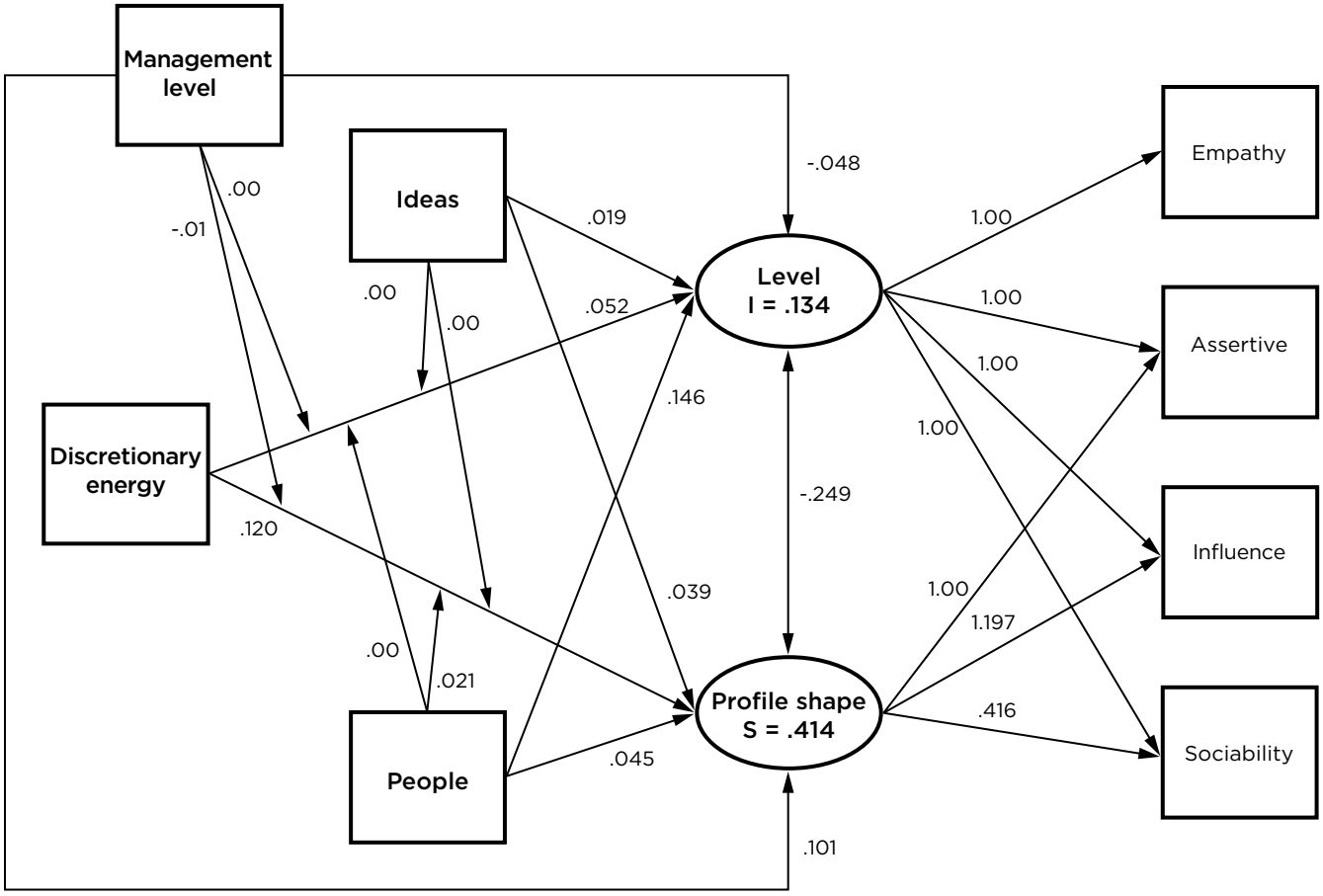
Figure PRLCM. Cross-validated latent change model examining the impact of covariates on profile of KF4D Presence subdomains

Fit measures:
CFI = .98
TLI = .98
RMSEA = .02



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As with other measures, we plot model-implied values for EICs, MLLs, and CLEVs at approximately the 95th percentile of WE on all Presence subdomains in Figure PRLEV. Results show that most engaged CLEVs tend to lead most strongly with AS and IN while de-emphasizing EM and SO to levels nearer to the mean. In notable contrast, EICs lead most strongly with EM and SO levels somewhat above the mean while relatively de-emphasizing AS and IN to average or below average levels. Figure PRMID shows again that mid-level leaders who are most engaged tend to look like CLEVs in terms of relative emphasis of variables while having lower scores (than CLEVs, see Figure PRLEV) on AS and IN. Low engagement MLLs, however, look similar to *high* engagement EICs and tend to emphasize EM and SO and de-emphasize AS and IN.

Figure PRTYP shows that most highly engaged incumbents in most roles (near MLL level) in terms of Tracey and Rounds (1995) types emphasize AS and IN more than EM and SO. Exceptions include accounting, mechanics, and rote technical, who all have relatively low P levels. In general, the types are associated with higher or lower scores on all Presence subdomains, such that types with higher I and especially higher P levels are generally elevated on all Presence subdomains.

Figure PRLEV. Model-implied high performance target profiles for Presence subdomains across management levels

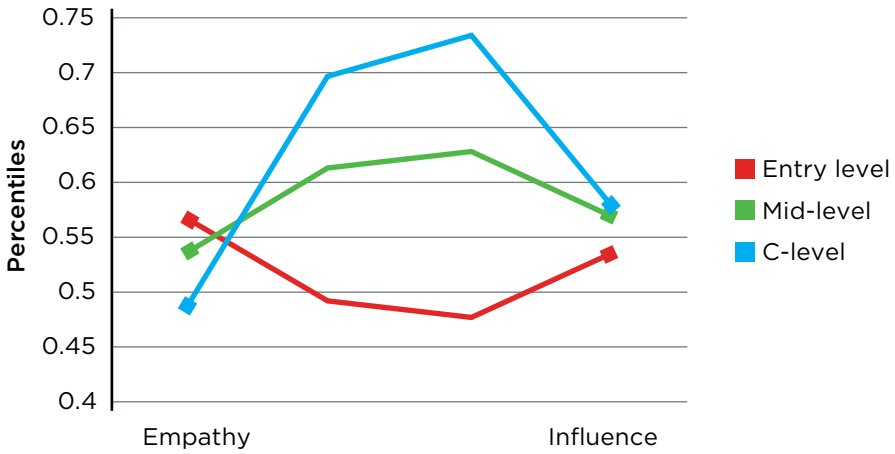

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Figure PRMID. Model-implied low and high performance target profiles for Presence subdomains among Mid-level leaders

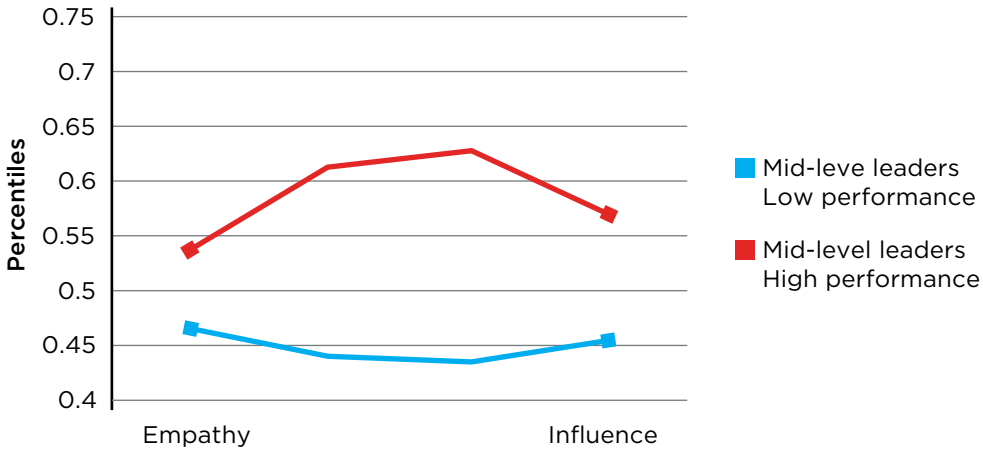
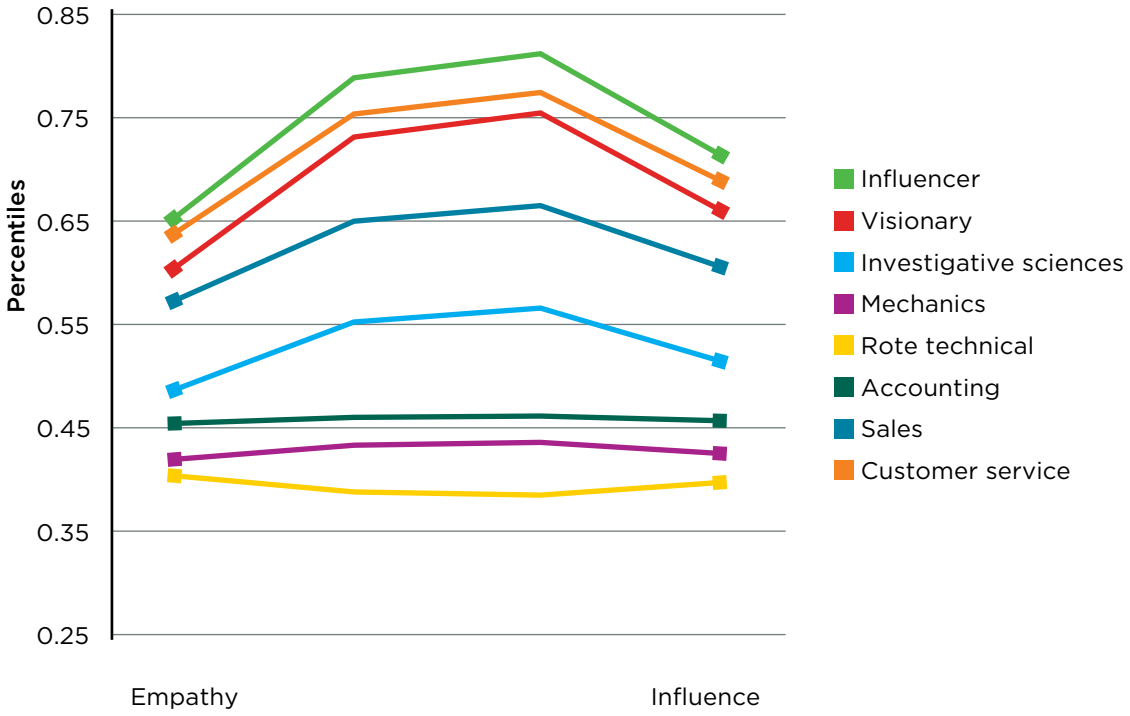


Figure PRTYP. Model-implied high performance targets on Presence subdomains across Tracey & Rounds (1995) job types



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Agreeableness traits. Results in Figure ARLCM show that WE (*t* [.015] = 9.00, $p \leq .001$), I (*t* [.010] = 10.50, $p \leq .001$), and P (*t* [.010] = 11.81, $p \leq .001$) have positive effects on the reference occasion (AF), while ML has no effect. As I, P, and WE increase, AF tends to increase, although the increase associated with WE decreases somewhat (while staying positive within sample observed ranges of WE) at elevated levels of I, due to the significant WE x I interaction (*t* [.009] = 4.11, $p \leq .001$). WE (*t* [.013] = -3.15, $p \leq .01$), I (*t* [.009] = 6.00, $p \leq .001$) and P (*t* [.010] = 7.14, $p \leq .001$) all have negative effects on the profile shape, although given the negative loading for OD, their effects are ultimately added positive on OD. Note also that the negative effect of WE on the profile shape becomes less negative at increased levels of I (*t* [.008] = 2.55, $p \leq .05$).

Table ARLCM. Results of cross-validation for latent change models on Agreeableness trait subdomains

	CALIBRATION DATA *n* = 15052			CROSS-VALIDATION DATA *n* = 14914		
Conditions	***df***	***q***	**Fit indices**	***df***	***q***	**Fit indices**
Model 1:						
Parameters freely estimated	16	26	χ^2 = 329.37	16	26	χ^2 = 280.70
			CFI = .938			CFI = .950
			TLI = .868			TLI = .900
			RMSEA = .037			RMSEA = .034
			BIC = 461527			BIC = 460279
Model 2:						
Parameters constrained to calibration values	--	--	--	32	10	χ^2 = 350.89
			--			CFI = .940
			--			TLI = .937
			--			RMSEA = .026
			--			BIC = 460196
Model 3:						
Only non-significant parameters fixed to zero	--	--	--	22	20	χ^2 = 306.56
			--			CFI = .947
			--			TLI = .918
			--			RMSEA = .030
			--			BIC = 460247

Note. q = number of parameters freely estimated. Coefficients having $p > .10$ are set to zero in the Model 2 constrained cross-validation sample.

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Figure ARLCM. Cross-validated latent change model examining the impact of covariates on profile of KF4D Agreeableness subdomains

Fit measures:
CFI = .94
TLI = .94
RMSEA = .03

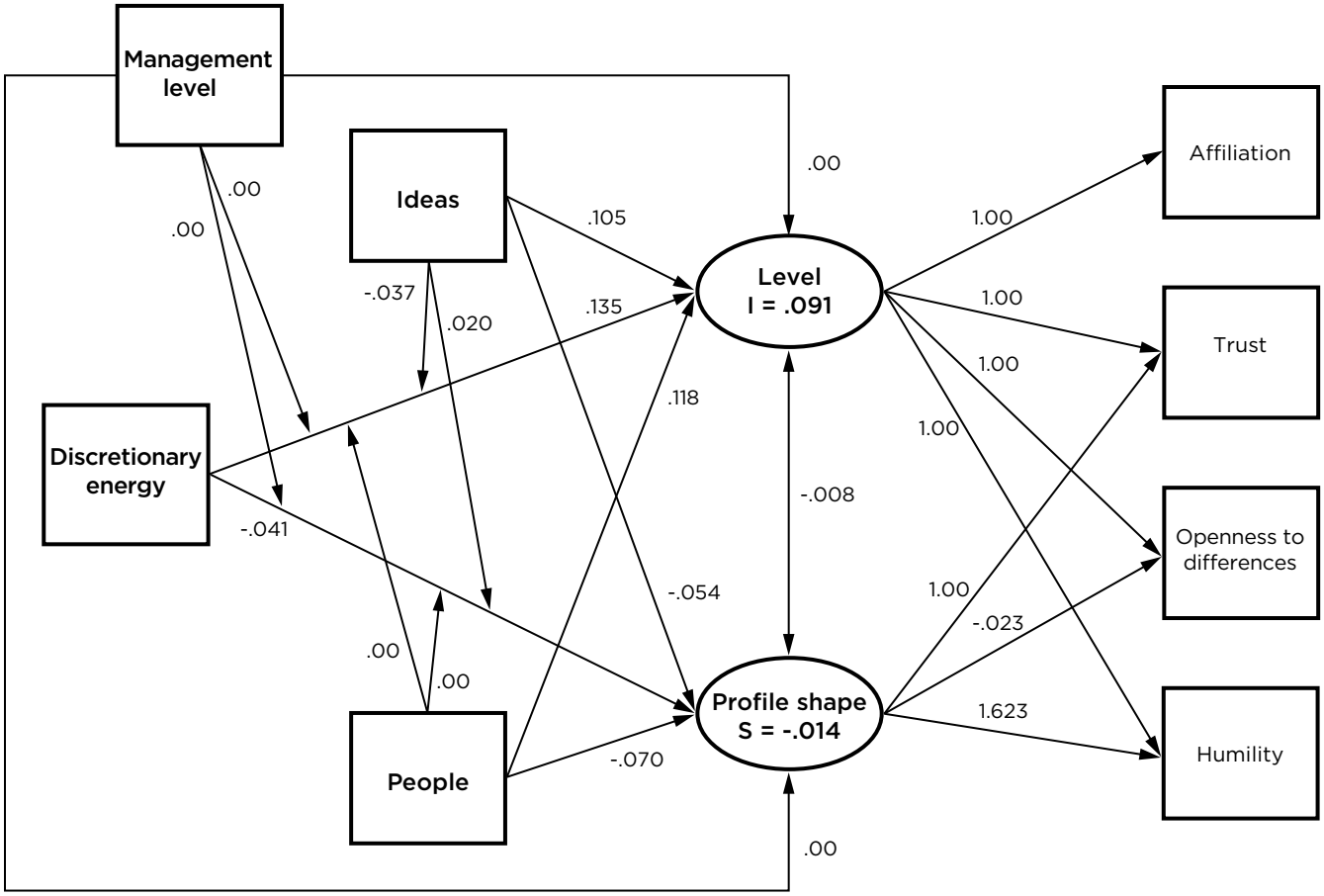

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Figure ARLEV shows that at higher levels in the management pipeline, successful incumbents become increasingly affiliative and open to differences while staying similar to lower-level incumbents in terms of TR and HU. It follows that, in terms of TR and HU, the most engaged low-level managers are notably similar to the most engaged upper-level managers, but they are notably different in terms of AF and OD. Note that all successful highly engaged incumbents across the management levels are near average or above average on all AGR subdomains. Low-performing mid-levels are independent, like to work alone, are more inclined to seek out people like themselves, and they tend to relatively emphasize trust and humility in social relationships (see Figure ARMID). In contrast, high-performing mid-levels tend toward affiliative work with diverse contacts and inputs. They're trusting and humble in an average way, but not in ways that trump their tendencies for affiliation and diversity.

Jobs involving elevated P levels—like sales and customer service—typically require higher levels of all AGR subdomains, but especially OD and AF (see Figure ARTYP). Jobs with low P levels, like accounting, rote technical, and mechanics, require lower levels on AGR subdomains overall, while tending to emphasize TR and HU more than OD and AF. The one exception to this is found among investigative scientists, who, while having low P roles, still tend to emphasize OD and AF a small amount. This is due in part to the positive effects that I ultimately has on OD and AF.

Figure ARLEV. Model-implied high performance target profiles on Agreeableness subdomains across management levels

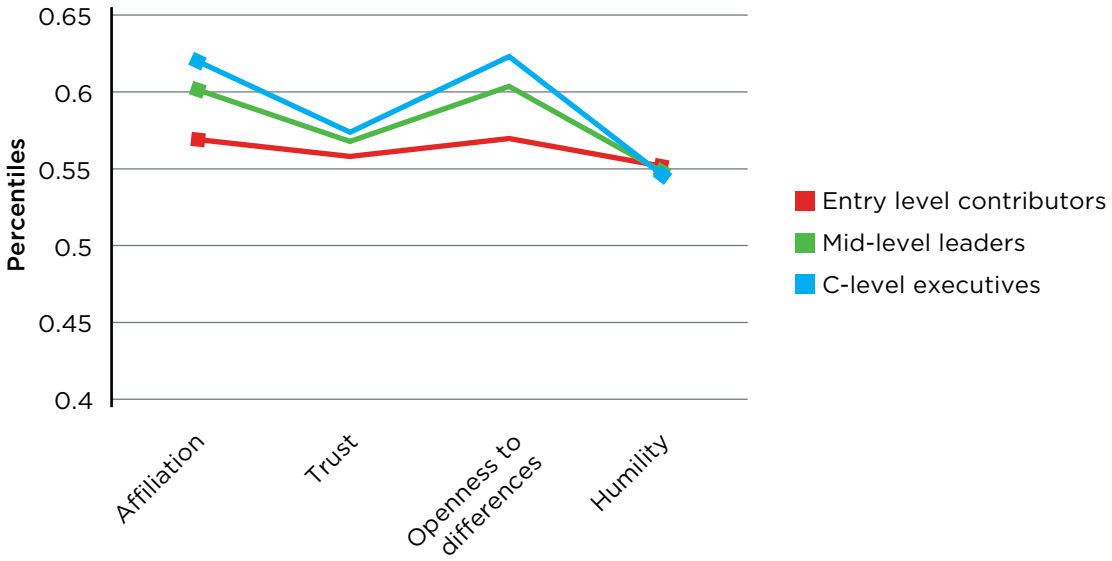

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Figure ARMID. Model-implied high performance target profiles on Agreeableness subdomains across management levels

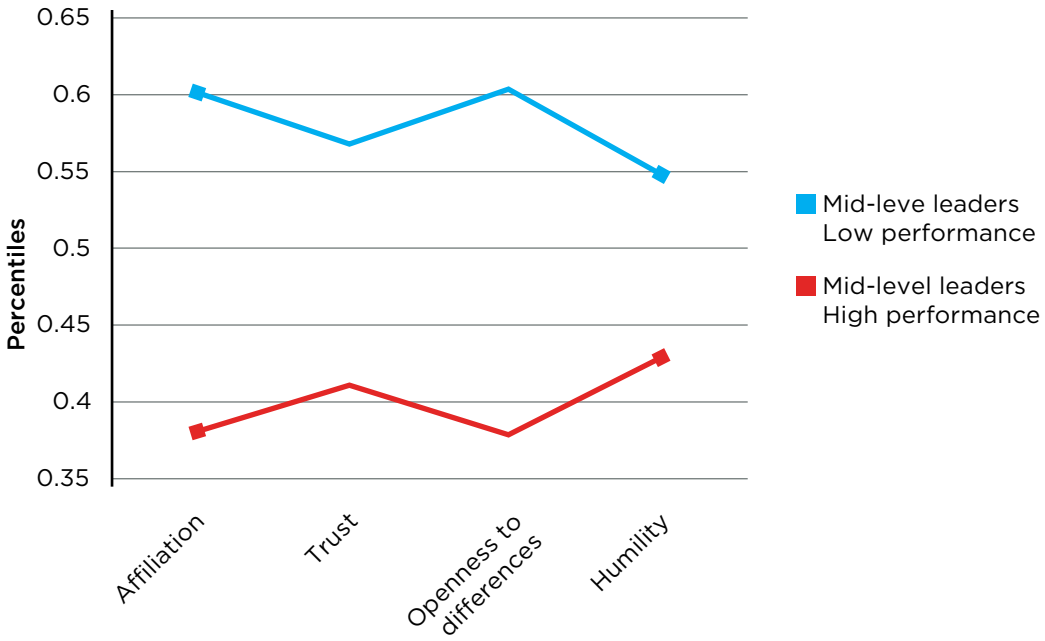
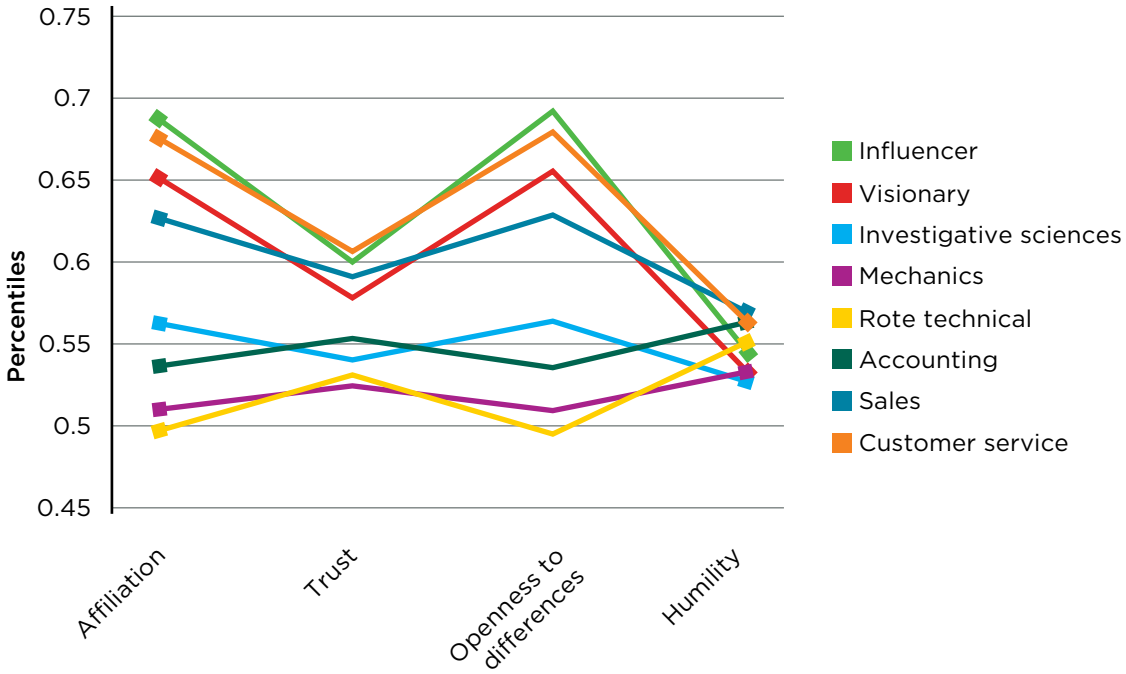


Figure ARTYP. Model-implied high performance targets on Agreeableness subdomains across Tracey & Rounds (1995) job types



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Higher-order traits. Figure SPLCM shows path-analytic results for the profile of higher-order traits regressed on covariates. The impact of WE on AG (the reference occasion) was positive and relatively large (t [.018] = 12.59, $p \leq .001$). The effects of I (t [.011] = 25.45, $p \leq .001$), P (t [.011] = 13.67, $p \leq .001$), and ML (t [.005] = 7.09, $p \leq .001$) were also positive and significant, with I being the most predictive among them and intuitively appealing, as such, given the nature of the AG higher-order factor. Increases in I were also associated with increases in the effect of WE on the reference occasion (t [.010] = 1.64, $p = .10$), although increases in ML were associated with decreases in the same effect (t [.004] = 2.13, $p \leq .05$). The effect of WE on the profile shape was positive (t [.013] = 2.08, $p \leq .05$). The effects of I (t [.011] = -15.00, $p \leq .001$) and ML (t [.004] = -4.75, $p \leq .001$) on the profile shape were negative, as was the Slope x I x WE interaction (t [.009] = -4.78, $p \leq .001$). No other effects on slope or intercept were significant.

Table SPLCM. Results of cross-validation for latent change models on trait higher-order factors

	CALIBRATION DATA *n* = 15052			CROSS-VALIDATION DATA *n* = 14914		
Conditions	***df***	***q***	**Fit indices**	***df***	***q***	**Fit indices**
Model 1:						
Parameters freely estimated	21	34	χ^2 = 936.44	21	34	χ^2 = 931.59
			CFI = .950			CFI = .948
			TLI = .894			TLI = .888
			RMSEA = .055			RMSEA = .055
			BIC = 491994			BIC = 488007
Model 2:						
Parameters constrained to calibration values	--	--	--	35	20	χ^2 = 950.45
			--			CFI = .947
			--			TLI = .932
			--			RMSEA = .043
			--			BIC = 487892
Model 3:						
Only non-significant parameters fixed to zero	--	--	--	24	31	χ^2 = 934.62
			--			CFI = .948
			--			TLI = .902
			--			RMSEA = .051
			--			BIC = 487981

Note. q = number of parameters freely estimated. Coefficients having $p > .10$ are set to zero in the Model 2 constrained cross-validation sample.

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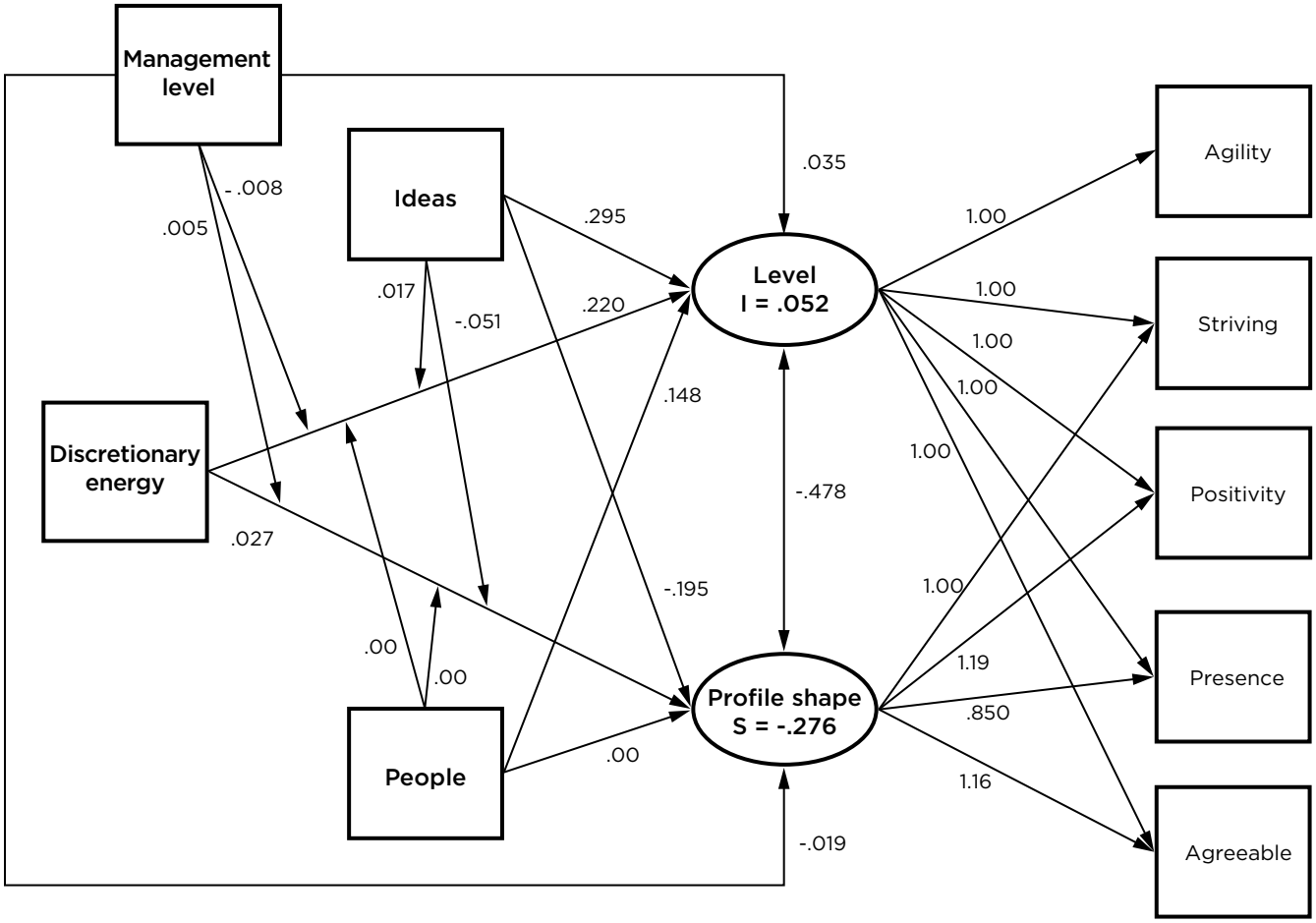
Figure SPLCM. Cross-validated latent change model examining the impact of covariates on profile of KF4D higher-order trait factors

Fit measures:
CFI = .95
TLI = .93
RMSEA = .04



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High engagement CLEV executives tend to be higher on all higher-order trait factors compared to lower management levels, as shown in Figure SPLEV. The most differentiating higher-order trait across the management pipeline (for high engagement incumbents) is Agility, followed by Striving and Presence. High engagement CLEVs tend to emphasize Agility, Striving, and Presence in their trait profiles, whereas high engagement EICs emphasize Positivity and Agreeableness, while de-emphasizing Agility. Figure SPMID shows that the most highly engaged MLLs have higher-order trait scores that are near the 65th percentile (on each trait). Low engagement MLLs also have a relatively flat profile, but each score is near the 35th or 40th percentile. In terms of job types, roles with a relatively high I-orientation tend to emphasize Agility more than any other higher-order trait (see Figure SPTYP). These include mechanics, visionaries, investigators, and influencers. When P-orientation trumps I-orientation, Agility tends to be de-emphasized in favor of more people-oriented traits, viz., Positivity, Presence, and Agreeableness. These jobs most notably include sales and customer service.

Figure SPLEV. Model-implied high performance target profiles on higher-order trait factors across management levels

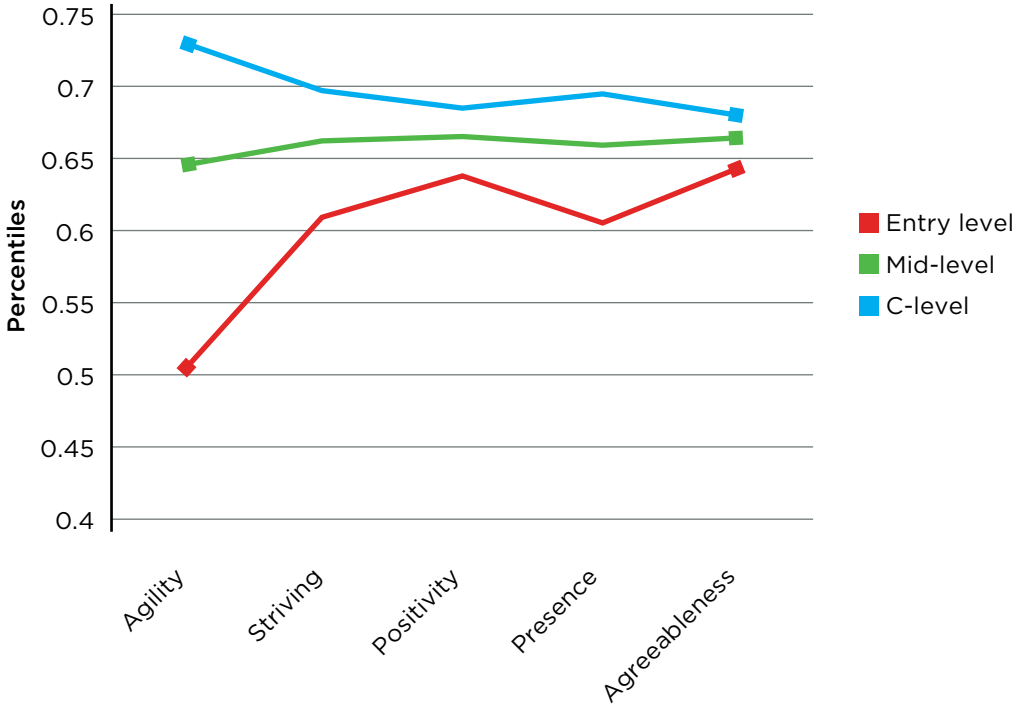

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Figure SPMID. Model-implied low and high performance target profiles for higher-order trait factors among Mid-level leaders

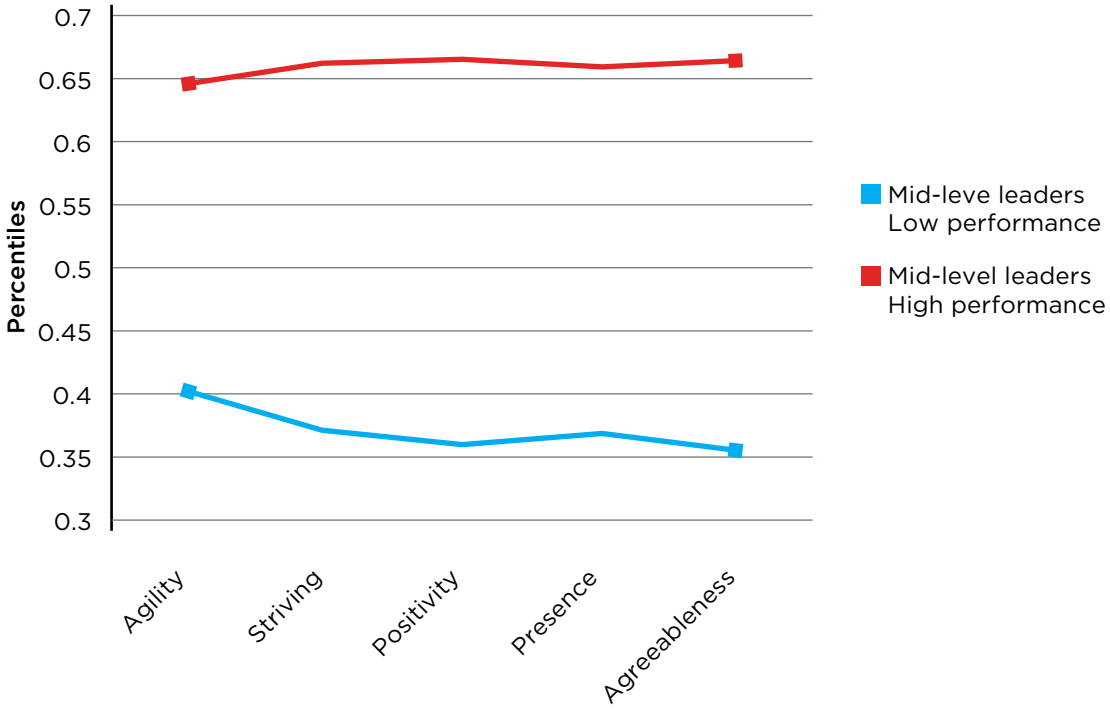
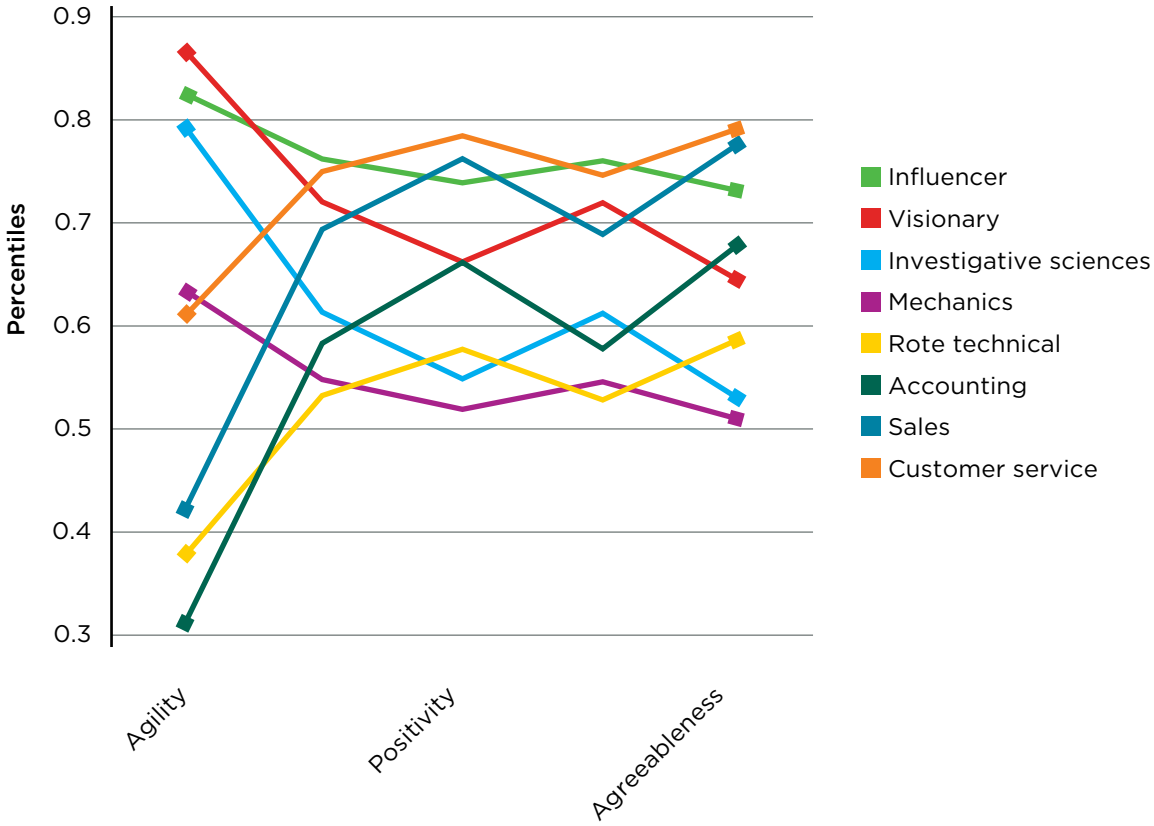


Figure SPTYP. Model-implied high performance targets on higher-order trait factors across Tracey & Rounds (1995) job types



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Competencies repeated-measures mixed-models results

Thought competencies. The multilevel repeated-measures mixed-model for Thought competencies is shown in Table THMLM. The final model accounted for 2.5% of the variance between individuals, 13.4% of the variance in the WE x Individuals interaction, and 34.9% of the variance in occasions. Results indicate that Customer focus (CFO, the reference occasion) is positively effected by both WE (t [.032] = 2.55, $p \leq .05$) and P (t [.015] = 6.41, $p \leq .001$). As ML (t [.007] = -2.93, $p \leq .001$) increases, however, CFO scores tend to decrease. The positive effect of WE increases at higher management levels (t [.007] = 3.19, $p \leq .001$) for CFO and all other measures, while decreasing among jobs with elevated I-orientation (t [.014] = -5.17, $p \leq .001$). While no direct effect of I-orientation was seen on CFO, its effect was positive on all other Thought competencies except DQU. The largest effect of I was seen for CIN (β = .29; t [.028] = 10.19, $p \leq .001$), while its effect on SVI (t [.026] = 7.50, $p \leq .001$) was also relatively large. Like with CFO, the effect of P-orientation was ultimately positive on all other Thought competencies, although it was attenuated downward notably for CIN (t [.027] = -2.58, $p \leq .01$) and strengthened some for BST (t [.027] = 4.64, $p \leq .001$). The WE x ML interaction seen for CFO is attenuated for BST but remains positive, as evidenced by the magnitude of the BST x WE x ML interaction (t [.006] = -2.17, $p \leq .05$). The same effect becomes zero for GPE, as evidenced by the magnitude of the GPE x WE x ML interaction (β = -.023; t [.006] = -3.82, $p \leq .001$), while the same effect becomes negative for CIN (t [.006] = -5.10, $p \leq .001$). As mentioned above, ML's direct effects on CFO is negative, but its effect on CIN and SVI is ultimately positive, as evidenced by the magnitude of the CIN x ML interaction (t [.012] = 3.30, $p \leq .001$) and SVI x ML interaction (t [.012] = 4.21, $p \leq .001$), respectively. Additional model details with additional effects, fit indices, and random effects can be examined in Table THTMLM.

Table THTMLM. Final multilevel mixed-model repeated measures regression analysis showing Thought competencies regressed on Linear engagement, Management level, Ideas orientation, People orientation, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	0.141	0.036	3.89	0.000
Work engagement (WE)	0.083	0.032	2.55	0.011
Management level (ML)	-0.021	0.007	-2.93	0.003
People (P)	0.093	0.015	6.41	0.000
WE x Ideas (I)	-0.075	0.014	-5.17	0.000
WE x ML	0.022	0.007	3.19	0.001
Balances stakeholders (BST)	-0.130	0.027	-4.84	0.000
Global perspective (GPE)	-0.157	0.061	-2.58	0.010
Cultivates innovation (CIN)	-0.229	0.061	-3.75	0.000
Strategic mindset (SVI)	-0.258	0.061	-4.22	0.000
Decision quality (DQU) x WE x P	-0.057	0.024	-2.40	0.017
BST x I	0.078	0.026	2.96	0.003
BST x P	0.124	0.027	4.64	0.000

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Table THTMLM. Continued

BST x WE x ML	-0.013	0.006	-2.17	0.030
GPE x ML	0.039	0.012	3.16	0.002
GPE x I	0.244	0.026	9.25	0.000
GPE x WE x I	0.033	0.018	1.84	0.067
GPE x WE x P	-0.059	0.026	-2.27	0.023
GPE x WE x ML	-0.023	0.006	-3.82	0.000
CIN x ML	0.041	0.012	3.30	0.001
CIN x I	0.285	0.028	10.19	0.000
CIN x P	-0.069	0.027	-2.58	0.010
CIN x WE x I	0.114	0.026	4.38	0.000
CIN x WE x P	-0.065	0.026	-2.49	0.013
CIN x WE x ML	-0.030	0.006	-5.10	0.000
SVI x WE	-0.086	0.029	-3.02	0.003
SVI x ML	0.052	0.012	4.21	0.000
SVI x I	0.198	0.026	7.50	0.000
Random Effects				
	Unconditional Model		**Final Model**	
Terms	**σ^2**		**σ^2**	
Individuals	0.769		0.750	
WE x Individuals	0.067		0.058	
Occasions	0.189		0.123	
Model Fit				
Fit Index	**Unconditional Model**		**Final Model**	
Deviance	28005		27474	
AIC	28011		27480	
BIC	28027		27496	

Note. N = 16690 occasions nested in 1669 individuals. Reference occasion is Customer focus.

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Figure THTLEV shows model-implied values for the most highly engaged EICs, MLLs, and CLEVs on all Thought competencies. In application, these serve as target scores for each role. As one moves up the management pipeline, GPE, CIN, and SVI become increasingly important, as does CFO to a lesser extent. Interestingly, DQU has virtually the same target value for all three groups at the 65th percentile. The most engaged EICs lead with skills including DQU, CFO, and BST, while the most engaged CEOs emphasize CFO, GPE, and especially SVI. In terms of relative skill emphasis, the most engaged MLLs look similar to the most engaged EICs, although have notably higher GPE, CIN, and SVI scores that are above the mean for the former and below the mean for the latter. The lowest performing MLLs emphasize GPE, SVI, and CIN with scores near the mean while having DQU, BST, and CFO scores notably below the mean, as shown in Figure THTMID.

In terms of Tracey and Rounds (1995) types, customer service and sales roles have CFO target scores higher than all other types, while visionaries and investigative scientists have CIN, SVI, and GPE targets that trump all or most others in terms of magnitude. Influencers most notably have relatively high targets on all scores. GPE, SVI, and CIN targets are perhaps expectably low for rote technical roles and especially accountants. In general, jobs that emphasize P as a defining variable have elevated CFO, DQU, and BST, while jobs whose emphasis is on I tend more toward high targets on GPE, CIN, and SVI. More details can be examined in Figure THTTYP.

Figure THTLEV. Model-implied high performance target profiles on Thought competencies across management levels

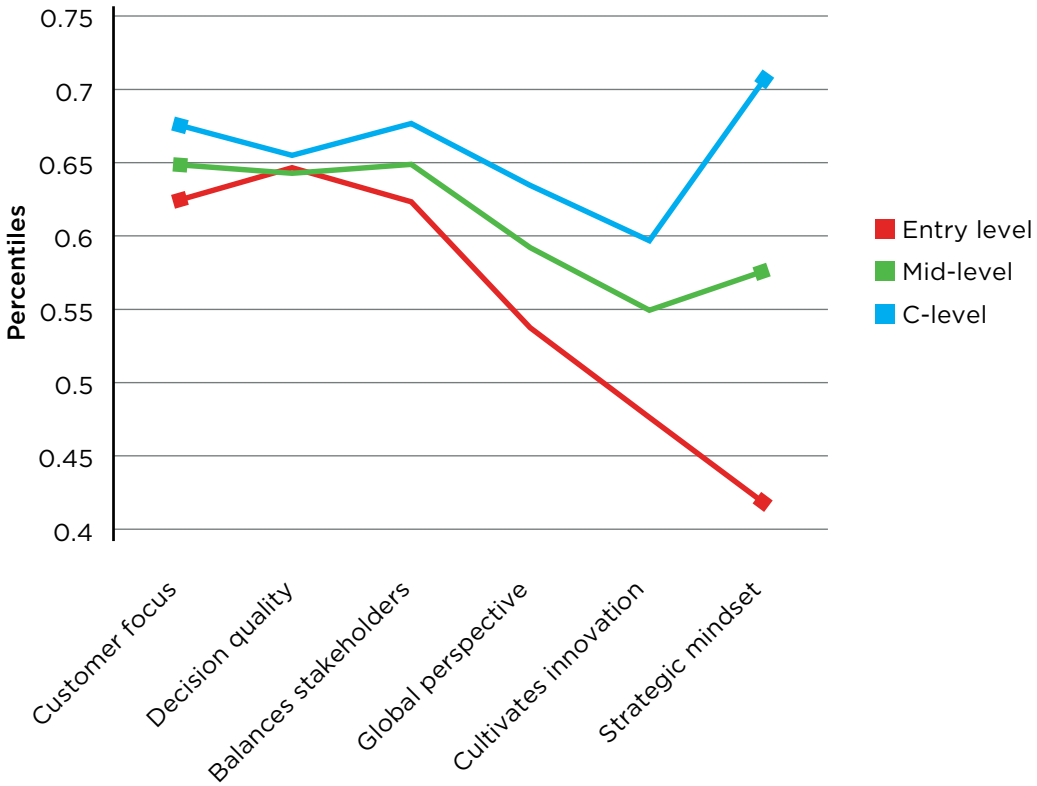

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Figure THTMID. Model-implied low and high performance target profiles on Thought competencies among Mid-level leaders

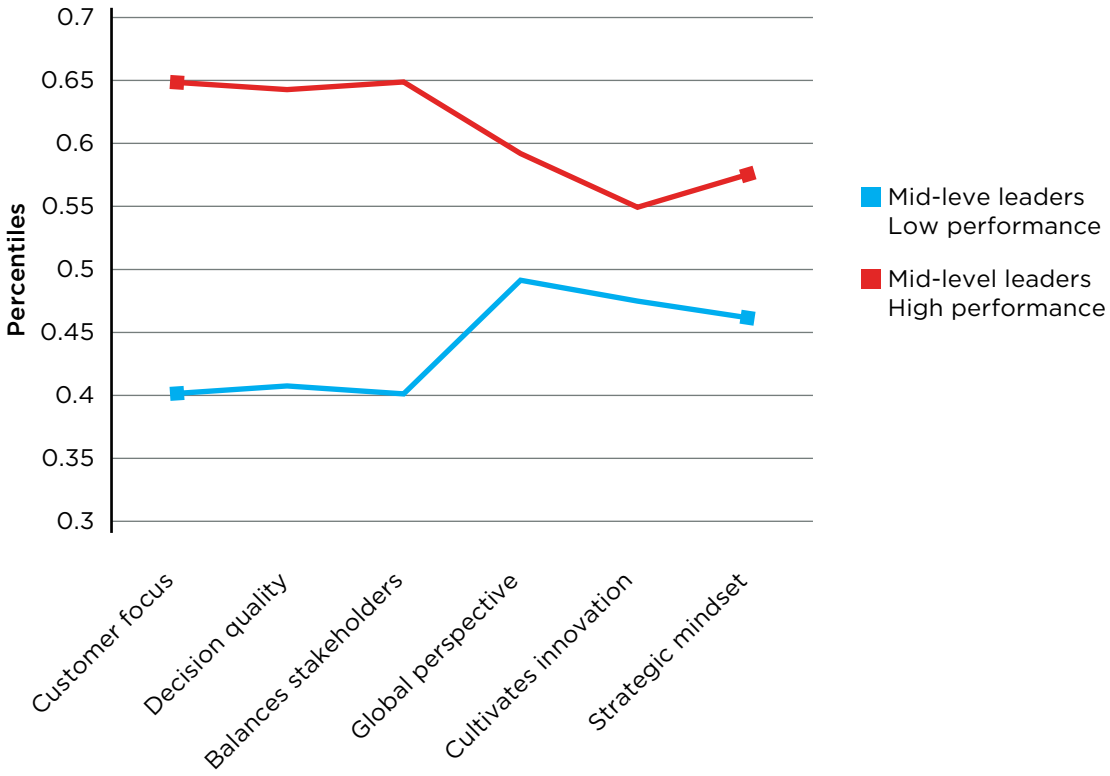
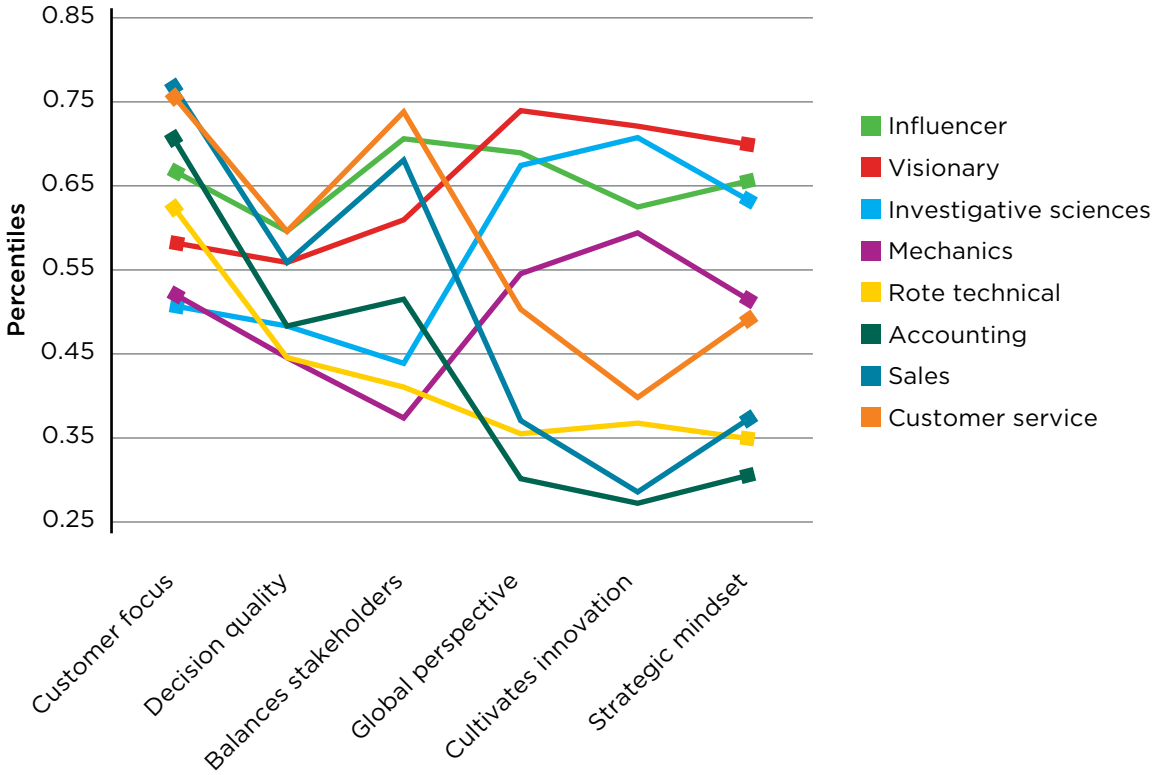


Figure THTTYP. Model-implied high performance targets on Thought competencies across Tracey & Rounds (1995) job types



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Results competencies. The multilevel repeated-measures mixed-model for Results competencies is shown in Table RESMLM. The final model accounted for 19.23% of the variance between individuals, 19.23% of the variance in the WE x occasions interaction, and 1.67% of the variance in occasions. The impact of WE (*t* [.044] = 3.47, $p \leq .001$), I (*t* [.022] = 7.06, $p \leq .001$), P (*t* [.022] = 5.01, $p \leq .001$), and ML (*t* [.009] = 5.91, $p \leq .001$) on ACO were all positive and significant. Both the WE x I (*t* [.019] = -4.20, $p \leq .001$) and WE x P (*t* [.018] = -3.40, $p \leq .01$) interaction were negative and significant however, indicating that WE's positive impact on ACO decreases as both I and P increase—so much so that at high levels of P and I *z*-scores, there is potential for WE's effect to become negative. The WE x ML interaction (*t* [.009] = 2.13, $p \leq .05$) is positive, indicating that WE's impact on ACO becomes more positive among higher-level management.

On most other Results competencies, I's impact remains positive but is attenuated. This is not the case for AEX or DRE where I's impact and magnitude are equal to that of ACO, but it is the case for RSF, DWO, OWP, and EAC according to significant interactions RSF x I (*t* [.026] = -3.65, $p \leq .001$), DWO x I (*t* [.026] = -2.08, $p \leq .05$), OWP x I (*t* [.023] = -2.11, $p \leq .05$), and EAC x I (*t* [.024] = -3.44, $p \leq .001$), respectively. The magnitude of P's effect is also less than seen on ACO for RSF, DWO, AEX, EAC, and DRE, as evidenced by related interactions RSF x P (*t* [.025] = -3.28, $p \leq .001$), DWO x P (*t* [.025] = -2.18, $p \leq .05$), AEX x P (*t* [.023] = -2.84, $p \leq .005$), EAC x P (*t* [.025] = -2.63, $p \leq .01$), and DRE x P (*t* [.023] = -1.93, $p \leq .10$). Similarly, ML's positive effect on ACO is attenuated downward for many of the Results competencies compared to ACO. This is evidenced by interactions including RSF x ML (*t* [.010] = -8.36, $p \leq .001$), AEX x ML (*t* [.005] = -5.29, $p \leq .001$), OWP x ML (*t* [.005] = -4.36, $p \leq .001$), and DRE x ML (*t* [.010] = -5.00, $p \leq .001$). Note, however, that only the RSF x ML interaction is of sufficient magnitude to render ML's effect ultimately negative. The significant DWO x ML interaction (*t* [.010] = 2.91, $p \leq .005$), unlike most others, indicates that the effect of ML on DWO is *higher* than the effect of ML on ACO by .03 *SD*s per management level. WE's positive effect on ACO is attenuated downward for RSF (*t* [.025] = -4.67, $p \leq .001$), DWO (*t* [.025] = -5.84, $p \leq .001$), AEX (*t* [.024] = -4.56, $p \leq .001$), and OWP (*t* [.025] = -1.82, $p \leq .10$), while being strengthened for DRE (*t* [.054] = 2.57, $p \leq .01$). Additional model details, including additional fixed effects, random effects, and fit indices can be examined in Table RESMLM.

Table RESMLM. Final multilevel mixed-model repeated measures regression analysis showing Results competencies regressed on Linear engagement, Management level, Ideas orientation, People orientation, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	-0.116	0.043	-2.73	0.006
Work engagement (WE)	0.154	0.044	3.47	0.001
Management level (ML)	0.053	0.009	5.91	0.000
Ideas (I)	0.156	0.022	7.06	0.000
People (P)	0.108	0.022	5.01	0.000
WE x I	-0.081	0.019	-4.20	0.000
WE x P	-0.061	0.018	-3.40	0.001
WE x ML	0.018	0.009	2.13	0.034
Resourcefulness (RSF)	0.269	0.050	5.43	0.000
Directs work (DWO)	-0.189	0.050	-3.81	0.000

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Table RESMLM. Continued

Drives results (DRE)	0.187	0.047	3.96	0.000
RSF x WE	-0.116	0.025	-4.67	0.000
RSF x ML	-0.086	0.010	-8.36	0.000
RSF x I	-0.094	0.026	-3.65	0.000
RSF x P	-0.081	0.025	-3.28	0.001
RSF x WE x I	0.051	0.020	2.52	0.012
DWO x WE	-0.145	0.025	-5.84	0.000
DWO x ML	0.030	0.010	2.91	0.004
DWO x I	-0.053	0.026	-2.08	0.037
DWO x P	-0.053	0.025	-2.18	0.030
DWO x WE x I	0.046	0.020	2.29	0.022
Plans and aligns (AEX) x WE	-0.111	0.024	-4.56	0.000
AEX x ML	-0.024	0.005	-5.29	0.000
AEX x P	-0.066	0.023	-2.84	0.005
Optimizes work processes (OWP) x WE	-0.045	0.025	-1.82	0.069
OWP x ML	-0.020	0.005	-4.36	0.000
OWP x I	-0.048	0.023	-2.11	0.035
Ensures accountability (EAC) x I	-0.082	0.024	-3.44	0.001
EAC x P	-0.064	0.025	-2.63	0.009
DRE x WE	0.138	0.054	2.57	0.010
DRE x ML	-0.048	0.010	-5.00	0.000
DRE x P	-0.045	0.023	-1.93	0.054
DRE x WE x I	0.057	0.022	2.60	0.009
DRE x WE x ML	-0.031	0.011	-2.90	0.004
Random Effects				
	Unconditional Model	**Final Model**		
Terms	**σ^2**	**σ^2**		
Individuals	0.468	0.378		
WE x Individuals	0.052	0.042		
Occasions	0.539	0.530		
Model Fit				
Fit Index	**Unconditional Model**	**Final Model**		
Deviance	30069	29636		
AIC	30076	29641		
BIC	30092	29658		

Note. N = 11683 occasions nested in 1669 individuals. Reference occasion is Action oriented.

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Figure RESLEV shows target scores for CLEVs and indicates that the most engaged CLEVs emphasize skills including ACO, DWO, and EAC, while having >60th percentile averages on all other Results competencies. The best EICs are rather dissimilar, in that they lead most strongly with ACO, RSF, and DRE, while having DWO scores that are below the mean and typically more than 30 percentile points lower than high engagement CLEVs. As is often seen, the most engaged MLLs are very much in the middle, leading most strongly with EAC, ACO, OWP, DRE. The least engaged MLLs are below the mean on all Results competencies while emphasizing most strongly—unlike high engagement MLLs—RSF, DWO, and AEX, as shown in Figure RESMID.

Note that for each Tracey and Rounds (1995) job type, all Results competency targets are at least slightly above the mean and in most cases notably above the mean, as can be seen in Figure RESTYP. RSF targets are highest and near the 65th percentile for jobs having both low I and low P-orientation, including rote technical jobs and accountants; mechanics also have a relatively high RSF target. ACO is a high and similar target for all jobs, being always between the 70th and 72nd percentile. Jobs wherein I-orientation trumps P-orientation and/or both I and P-orientation are low, tend to have the highest targets for DWO, OWP, and AEX. These include mechanics, rote technical, investigative scientists, and accountants. Note, however, that despite being relatively high for these jobs, elevated OWP targets are observed for everyone, being between the 70th and 76th percentile for every job type. EAC seems most important for rote technical and accountants, while DRE is most important for investigative scientists, mechanics, and visionaries. In many respects, we see more high targets for low I and low P-orientation among Results competencies more than any other KF4D cluster of scores as we have defined them. Note, for an additional example, that visionaries and influencers have EAC, AEX, DWO, and RSF targets that are the lowest or among the lowest despite being highest in I and P-orientation (as noted in Table TAX).

Figure RESLEV. Model-implied high performance target profiles on Results competencies across management levels

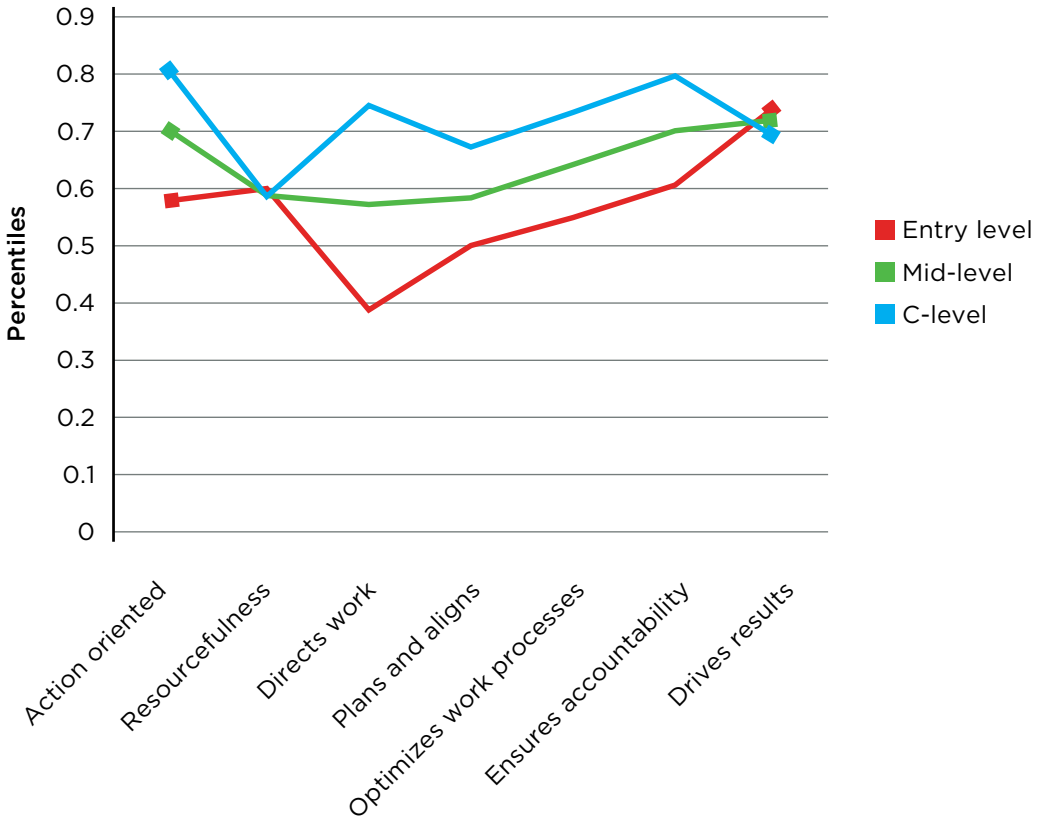

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Figure RESMID. Model-implied low and high performance target profiles on Results competencies among Mid-level leaders

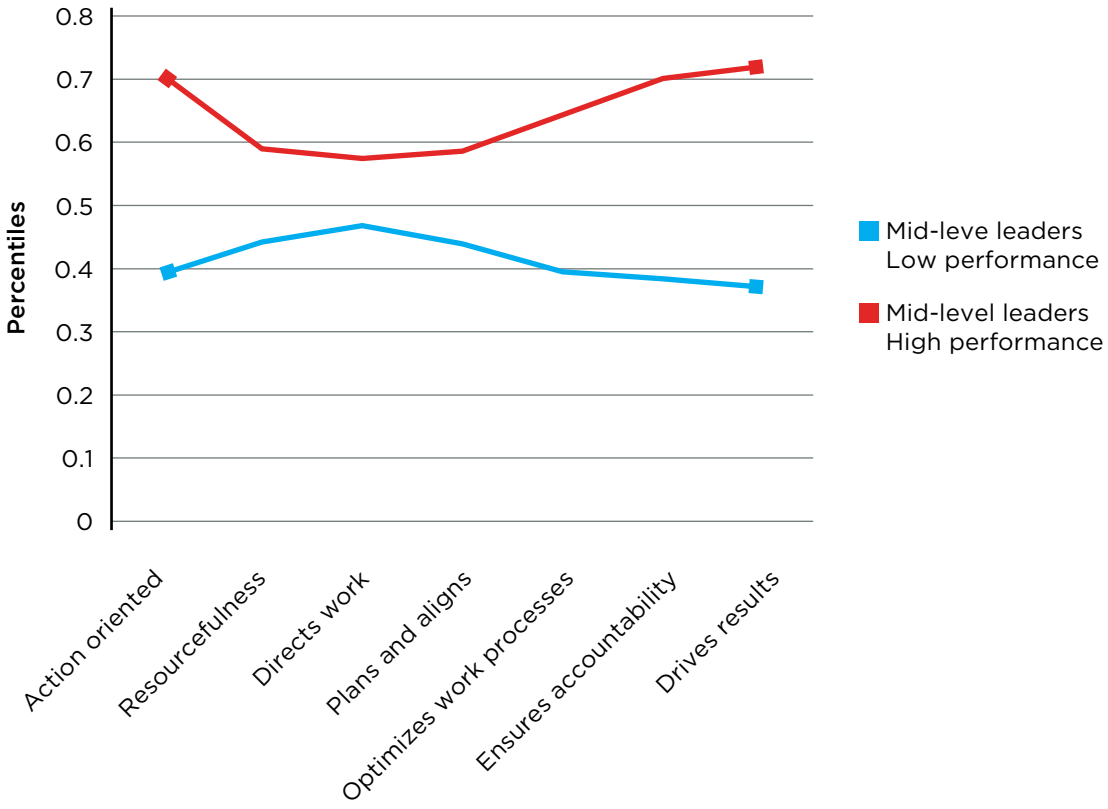
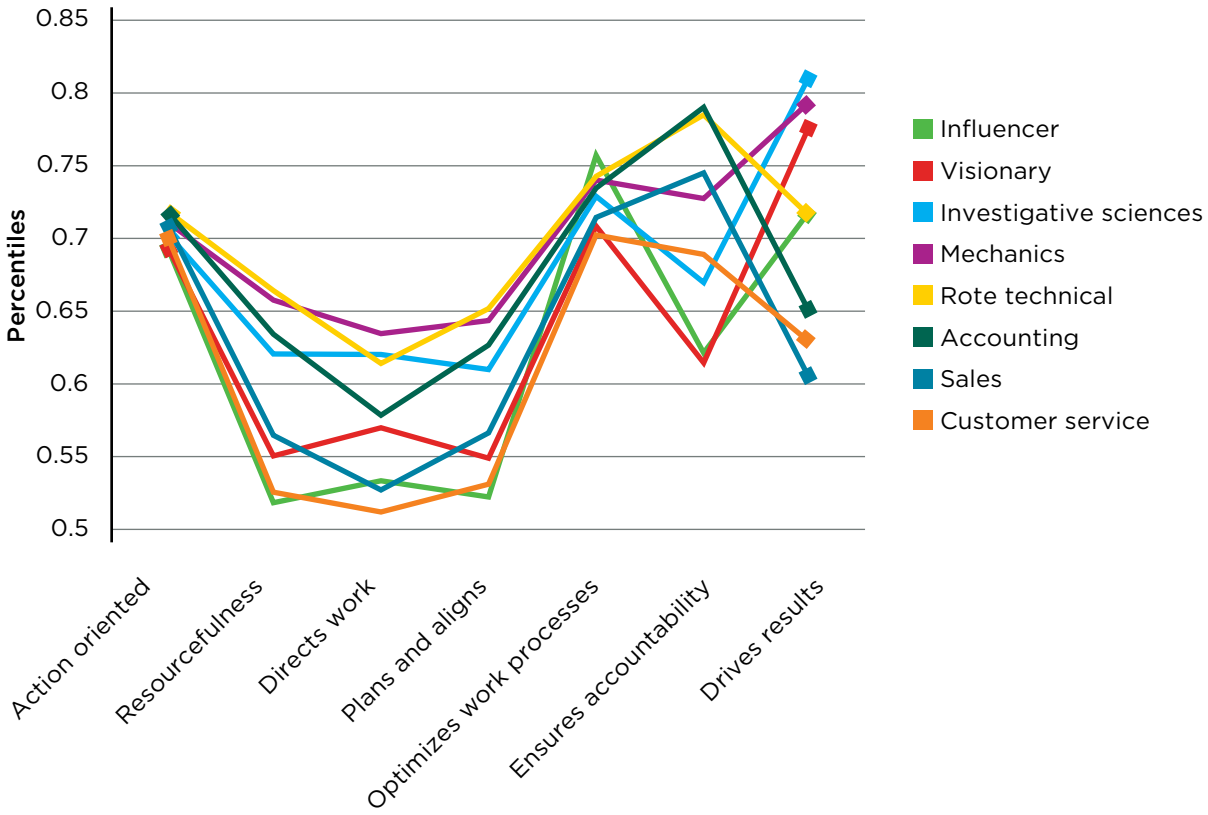


Figure RESTYP. Model-implied high performance targets on Results competencies across Tracey & Rounds (1995) job types



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People competencies. The multilevel repeated-measures mixed-model for People competencies is shown in Table PPLMLM. The final model accounted for 3.60% of the variance between individuals, 19.10% of the variance in the WE x occasions interaction, and 25.63% of the variance in occasions. The reference occasion (COL) was positively associated with ML (t [.009] = 6.33, $p \leq .001$), I (t [.020] = 3.76, $p \leq .001$), and P (t [.018] = 9.67, $p \leq .001$). The magnitude was especially notable for P, as might be expected given the social nature of COL and other KF4D measures in the model. Note that the positive impact of P was even higher on IPS (t [.024] = 3.36, $p \leq .001$) and COM (t [.024] = 2.52, $p \leq .05$), lower for VDI (t [.024] = -1.83, $p \leq .10$), NNE (t [.024] = -4.90, $p \leq .001$), EIN (t [.023] = -3.53, $p \leq .001$), and DTA (t [.023] = -3.97, $p \leq .001$), while remaining relatively high and the same as COL for MCO, BET, and PER. Note, however, that even in cases where the effect of P was attenuated downward, it remained positive on all People competencies.

WE did not direct impact COL, although its association magnitude becomes negative as I (t [.015] = -4.98, $p \leq .001$) and P (t [.016] = -4.54, $p \leq .001$) increase, while becoming positive as ML (t [.003] = 7.49, $p \leq .001$) increases. The WE x I interaction seen on COL approaches zero and is slightly positive for VDI, according to the VDI x WE x I interaction (t [.021] = 3.84, $p \leq .001$). Similarly, the WE x P interaction as seen on COL approaches zero and is slightly positive for PER, according to the PER x WE x P interaction (t [.022] = 3.31, $p \leq .001$). Only NNE, BET, and EIN have positive associations with WE at centered values of all the covariates as evidenced by the significant NNE x WE (t [.021] = 3.13, $p \leq .001$), BET x WE (t [.024] = 3.09, $p \leq .001$), and EIN x WE (t [.024] = 1.82, $p \leq .10$) interactions. Additional model details including additional fixed effects, random effects, and fit indices can be examined in Table PPLMLM.

Table PPLMLM. Final multilevel mixed-model repeated measures regression analysis showing People competencies regressed on Linear engagement, Management level, Ideas orientation, People orientation, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	-0.242	0.039	-6.23	0.000
Management level (ML)	0.055	0.009	6.33	0.000
Ideas (I)	0.076	0.020	3.76	0.000
People (P)	0.170	0.018	9.67	0.000
Work engagement (WE) x I	-0.073	0.015	-4.98	0.000
WE x P	-0.071	0.016	-4.54	0.000
WE x ML	0.024	0.003	7.49	0.000
Manages conflict (MCO)	0.418	0.054	7.80	0.000
Interpersonal savvy (IPS)	0.409	0.054	7.63	0.000
Builds networks (NNE)	0.457	0.054	8.52	0.000
Values differences (VDI)	0.440	0.054	8.20	0.000
Communicates effectively (COM)	0.209	0.054	3.91	0.000
Persuades (PER)	0.289	0.054	5.40	0.000
MCO x ML	-0.097	0.012	-8.41	0.000
MCO x I	-0.065	0.026	-2.52	0.012
MCO x WE x P	0.051	0.022	2.29	0.022
IPS x ML	-0.104	0.012	-9.00	0.000

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Table PPLMLM. Continued

IPS x I	0.088	0.027	3.20	0.001
IPS x P	0.082	0.024	3.36	0.001
IPS x ML	0.012	0.005	2.46	0.014
NNE x WE	0.066	0.021	3.13	0.001
NNE x ML	-0.091	0.012	-7.82	0.000
NNE x I	-0.091	0.028	-3.28	0.001
NNE x P	-0.120	0.024	-4.90	0.000
NNE x ML	-0.028	0.010	-2.74	0.006
Develops talent (DTA) x ML	0.014	0.006	2.41	0.016
DTA x P	-0.091	0.023	-3.97	0.000
VDI x ML	-0.111	0.012	-9.62	0.000
VDI x I	0.092	0.027	3.35	0.001
VDI x P	-0.045	0.024	-1.83	0.067
VDI x WE x I	0.080	0.021	3.84	0.000
Builds effective teams (BET) x WE	0.074	0.024	3.09	0.002
BET x ML	0.015	0.006	2.63	0.009
BET x I	0.101	0.025	4.10	0.000
COM x ML	-0.053	0.012	-4.60	0.000
COM x I	0.149	0.027	5.42	0.000
COM x P	0.061	0.024	2.52	0.012
COM x WE x ML	0.012	0.005	2.47	0.014
Drives engagement (EIN) x WE	0.043	0.024	1.82	0.068
EIN x ML	0.025	0.006	4.36	0.000
EIN x P	-0.082	0.023	-3.53	0.000
PER x ML	-0.055	0.012	-4.77	0.000
PER x I	0.099	0.026	3.83	0.000
PER x WE x P	0.073	0.022	3.31	0.001

Random Effects

	Unconditional Model	**Final Model**
Terms	**σ^2**	**σ^2**
Individuals	0.639	0.616
WE x Individuals	0.068	0.055
Occasions	0.359	0.267

Model Fit

Fit Index	**Unconditional Model**	**Final Model**
Deviance	44453	43555
AIC	44459	43561
BIC	44475	43577

Note. N = 16690 occasions nested in 1669 individuals. Reference occasion is Collaborates.

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Figure PPLLEV shows model-implied scores for high engagement incumbents across management levels. Results show that highly engaged CLEVs tend to emphasize skills including COL, DTA, BET, COM, EIN, and PER, while de-emphasizing MCO, NNE, and VDI to levels that are nonetheless still near or above the 60th percentile. The most engaged EICs, in a pattern that is much different, tend to emphasize NNE, MCO, and IPS. Figure PPLMID shows that the most engaged MLLs tend to emphasize NNE, BET, COM, EIN, and PER, while de-emphasizing COL, DTA, MCO, and VDI to values that are nonetheless above the 55th percentile in every case. Conversely, low engagement MLLs tend to have as their highest model-implied scores what high engagement MLLs do not, viz., COL, MCO, and DTA.

Notable variability in target scores, especially for COM, PER, and BET are seen across Tracey and Rounds (1995) job types. Figure PPLTYP shows that rote technical workers and accountants have notably little need for COM, EIN, and PER, whereas visionaries and influencers have targets on the same variables that are near or above the 70th percentile in every case; customer service targets are not too far behind. The only case in which rote technical and accountants have targets clearly above the 50th percentile are for COL. The least target score variability is seen for NNE, where targets always hover between the 50th and 60th percentile and where influencers, sales, and customer service incumbents trump all others in terms of height of target. The pattern of findings is generally intuitive, such that jobs requiring low P tend to have low(er) targets, as would be expected given the nature of the competencies modeled in this set.

Figure PPLLEV. Model-implied high performance target profiles on People competencies across management levels

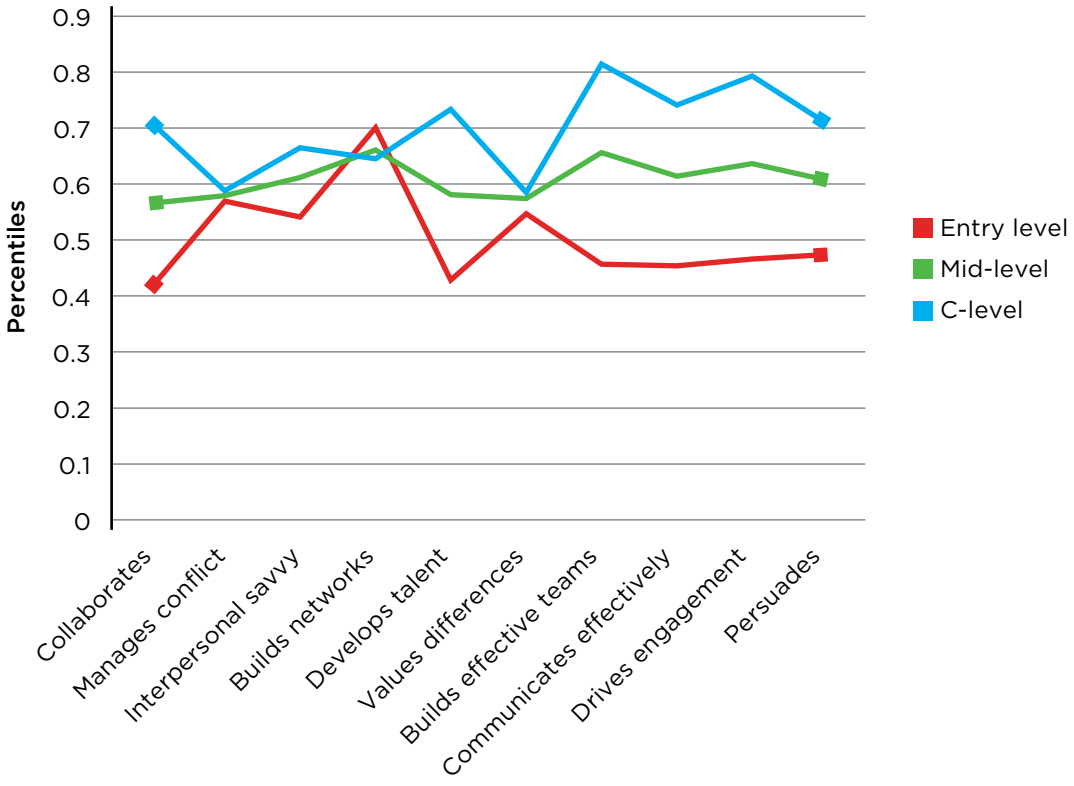

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Figure PPLMID. Model-implied low and high performance target profiles on People competencies among Mid-level leaders

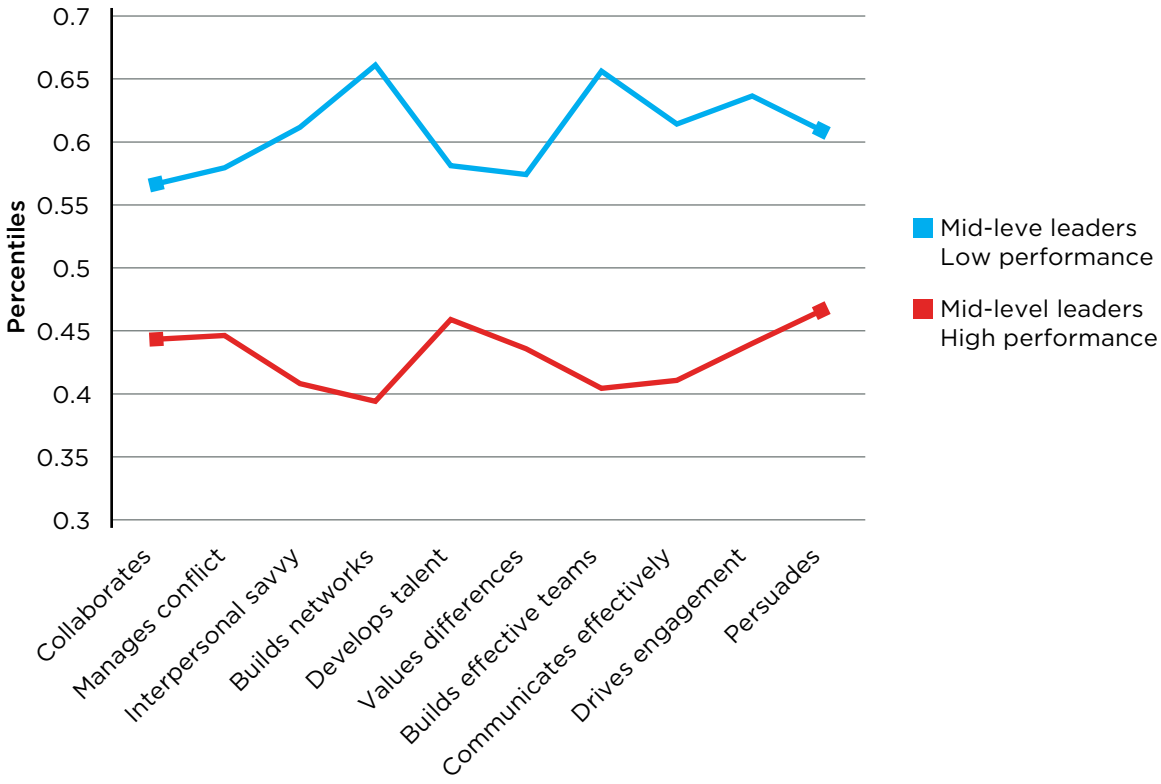
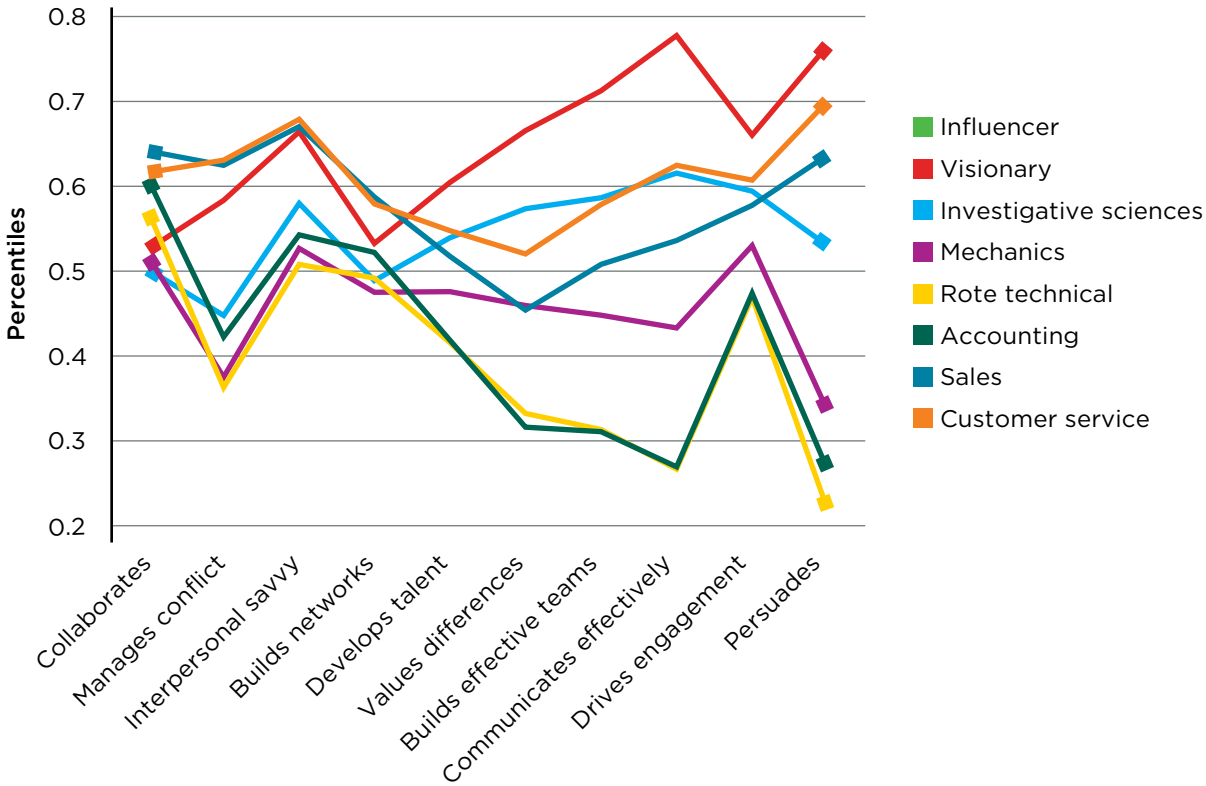


Figure PPLTYP. Model-implied high performance targets on People competencies across Tracey & Rounds (1995) job types



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Self competencies. The multilevel repeated-measures mixed-model for Self competencies is shown in Table SELMLM. The final model accounted for 7.15% of the variance between individuals, 33.93% of the variance in the WE x occasions interaction, and 21.05% of the variance in occasions. The reference occasion (COU) was notably and positively associated with I (*t* [.021] = 7.29, *p* ≤ .001), P (*t* [.016] = 7.02, *p* ≤ .001), and ML (*t* [.011] = 7.79, *p* ≤ .001). At centered values, WE did not impact COU, but does negatively as I increases (*t* [.013] = -5.76, *p* ≤ .001) and positively as ML increases (*t* [.003] = 7.53, *p* ≤ .001). ML's positive impact on the reference occasion becomes negative on four KF4D variables including ITR, SDV, NLE, and SAD, as can be seen by the magnitude of the related interactions including ITR x ML (*t* [.014] = -8.06, *p* ≤ .001), SDV x ML (*t* [.014] = -17.58, *p* ≤ .001), NLE x ML (*t* [.014] = -12.14, *p* ≤ .001), and SAD x ML (*t* [.013] = -12.17, *p* ≤ .001). ML's impact is also attenuated for MAB (*t* [.014] = -4.77, *p* ≤ .001) and BRE (*t* [.014] = -7.19, *p* ≤ .001), but the ultimate effect of ML remains positive. P's positive effect on the reference occasion is also variously attenuated and strengthened. Its effect on SDV (*t* [.025] = -4.16, *p* ≤ .001) is attenuated but ultimately remains small and positive. Its effect on BRE (*t* [.025] = 3.71, *p* ≤ .001) and SAD (*t* [.024] = 2.26, *p* ≤ .05), however, is larger compared to COU. Especially the latter is expectable, considering SAD's nature as a *social* adaptability. The positive ML x WE interaction on COU becomes stronger for BRE, according to the BRE x ML x WE interaction (*t* [.005] = 5.52, *p* ≤ .001), but weaker (yet ultimately positive) for SDV, according to the SDV x ML x WE interaction (*t* [.005] = -2.69, *p* ≤ .01). Additional model details including additional fixed effects, random effects, and fit indices can be examined in Table SELMLM.

Table SELMLM. Final multilevel mixed-model repeated measures regression analysis showing Self competencies regressed on Linear engagement, Management level, Ideas orientation, People orientation, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	-0.267	0.054	-4.92	0.000
Management level (ML)	0.086	0.011	7.79	0.000
Ideas (I)	0.156	0.021	7.29	0.000
People (P)	0.115	0.016	7.02	0.000
Work engagement (WE) x I	-0.076	0.013	-5.76	0.000
WE x ML	0.024	0.003	7.53	0.000
Instills trust (ITR)	0.416	0.068	6.15	0.000
Self-development (SDV)	0.988	0.068	14.59	0.000
Manages ambiguity (MAB)	0.131	0.068	1.93	0.053
Nimble learning (NLE)	0.593	0.068	8.75	0.000
Being resilient (BRE)	0.350	0.068	5.17	0.000
Situational adaptability (SAD)	0.511	0.064	7.93	0.000
ITR x ML	-0.112	0.014	-8.06	0.000
ITR x I	-0.067	0.028	-2.43	0.015
SDV x ML	-0.244	0.014	-17.58	0.000

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Table SELMLM. Continued

SDV x I	-0.113	0.029	-3.84	0.000
SDV x P	-0.103	0.025	-4.16	0.000
SDV x ML x WE	-0.013	0.005	-2.69	0.007
MAB x ML	-0.066	0.014	-4.77	0.000
MAB x I	0.105	0.028	3.77	0.000
MAB x I x WE	0.092	0.023	4.03	0.000
MAB x P x WE	-0.040	0.024	-1.67	0.096
NLE x ML	-0.168	0.014	-12.14	0.000
NLE x I	-0.146	0.028	-5.27	0.000
NLE x P x WE	-0.042	0.022	-1.89	0.059
BRE x ML	-0.100	0.014	-7.19	0.000
BRE x I	0.069	0.029	2.34	0.020
BRE x P	0.092	0.025	3.71	0.000
BRE x P x WE	-0.077	0.022	-3.46	0.001
BRE x ML x WE	0.027	0.005	5.52	0.000
SAD x WE	-0.054	0.024	-2.27	0.023
SAD x ML	-0.159	0.013	-12.17	0.000
SAD x P	0.054	0.024	2.26	0.024
SAD x P x WE	-0.047	0.022	-2.10	0.036

Random Effects

	Unconditional Model	**Final Model**
Terms	**σ^2**	**σ^2**
Individuals	0.700	0.650
WE x Individuals	0.056	0.037
Occasions	0.263	0.210

Model Fit

Fit Index	**Unconditional Model**	**Final Model**
Deviance	31863	30811
AIC	31869	30817
BIC	31885	30834

Note. N = 10014 occasions nested in 1669 individuals. Reference occasion is Courage.

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Figure SELLEV shows considerable variability in target scores across management levels. High engagement CLEVs lead clearly with COU, MAB, and BRE scores all above the 70th percentile, while notably de-emphasizing SDV and NLE to levels below the 40th percentile and near the mean, respectively. In contrast, high engagement EICs emphasize skills that CLEVs de-emphasize, including NLE and most notably SDV, whose target approaches the 80th percentile. ITR and SAD targets are similar across management levels and near or slightly above the mean for the latter and near the 60th percentile for the former. MLLs have near-60th percentile targets on all Self competencies, but have a notable highest target value for BRE. In contrast, low engagement MLLs have all Self competency scores that are typically somewhat below the mean. The only exception is SDV, whose peak in the typical low engagement MLL profile looks similar to what is seen for *high* engagement EICs. Additional results with regard to MLLs can be seen in Figure SELMID.

The most variability in target scores across the Tracey and Rounds (1995) job types is seen for MAB. Roles with relatively high I-orientation including visionaries, influencers, mechanics, and investigative scientists all have MAB targets well above the 60th percentile and as high as the 77th percentile. Conversely, jobs with relatively low I-orientation (and therefore high "data" orientation) have MAB targets below the average in every case—most notably accountants, sales, and rote technical workers. As might be expected, salespeople, customer service professionals, and influencers all must instill trust at relatively high levels to be successful. NLE—viz., learning from experiences—needs to be highest for mechanics, visionaries, and investigative scientists whose roles debatably require more experimentation and trial/error. The same jobs require relatively high targets for resilience (BRE). Given its aforementioned nature as a *social* adaptability, it is perhaps not surprising that people-facing professionals such as customer service incumbents and influencers have the highest SAD targets. Additional results showing target scores across job types can be examined in Figure SELTYP.

Figure SELLEV. Model-implied high performance target profiles on Self competencies across management levels

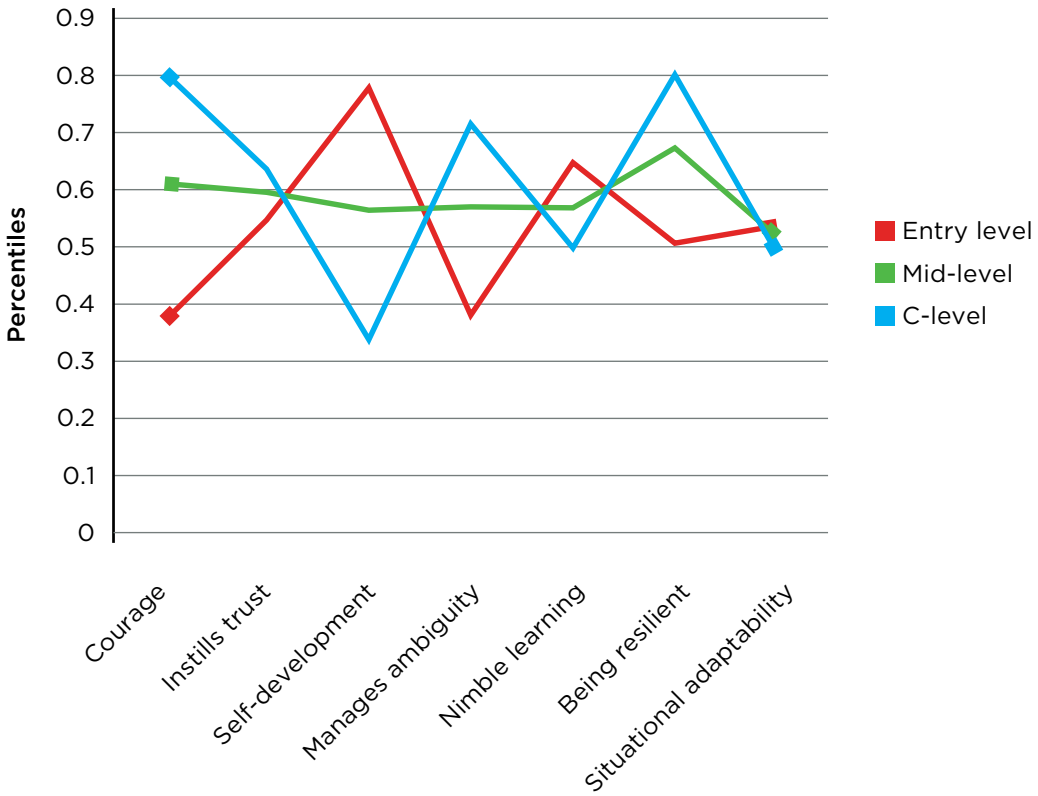

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Figure SELMID. Model-implied low and high performance target profiles on Self competencies among Mid-level leaders

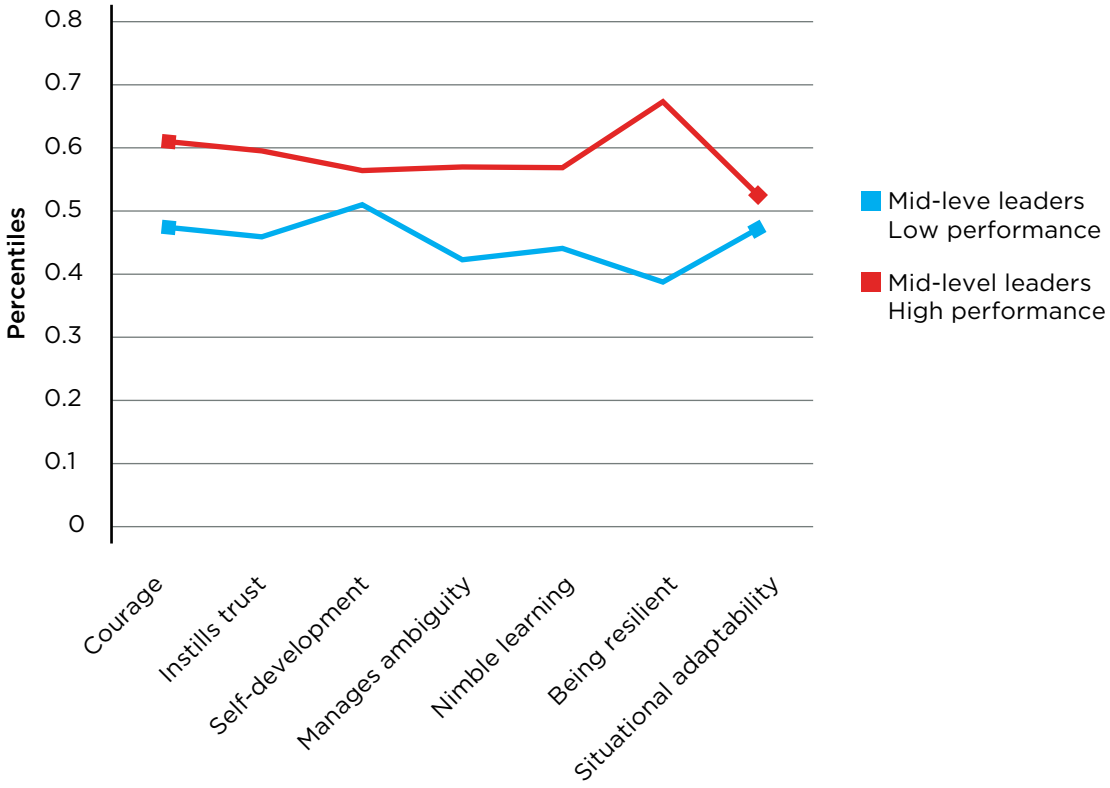
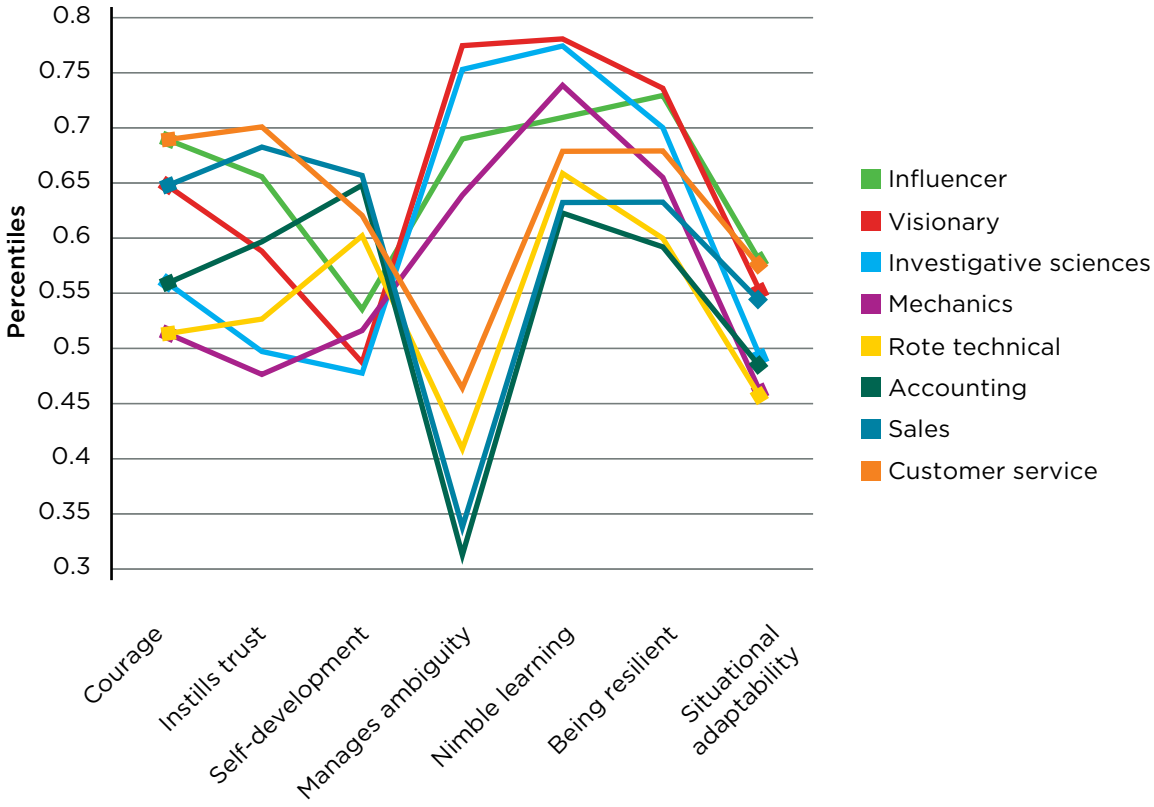


Figure SELTYP. Model-implied high performance targets on Self competencies across Tracey & Rounds (1995) job types



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Drivers multilevel models results

***Balance* (BALA).** The unconditional multilevel regression model for BALA showed significant variance in BALA attributable to not only individuals but also to Level 2 companies. As such, we retained all random effects and proceeded with fixed effects models having Level 1 and Level 2 predictors as well as cross-level interactions. The final fixed effects model accounted for 9.60% of the variance between individuals and 34.93% of the variance attributable to Level 2 companies. The effect of WE on BALA was negative and significant (t [.066] = -8.76, $p \leq .001$), as was the effect of P-orientation (t [.007] = -4.61, $p \leq .001$). Note that P was present in no significant interactions and, therefore, its negative effect is consistent across cultural contexts and WE levels. ML's effects were only found to be significant in increasingly Regulatory (REG) cultures (t [.003] = -4.32, $p \leq .001$), where its effect is negative, and in increasingly Collaborative (CCL) cultures (t [.003] = 2.58, $p \leq .01$), where it's effect is positive. Both Innovative (INN) (t [.019] = -4.03, $p \leq .001$) and Competitive (CMP) cultures (t [.019] = -3.88, $p \leq .001$) tend to have decreased BALA overall, and for INN cultures the decrease is more pronounced among individuals with increased I-orientation, according to the significant INN x I interaction (t [.009] = -2.27, $p \leq .05$). At covariate centered values, CCL cultural level is not associated with changes in BALA, but it is associated with BALA negatively as I-orientation increases (t [.013] = -2.40, $p \leq .05$). Additional model results can be examined in Table BALAMLM.

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Table BALAMLM. Final multilevel regression analysis showing Balance regressed on Linear engagement, Management level, Ideas orientation, People orientation, Company culture, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	1.244	0.148	8.43	0.000
Work engagement (WE)	-0.581	0.066	-8.76	0.000
Ideas (I)	0.230	0.085	2.70	0.007
People (P)	-0.033	0.007	-4.61	0.000
WE x I	-0.018	0.008	-2.34	0.019
Innovative Culture (INN)	-0.077	0.019	-4.03	0.000
Competitive Culture (CMP)	-0.076	0.019	-3.88	0.000
INN x WE	0.039	0.012	3.17	0.002
Regulatory Culture (REG) x Management level (ML)	-0.014	0.003	-4.32	0.000
Collaborative Culture (CCL) x ML	0.008	0.003	2.58	0.010
INN x I	-0.021	0.009	-2.27	0.023
CCL x I	-0.031	0.013	-2.40	0.016
REG x WE x ML	0.009	0.002	3.74	0.000
CCL x WE x ML	-0.008	0.002	-3.35	0.001
Random Effects				
	Unconditional Model		**Final Model**	
Terms	**σ^2**		**σ^2**	
Individuals	0.948		0.857	
Companies	0.089		0.058	
Model Fit				
Fit Index	**Unconditional Model**		**Final Model**	
Deviance	73554		70802	
AIC	73560		70834	
BIC	73574		70906	

Note. N = 27699 individuals nested in 663 companies.

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***Collaboration* (COLL).** The final fixed effects model for COLL accounted for 3.19% of the variance between individuals and 24.36% of the variance attributable to Level 2 companies. At covariate centered values, WE has a notable positive impact on COLL (t [.077] = -4.72, $p \leq .001$), although that impact is slightly reduced by increases in ML (t [.004] = -3.22, $p \leq .001$), and drastically reduced at elevated levels of I-orientation WE x I [.090] = -4.35, $p \leq .001$. The magnitude of the reduction associated with I is substantial enough to render WE's effect on COLL negative in a nontrivial amount of cases in which I is elevated. This finding is general across cultures, although the culprit effect, viz., WE x I, is attenuated a small amount in REG and INN cultures, according to the significant and positive REG x WE x I (t [.010] = 3.12, $p \leq .01$) and INN x WE x I interactions (t [.010] = 3.47, $p \leq .001$). As would be expected in light of the social nature of COLL, its relationship with P-orientation is positive and substantial (t [.007] = 19.02, $p \leq .001$) and never attenuated by any interaction. No main effect for I was observed at covariate centered values, although its effect is increasingly negative as cultures become more INN (t [.009] = -2.60, $p \leq .01$) and its effect is increasingly positive as cultures become more CCL (t [.009] = 3.41, $p \leq .001$). Additional model results, including random effects, fit indices, and additional fixed effects can be examined in Table COLLMLM.

Table COLLMLM. Final multilevel regression analysis showing Collaboration regressed on Linear engagement, Management level, Ideas orientation, People orientation, Company culture, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	0.111	0.147	0.75	0.452
Work engagement (WE)	0.362	0.077	4.72	0.000
Management level (ML)	-0.091	0.024	-3.86	0.000
People (P)	0.134	0.007	19.02	0.000
WE x Ideas (I)	-0.392	0.090	-4.35	0.000
WE x ML	-0.012	0.004	-3.22	0.001
Innovative Culture (INN)	-0.079	0.016	-5.10	0.000
Competitive Culture (CMP)	0.054	0.022	2.45	0.015
CMP x WE	-0.035	0.013	-2.67	0.008
Collaborative Culture (CCL) x ML	0.017	0.004	4.15	0.000
INN x I	-0.024	0.009	-2.60	0.009
CCL x I	0.029	0.009	3.41	0.001
Regulatory Culture (REG) x WE x I	0.030	0.010	3.12	0.002
INN x WE x I	0.036	0.010	3.47	0.001
Random Effects				
	Unconditional Model		**Final Model**	
Terms	**σ^2**		**σ^2**	
Individuals	0.846		0.819	
Companies	0.078		0.059	
Model Fit				
Fit Index	**Unconditional Model**		**Final Model**	
Deviance	70569		69625	
AIC	70575		69657	
BIC	70589		69729	

Note. N = 27699 individuals nested in 663 companies

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***Power* (POWR).** The final fixed effects model for POWR accounted for 3.24% of the variance between individuals and 17.91% of the variance attributable to Level 2 companies. Significant and positive main effects were seen for each Level 1 covariate including WE (t [.062] = 2.82, $p \leq .005$), ML (t [.003] = 6.41, $p \leq .001$), I (t [.055] = 2.86, $p \leq .005$), and P (t [.007] = 18.91, $p \leq .001$). WE's positive effect is attenuated for cultures that are increasingly INN (t [.012] = -1.99, $p \leq .05$), although even at the highest levels of INN, its effect does not become negative. The positive effect of I-orientation is attenuated in REG cultures (t [.010] = -2.00, $p \leq .05$), and is substantial enough to become virtually zero at the highest levels of REG. POWR tends to increase in cultures characterized by increasing INN (t [.020] = 2.06, $p \leq .05$), REG (t [.020] = 1.78, $p \leq .10$), and CMP (t [.021] = 3.30, $p \leq .001$). The one exception is found for CCL, where POWR tends to decrease as cultures become increasingly CCL (t [.024] = -2.92, $p \leq .005$). Additional model results, including random effects and fit indices can be examined in Table POWRMLM.

Table POWRMLM. Final multilevel regression analysis showing Power regressed on Linear engagement, Management level, Ideas orientation, People orientation, Company culture, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	-0.615	0.284	-2.17	0.031
Work engagement (WE)	0.175	0.062	2.82	0.005
Management level (ML)	0.022	0.003	6.41	0.000
Ideas (I)	0.158	0.055	2.86	0.004
People (P)	0.141	0.007	18.91	0.000
Innovative Culture (INN)	0.040	0.020	2.06	0.040
Competitive Culture (CMP)	0.069	0.021	3.30	0.001
Collaborative Culture (CCL)	-0.069	0.024	-2.92	0.004
Regulatory Culture (REG)	0.035	0.020	1.78	0.075
INN x WE	-0.023	0.012	-1.99	0.046
REG x I	-0.020	0.010	-2.00	0.046
Random Effects				
	Unconditional Model		**Final Model**	
Terms	**σ^2**		**σ^2**	
Individuals	0.957		0.926	
Companies	0.067		0.055	
Model Fit				
Fit Index	**Unconditional Model**		**Final Model**	
Deviance	73715		72814	
AIC	73721		72840	
BIC	73734		72899	

Note. N = 27699 individuals nested in 663 companies.

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***Challenge* (CHAL).** The final fixed effects model for CHAL accounted for 9.00% of the variance between individuals and 42.45% of the variance attributable to Level 2 companies. All Level 1 main effects including WE (t [.014] = 17.15, $p \leq .001$), ML (t [.022] = -8.10, $p \leq .001$), I (t [.007] = 23.79, $p \leq .001$), and P (t [.075] = 3.16, $p \leq .005$) had notable effects on CHAL. Among them, only the ML effect was negative at centered values of covariates. Note, however, that the CMP x ML interaction (t [.004] = 9.34, $p \leq .001$) provides that at upper management levels, the effect of ML becomes positive on CHAL within CMP cultures. The effect of WE decreases a small amount as ML increases (t [.004] = -2.35, $p \leq .05$), although the magnitude of the interaction provides that the effect of WE never becomes negative or zero, even at the highest management levels. Increasingly INN cultures tend to have incumbents who are lower on CHAL (t [.016] = -3.05, $p \leq .01$) than other cultures. CCL cultures also tend toward lower CHAL scores, particularly at elevated levels of P, as indicated by the CCL x P interaction (t [.013] = -1.95, $p \leq .05$). Additional model results, including random effects and fit indices can be examined in Table CHALMLM.

Table CHALMLM. Final multilevel regression analysis showing Challenge regressed on Linear engagement, Management level, Ideas orientation, People orientation, Company culture, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	0.005	0.088	0.06	0.954
Work engagement (WE)	0.244	0.014	17.15	0.000
Management level (ML)	-0.179	0.022	-8.10	0.000
Ideas (I)	0.163	0.007	23.79	0.000
People (P)	0.237	0.075	3.16	0.002
WE x ML	-0.008	0.004	-2.35	0.019
Innovative Culture (INN)	-0.050	0.016	-3.05	0.002
Competitive Culture (CMP) x ML	0.034	0.004	9.34	0.000
Collaborative Culture (CCL) x P	-0.025	0.013	-1.95	0.052
Random Effects				
	Unconditional Model		**Final Model**	
Terms	**σ^2**		**σ^2**	
Individuals	0.901		0.820	
Companies	0.139		0.080	
Model Fit				
Fit Index	**Unconditional Model**		**Final Model**	
Deviance	72393		69777	
AIC	72399		69799	
BIC	72412		69849	

Note. N = 27699 individuals nested in 663 companies.

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***Structure* (STRC).** The final fixed effects model for STRC accounted for 8.47% of the variance between individuals and 42.86% of the variance attributable to Level 2 companies. At covariate centered values, the effects of WE (t [.140] = 2.70, $p \leq .01$) and ML (t [.035] = 2.98, $p \leq .005$) on STRC were positive, while the effects of I (t [.100] = -1.93, $p \leq .05$) and P (t [.081] = -3.30, $p \leq .001$) were negative. Interestingly, I's effect is increasingly negative in CMP cultures (t [.012] = -1.93, $p \leq .05$), while being increasingly positive in REG cultures (t [.010] = 2.38, $p \leq .05$). Across cultures, the positive effect of WE is attenuated as I-orientation increases (t [.008] = -3.63, $p \leq .001$), while being strengthened as P-orientation increases, WE x P [.071] = 1.75, $p \leq .10$. There is an exception concerning the latter, according to the CMP x WE x P interaction (t [.012] = -1.67, $p \leq .10$), which indicates that the positive effect of P on the WE slope decreases as cultures become increasingly CMP. In general, REG cultures have the strongest association with STRC, followed closely by INN cultures, whereas the weakest (yet significantly positive) association is seen for CMP cultures, CMP [.023] = 2.11, $p \leq .05$. ML's positive effect at centered covariate values is attenuated for CCL cultures (t [.006] = -3.03, $p \leq .005$) as is the positive effect of WE in CCL (t [.015] = -1.90, $p \leq .10$), REG (t [.013] = -1.72, $p \leq .10$) and INN (t [.012] = -2.02, $p \leq .05$) cultures. Although WE's effect on STRC is positive at covariate centered values, these effects provide that at average culture rating levels, WE's effect is more often negative. Additional model results, including random effects and fit indices can be examined in Table STRCMLM.

Table STRCMLM. Final multilevel regression analysis showing Structure regressed on Linear engagement, Management level, Ideas orientation, People orientation, Company culture, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	-3.066	0.349	-8.80	0.000
Work engagement (WE)	0.377	0.140	2.70	0.007
Management level (ML)	0.106	0.035	2.98	0.003
Ideas (I)	-0.192	0.100	-1.93	0.054
People (P)	-0.269	0.081	-3.30	0.001
WE x I	-0.030	0.008	-3.63	0.000
WE x P	0.124	0.071	1.75	0.080
Innovative Culture (INN)	0.156	0.021	7.44	0.000
Competitive Culture (CMP)	0.048	0.023	2.11	0.035
Collaborative Culture (CCL)	0.160	0.038	4.24	0.000
Regulatory Culture (REG)	0.184	0.023	7.85	0.000
REG x WE	-0.023	0.013	-1.72	0.085
INN x WE	-0.025	0.012	-2.02	0.043
CCL x WE	-0.028	0.015	-1.90	0.057
CCL x ML	-0.019	0.006	-3.03	0.002
CMP x I	-0.023	0.012	-1.93	0.053
REG x I	0.023	0.010	2.38	0.018

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Table STRCMLM. Continued

CMP x P	0.026	0.014	1.90	0.058
CMP x WE x P	-0.020	0.012	-1.67	0.094
Random Effects				
	Unconditional Model		**Final Model**	
Terms	**σ^2**		**σ^2**	
Persons	0.850		0.778	
Company	0.154		0.088	
Model Fit				
Fit Index	**Unconditional Model**		**Final Model**	
Deviance	70914		68420	
AIC	70920		68462	
BIC	70933		68557	

Note. N = 27699 individuals nested in 663 companies.

***Independence* (INDY).** The final fixed effects model for INDY accounted for 3.05% of the variance between individuals and 23.46% of the variance between Level 2 companies. At covariate centered values, the effects of WE (*t* [.082] = -3.52, $p \leq .001$) and ML (*t* [.034] = -3.52, $p \leq .001$) on INDY were negative, while the effects of I (*t* [.068] = 4.31, $p \leq .001$) and P (*t* [.079] = 2.03, $p \leq .05$) were positive. I's positive effect is attenuated as cultures become increasingly CMP, according to the CMP x I interaction (*t* [.011] = -2.13, $p \leq .05$). For all cultures, the negative effect of WE on INDY becomes increasingly positive as I increases (*t* [.008] = 4.06, $p \leq .001$), although the magnitude of the effect provides that the ultimate effect of WE remains ultimately negative, even at the highest values of I. Similarly, WE's effect becomes less negative as cultures become increasingly CMP (*t* [.014] = 1.80, $p \leq .10$). The negative effect of ML on INDY also becomes increasingly positive as cultures become increasingly CMP (*t* [.006] = 2.18, $p \leq .05$). In CCL cultures, the positive main effect of P on INDY is attenuated and, at very high levels of CCL, has the potential to become zero or slightly negative, according to the significance and magnitude of the CCL x P interaction (*t* [.014] = -2.03, $p \leq .05$). Additional model results, including random effects and fit indices can be examined in Table INDYMLM.

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Table INDYMLM. Final multilevel regression analysis showing Independence regressed on Linear engagement, Management level, Ideas orientation, People orientation, Company culture, and select interactions

Fixed Effects				
Terms	**β**	***SE***	***t***	***p***
Intercept	2.127	0.300	7.08	0.000
Work engagement (WE)	-0.288	0.082	-3.52	0.000
Management level (ML)	-0.120	0.034	-3.52	0.000
Ideas (I)	0.291	0.068	4.31	0.000
People (P)	0.161	0.079	2.03	0.043
WE x I	0.032	0.008	4.06	0.000
WE x ML	0.011	0.004	2.91	0.004
Competitive Culture (CMP)	-0.145	0.033	-4.41	0.000
Collaborative Culture (CCL)	-0.099	0.024	-4.19	0.000
Regulatory Culture (REG)	-0.091	0.018	-4.94	0.000
CMP x WE	0.025	0.014	1.80	0.072
CMP x ML	0.012	0.006	2.18	0.029
CMP x I	-0.024	0.011	-2.13	0.033
CCL x P	-0.027	0.014	-2.03	0.042
Random Effects				
	Unconditional Model	**Final Model**		
Terms	**σ^2**	**σ^2**		
Individuals	0.919	0.891		
Companies	0.081	0.062		
Model Fit				
Fit Index	**Unconditional Model**	**Final Model**		
Deviance	72718	71829		
AIC	72724	71861		
BIC	72738	71933		

Note. N = 27699 individuals nested in 663 companies.

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Model-implied values for drivers. As with traits and competencies, we plot model-implied values to facilitate understanding and underscore the KF4D system's utility in separating among highly engaged individuals *with different kinds of jobs* and here, in the case of drivers, we also consider *different cultures*. Figures DREICCLT, DRMLLCLT, and DRCLEVCLT show drivers target profiles for EICs, MLLs, and CLEVs (respectively) across cultures and offer many intuitively appealing results, much like those seen previously in Table CLT4.

All management levels in the CCL culture have the highest target scores for COLL compared to other cultures, while also having the lowest target for POWR. As can be seen with cross-table examinations, STRC has the highest targets for EICs compared to higher MLs in general, while—as would be expected given the structured process-driven nature of REG cultures—the highest targets for STRC are repeatedly seen in the REG culture for every ML. INN cultures tend to have the lowest targets on all drivers except for POWR and especially INDY where the target is highest for MLLs and EICs. Figure DRCLEVCLT shows that INDY targets for INN and CMP culture CLEVs are virtually identical. This is a reflection of the positive CMP x ML interaction shown in Table INDYMLM. As one moves up the management pipeline, CHAL becomes increasingly salient in the CMP culture, as does POWR but to a lesser extent. For CLEVs in the CMP culture, the target for CHAL is nearly 20 percentile points above the target for the next-highest culture. Across management levels, INDY has the lowest target in the CCL culture, as might be expected given the negative correlation between INDY and COLL and also in light of INDY's status as a variable measuring the extent to which one prefers to pursue one's own entrepreneurial vision more than a group-based vision and goals.

Figure DREICCLT. High performance target profiles on drivers across cultures for Entry level contributors

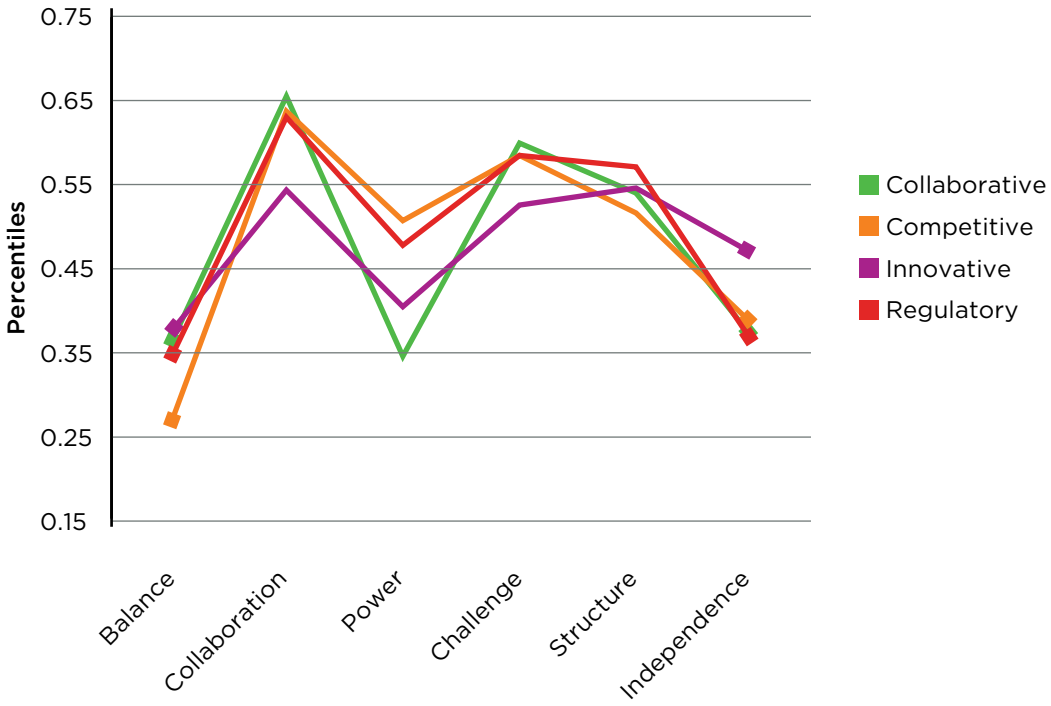

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Figure DRMLLCLT. High performance target profiles on drivers across cultures for Mid-level leaders

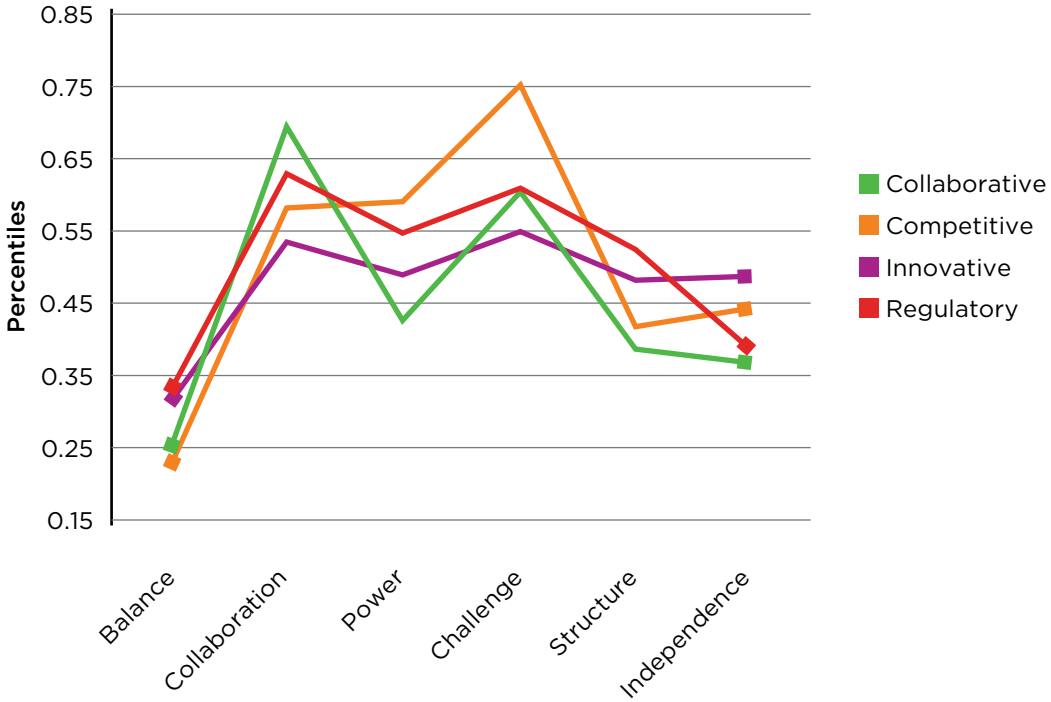
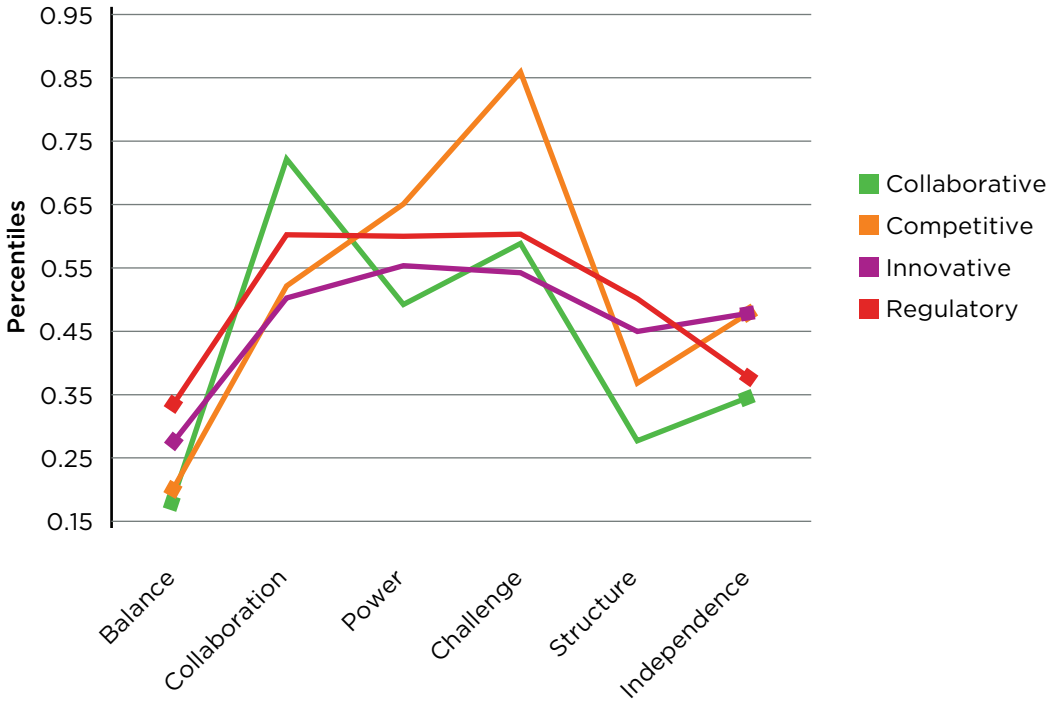


Figure DRCLEVCLT. High performance target profiles on drivers across cultures for C-level leaders



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To further facilitate understanding, we plot target scores across MLs within each culture in Figures DRLEVCOM, DRLEVCCL, DRLEVINN, and DRLEVREG. Figure DRLEVCOM shows that highly engaged managerial personnel (MLLs, CLEVs) lead strongly with CHAL in CMP environments and increasingly so up the management pipeline. They emphasize POWR secondarily. Highly engaged EICs in CMP cultures, however, emphasize COLL more than CHAL, while emphasizing CHAL secondarily. As is seen in every case in every culture, EICs emphasize STRC more than any other ML in CMP cultures.

In CCL cultures, all highly engaged MLs emphasize COLL most strongly, as would be expected in a collaborative culture. In the same culture, management personnel (MLLs and CLEVs) secondarily emphasize CHAL, while EICs secondarily emphasize STRC. INN cultures have a peculiar pattern, such that the highest level executives who are highly engaged emphasize POWR and CHAL and tertiarily COLL. Lower-level management and EICs in INN cultures, however, emphasize CHAL and COLL more than POWR. Also, as noted previously, INN cultures have the highest targets for INDY in general, which are of very similar magnitude across each ML. REG cultures have the highest targets for STRC. Highly engaged REG culture incumbents emphasize COLL and CHAL at very similar levels across MLs, while showing notable differences for POWR across MLs. In fact, POWR targets are consistently differentiating of MLs across each culture, similar to STRC.

Figure DRLEVCOM. High performance target profiles on drivers across management levels for Competitive Cultures

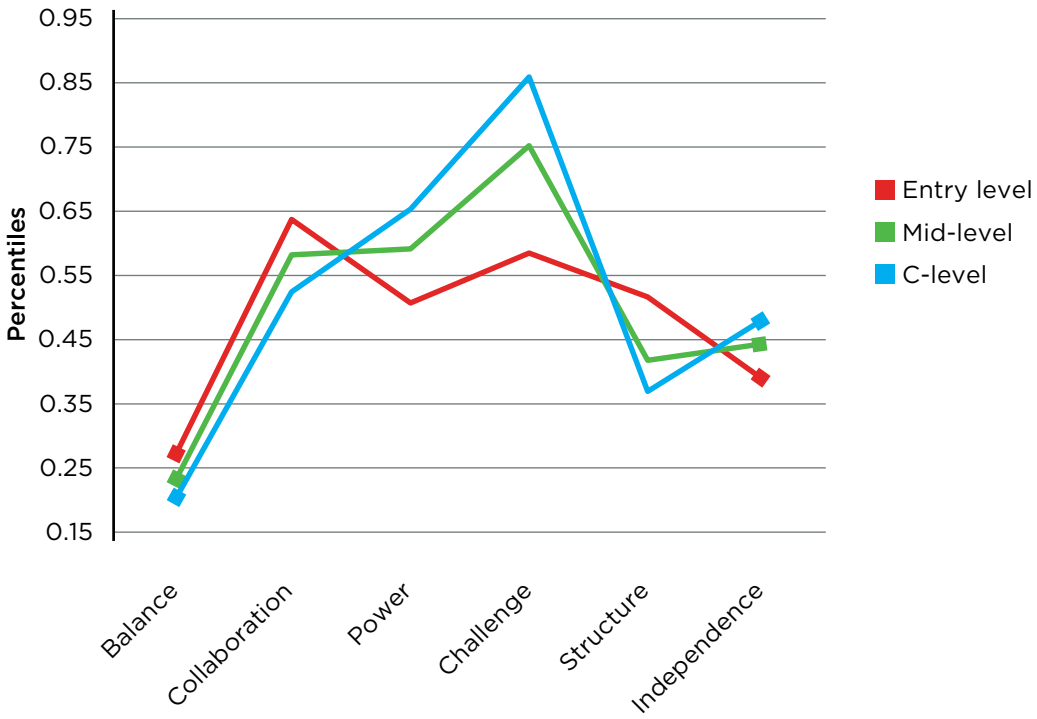

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Figure DRLEVCCL. High performance target profiles on drivers across management levels for Collaborative Cultures

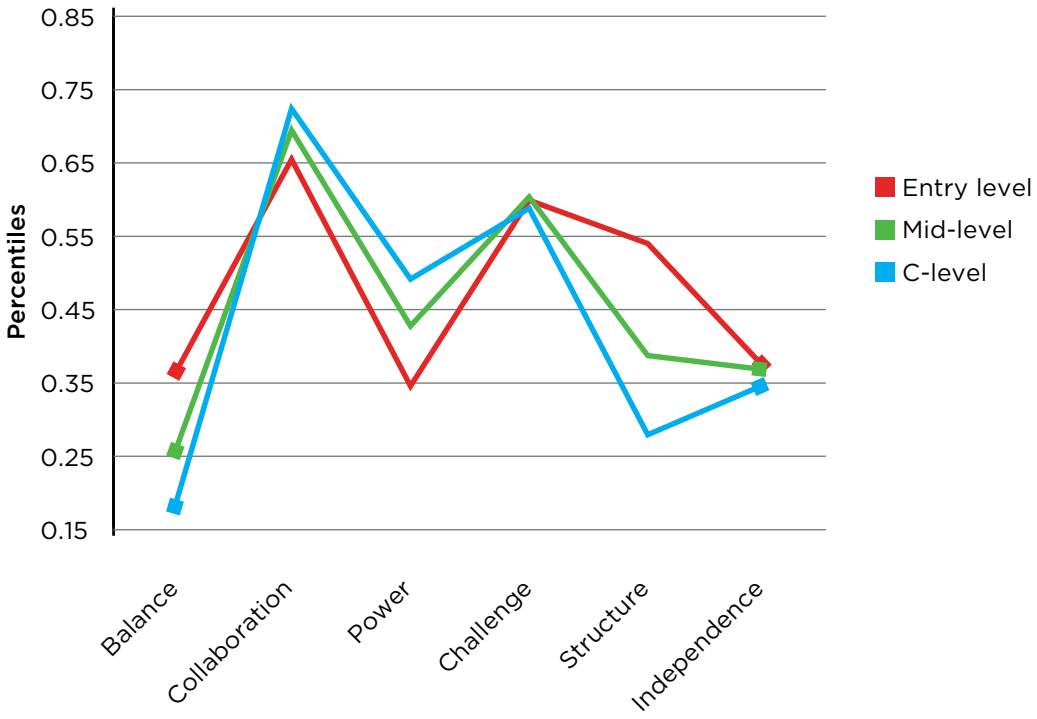

Figure DRLEVINN. High performance target profiles on drivers across management levels for Innovative Cultures

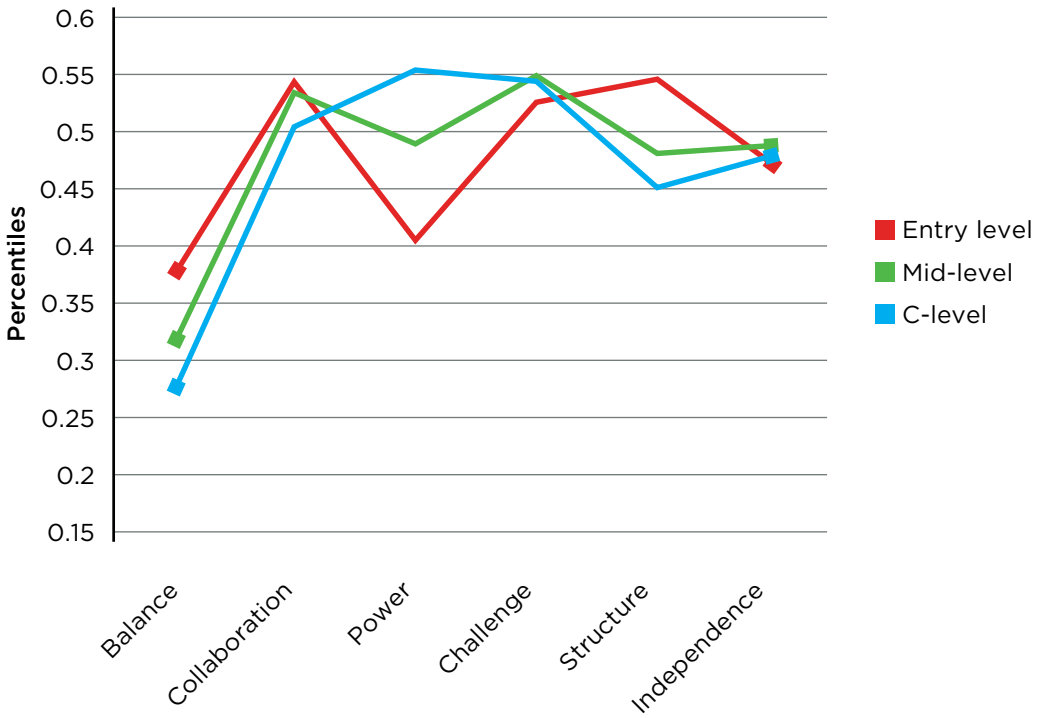

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Figure DRLEVREG. High performance target profiles on drivers across management levels for Regulatory Cultures

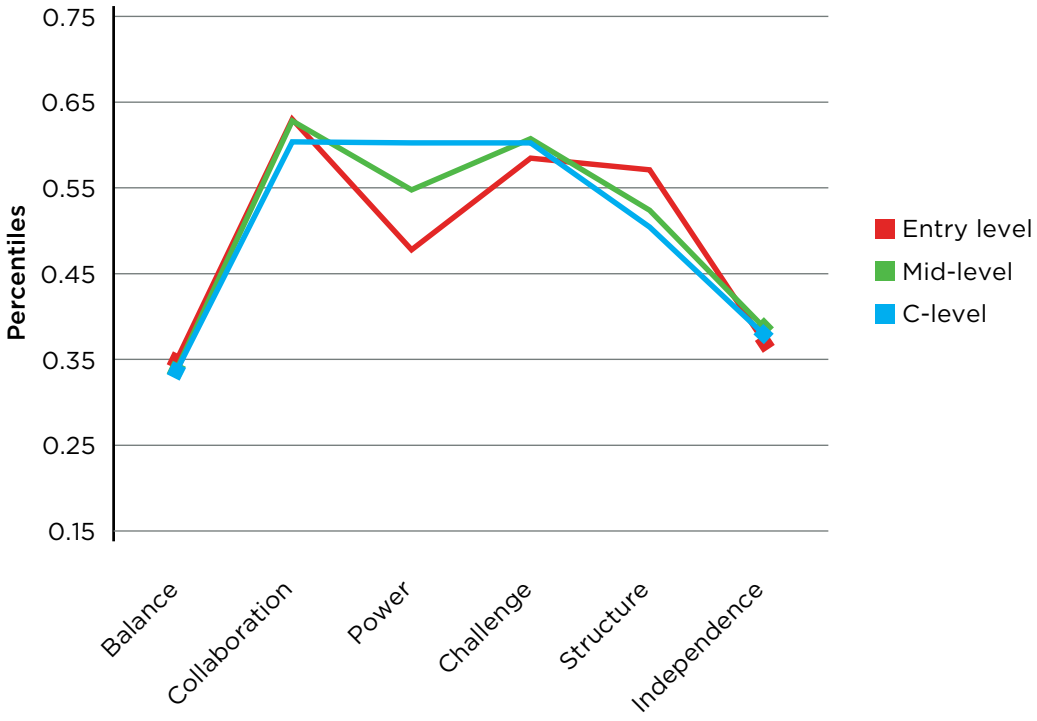
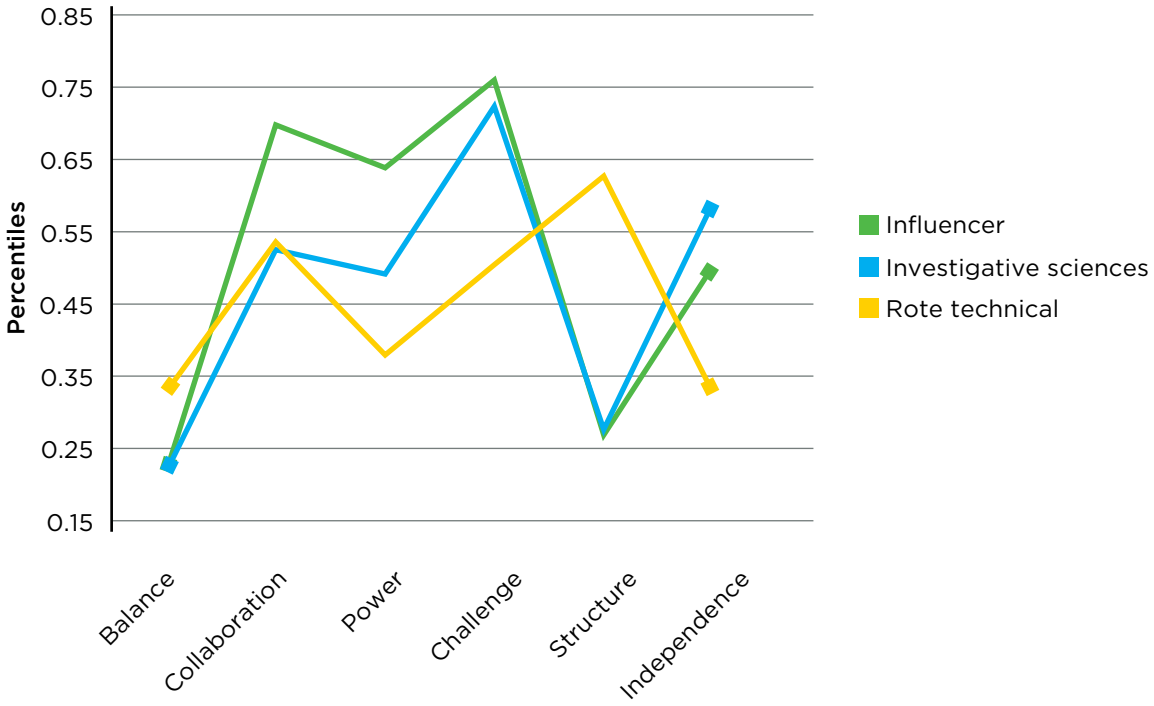


Figure DRTYP. Model-implied high performance target profiles on drivers across select Tracey & Rounds (1995) job types



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Interpreting final equations

In the sections that follow, we further discuss and underscore some of the practical implications and substantive meaning of the equations/models extracted and described above. To facilitate, we plot model-implied KF4D-Ent scores for professionals having high and low WE across work-analysis levels and, where applicable, company culture.[25] We also show relationships between KF4D-Ent scores and WE across levels of work-analysis variables in ways that will facilitate understanding.

Examples and discussion put forth in the following sections are not intended to be exhaustive. Extracted models were based on continuous or quasi-continuous work-analysis variables and not groups and, as such, model equations included main and/or interaction effects for two *quantitative* work-analysis variables, ordered categorical management level, and also (in the case of drivers) quantitative measures of company culture. As such, the potential for drawing comparisons and/or arriving at optimal (or sub-optimal or average) model-implied KF4D-Ent scores and profiles of scores is very large in the purely quantitative sense. Consider, for example, that the work-analysis variables plus management level—even when (where applicable) the former are conceptualized conservatively as having 5 possible integer values each—have (9 x 5 x 5) 225 potential combinations or vectors. Given that even the most comprehensive and carefully developed theoretical and multivariate models in the social sciences rarely have or exceed effect sizes of *R2* = 20%–40%, we certainly do not argue or support that these models permit or require that kind of exactitude for practical purposes. We do maintain that the extracted models provide a considerable degree of flexibility for making comparisons, making inferences, and/or arriving at target or typical score ranges for many different job role conceptualizations. Yet our broad-stroke treatment of the findings in the following sections reflects what we believe and recommend vis-à-vis the utility of our models. They provide insights that add practical value and support for understanding and thinking critically and broadly about jobs and fit for different kinds of job roles. The applied utility of the findings is contained in the gestalt and theoretically supportable impressions that they yield.

For exemplary purposes, we repeatedly make use of the two maximally disparate management levels, viz., CEOS and EICs. We do so by imputing the ordinal code associated with each ML as well as the typical work-analysis values for each (see Table WAIM) in order to arrive at comparative model-implied KF4D-Ent scores as desired for each of the notably contrastable groups. We again emphasize that the model equations do not require deferring to types or categorical conceptualizations of job roles, but allow for the imputation of continuous values (ranging from 1.00 to 5.00) for each of the work-analysis variables and related interactions, as well as the nine management levels. We only employ ML groups here in order to facilitate discussion and draw literature-based, substantive, and intuitively appealing comparisons between the groups for exemplary purposes. The scope of the discussion and the use of the ML groups provide that the comparisons and inferences explicated in the examples below do not necessarily exhaust or draw out all the valid insights that could be extracted for even practical utility and value-added understanding.

What makes for a target or typical score?

We have conceptualized a target as the average score for a person in a given job (as measured by ML, I, P, and culture where appropriate) who is maximally engaged. As such, it is work-analysis variables, engagement, and/or the combination of them that determines the target in any specific case. It may be otherwise tempting to assume that if a given construct is *important* for a given management level or job, then it's also positively (or negatively) and considerably associated with

[25] Our reference to high and low work engagement scores in the narrative and all figures and tables in this section is operationalized as WE = 2 and -2 *SD*s, respectively, when used in equations for model-implied values.

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performance (or any variable conceptualized as proxy for performance) at that level or for that job. This is often the case, but not always the case. Elevated scores on the construct may only be positively (or negatively) associated with advancement or *membership* into that level or job, but not also with performance within it. As such, KF4D construct score levels for individuals can be *important* to the extent that they are *common* for a given management level or job type, but not *differentiating* between performers within that level or type. A score that is commonly high may be negligible or even non-differentiating, despite being positively predictive of advancement or promotion into that level or job or associated with membership in that job. If, however, the association between performance (or some proxy) and a given KF4D score *is* notably non-zero, then the effect of the KF4D construct is *differentiating* of performance within that level or job. Typically, a score that is positively predictive of management level is also, when differentiating, positively predictive of performance within higher levels. It is also possible, although relatively rare, that KF4D scores that are positively associated with promotion or membership are also negatively or negligibly associated with performance, once promoted. Likewise, variables can also be negatively associated with advancement but positively differentiating of performance after advancement. In either case, such variables—again—are *important* for that management level or job at least because it demarcates (the likelihood of) membership status within it. Again, KF4D scores can also be important to the extent that they indeed are predictive of performance in a given job and thus differentiating, regardless of whether they are associated with promotions or, more generally, membership into given types of jobs for which they are differentiating.

It is a related matter to note that somewhat pervasive throughout the KF4D system is the notion of range restriction as sometimes a basis or partial basis for the moderation on the effects of WE (our proxy for performance), which is perhaps most easily understood in terms of ML's moderating effect, but is also relevant for I and P. The range restriction need not be viewed as a statistical artifact per se, but can perhaps be better understood as a natural by-product of movement through the management pipeline or into jobs that are increasingly I and/or P-oriented (or vice-versa). Consider, for example, Table GPEM which shows typical unadjusted[26] standardized GPE levels across MLs as well as across I and P stanines.[27] In terms of GPE and several other measures with which ML, I, and P are positively correlated, there is a funneling effect, of sorts. As individuals move up the management pipeline, the pool of incumbents becomes higher in terms of their overall average on many measures, including GPE, while becoming lower in terms of their variability on the same score. The same occurs in many cases in terms of I and P, viz., as jobs become more I and/or P-oriented, the averages of certain KF4D scores become lower or higher and the variability becomes narrower. This is the case in Table GPEM for GPE. As such, when WE x ML, WE x I, and/or WE x P interactions decrease WE's effect on KF4D scores, it may be, in some cases, a result of range restriction on KF4D scores as one moves up to higher (or lower) levels of ML, I, and/or P. If a high ML renders a given KF4D measure low in variability, in other words, it is more difficult for WE to differentiate among levels of the same KF4D measure compared to some other group who has increased variability.

[26] The same means shown later in Table GPEMIP are adjusted for I and P levels.

[27] Stanines were computed as 2z + 5 and then rounded to the nearest integer.

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Table GPEM. Global perspective means across Management level, People, and Ideas orientation of jobs

MANAGEMENT LEVEL	***M***	***SD***
Entry level IC	-0.35	1.04
Team lead	-0.26	1.16
First level leader	-0.01	0.98
Mid-level leader	-0.09	1.12
Functional leader	0.09	0.97
Business unit leader	0.17	0.95
Senior/Top functional executive	0.16	0.89
Senior/Top business group executive	0.12	0.88
CEO	0.23	0.78
Ideas stanine	***M***	***SD***
1	-0.92	1.52
2	-0.61	1.05
3	-0.57	1.23
4	-0.35	1.02
5	-0.05	0.88
6	0.13	0.93
7	0.30	0.84
8	0.40	0.83
9	0.47	0.74
People stanine	***M***	***SD***
1	-1.16	1.19
2	-0.97	1.51
3	-0.53	1.06
4	-0.13	1.19
5	0.01	1.02
6	0.04	0.91
7	0.16	0.90
8	0.15	0.95
9	0.25	0.89

Note. Means are unadjusted. Stanines were computed as 2z + 5 and then rounded to the nearest integer.

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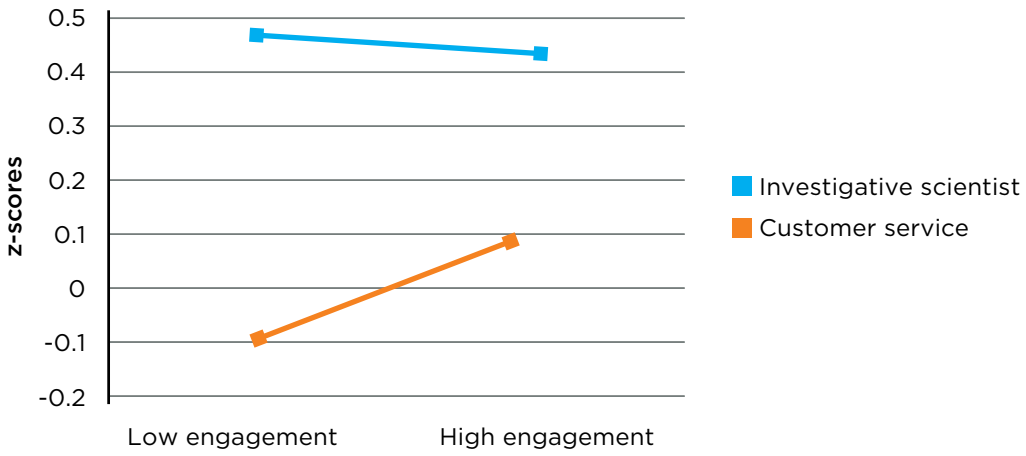
To further illustrate, reconsider Table THTMLM, which shows the pattern of relationships between GPE (as well as other Thought competencies) and WE, I, and P and the interactions between them. The WE x ML interaction on the reference occasion (CFO) is positive (β = .022), but the GPE x WE x ML interaction is negative (β = -.023) and of a slightly higher absolute magnitude. As such, the increase in WE's effect on CFO up the management pipeline becomes a slight decrease for WE's effect on GPE. Similarly, the WE x I interaction on the reference occasion is negative and of a sufficient magnitude to render WE's effect ultimately negative at notably elevated levels of I for CFO. Despite the positive nature of the GPE x WE x I interaction, its absolute magnitude, when added to the WE x I interaction on the reference occasion, provides that WE's slope is still negative at markedly elevated levels of I for GPE. The negative value of the GPE x WE x P interaction provides similarly, in that it renders WE's slope negative at increased levels of P for GPE.

The likely (at least partial) result of range restriction, perhaps among other things, can be seen in Figure GPEX, which shows GPE scores across engagement levels for both investigators and customer service professionals (at mid-level leader ML). The former job type is much higher than the latter in terms of I-orientation, which has a strong and positive effect on GPE. However, due to the ultimate negative effect of I on WE—which we argue is a result of range restriction on GPE as I increases (see Table GPEM)—the slope in Figure GPEX for investigative scientists is near zero and slightly negative. For customer service professionals, however, the slope is considerably positive—but their target GPE score is notably lower than the target seen for investigative scientists. This is because, for customer service professionals, increased variability and generally decreased GPE (*M* = .01) is common for that group, especially compared to investigative scientists (*M* = .52). For the latter, elevated GPE demarcates membership status but it hardly and negatively differentiates between engagement levels, whereas for the former, *average* GPE demarcates membership status and GPE positively differentiates among engagement levels considerably.

Figure GPEX. Global perspective scores across job types



We do not suggest that range restriction is entirely or partially culprit in every (occasion x) WE x (occasion x) ML, WE x I, or (occasion x) WE x P interaction that is observed. We do call attention to cases in which (1) the ML, I, and/or P effect on the intercept (for that measure) is significant, and (2) the WE x ML, WE x I, and/or WE x P interaction is also significant (for that measure) and ultimately has an opposite sign compared to the effect on the intercept. These situations might be indicative of a range restriction issue and one in which the "price of admission" for that measure for that job trumps the extent to which the measure is differentiating

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of performance (WE) for that job. Note that some researchers suggest in cases like these that a correction be applied to simulate *applicants* in cases wherein only incumbents are present in the sample. This is because applicants ostensibly have more variability on psychological and skill-based measures associated with some jobs than do incumbents (Sackett & Yang, 2000; Lawley, 1943). We do not apply the correction in this manual because we feel it is unnecessary, that it unintentionally veils the truth to some extent, and we also observe that related statistical corrections are not well developed and readily available for application to *the kinds of* multivariate models employed above.

We call attention to the range restriction phenomena in our data in part to explain some moderated magnitude results that may seem initially counterintuitive, particularly if one assumes that the extent to which a KF4D variable is *important* for a given job must be the same as the extent and nature of the way it is differentiating of performance (or some other outcome) for that job. It is perhaps natural to assume, in other words, that an I-related construct (like GPE, SVI, MAB, or CIN) would be more differentiating in jobs that are increasingly characterized by I-orientation. In the case of GPE, elevated levels are indeed important as jobs become increasingly I-oriented, P-oriented, and higher up the management pipeline because they demarcate typical status within such roles (the mean increases). In this case, an elevated GPE score may be seen as a "price of admission." Nonetheless, at sufficiently high levels of I, P, and ML, GPE's relationship to WE, as we have seen, can become zero or negative, such that elevated GPE can have reduced positive, zero, or negative differentiation of performance between incumbents *in that role* as defined by I, P, and ML levels.

The comparison shown in Figure GPEX and the slight negative relationship between WE and GPE for investigative scientists shown therein also provide us some fodder for thinking about the nature of target scores. Note that we do not claim to definitively or in every case know for certain whether a target score is an ideal point or a cutoff at or above (or below) which engagement is optimized. Absolute certainty and formal empirical testing around this issue is out of scope for this manual. We do, however, suggest some heuristics for consideration. In Figure GPEX, the slightly negative relationship between GPE and WE for investigators may lead one to conclude that increasingly lower GPE scores are ultimately optimal for that group. Note, however, that too low a GPE score for an investigator could render one a peculiar member of that group, and in light of GPE's correlation with advancement (see Table WAITHT, r = .16) may also make one an unlikely candidate for promotion into higher roles or for even retention in that role. As such, we suggest that in this case, and in any case where a KF4D variable for a job type is positively predictive of advancement but negatively associated with WE, that the target is an *ideal point*. We also suggest that in any case where a KF4D variable is negatively predictive of advancement but positively associated with WE, that the target is also an *ideal point*. Such is the case for FO among upper-level management, as shown later in Table FOMIP. We also suggest that if GPE had been positively predictive of engagement for investigators, that it would have been either an ideal point or a cutoff at or above which engagement would be (increasingly) optimized. This is because GPE would have been, in that case, positively predictive of both advancement and engagement after advancement. Similarly, if a KF4D variable is negatively associated with both WE and advancement, then the score is either an ideal point or a cutoff at or *below* which engagement is expected to be optimized and increasingly optimized. In these cases, we do not attempt to determine whether the score is an ideal point or cutoff, but simply offer that we believe it could be either.

We make note of a final possibility that a variable is a *rare* or increasingly *rare differentiator.* If a variable is negatively associated with advancement but trends upward through management levels in terms of its positive salience vis-à-vis predicting engagement, then (elevated levels of) the variable is increasingly rare up the management pipeline while becoming more differentiating. We characterize

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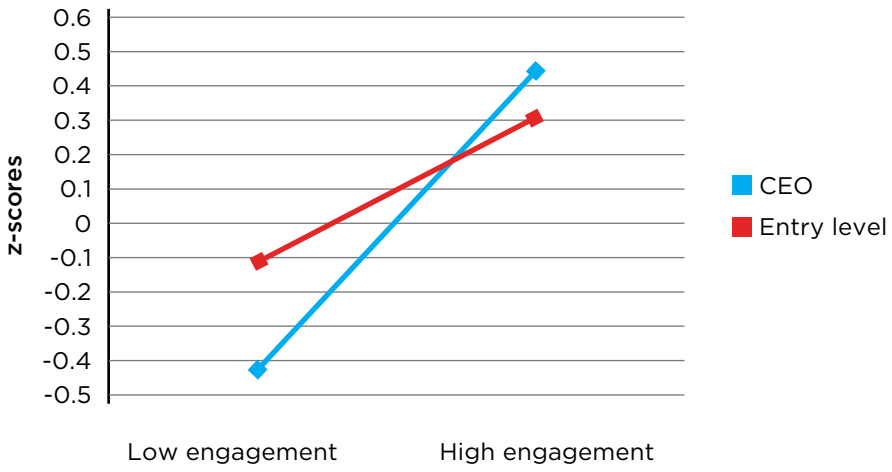
this possibility, again, as an increasingly rare differentiator and underscore its potential importance in predicting when an otherwise "unusual" upper-level manager might be more fit for optimal performance. Note, however, that a variable like this is nonetheless negatively associated with ML and, as such, too high a score may render one a peculiar member of an upper-level managerial group. In general, it is perhaps best to proceed with caution when a variable is characterized this way due to its potential to be an ideal point or a rare differentiator.

Having called attention to these issues, we now turn to additional results illustrating how KF4D scores interact with jobs and work engagement to produce target scores for potential use in application. Effects are demonstrated in the figures below and show the linear relationships between KF4D scores and work engagement across CEOs and EICs with level-typical work-analysis values, and demonstrate both mean and slope differences between them. We also present tabular results showing the relationship between KF4D scores and management level, as well as the extent and comparative extent to which each KF4D score typically differentiates between engaged individuals at each management level. In some cases, we apply our heuristics described above to suggest characterizations of each target variable.

Thought competency results

***Customer focus* (CFO).** CEOs (*M* = .01) and EICs (*M* = .10) show somewhat different mean levels of CFO, such that EICs are typically a bit higher.[28] The steeper slope and higher target for the former suggests that CFO is, however, a bit more salient for CEOs in terms of differentiating among the successful. The CEO target is approximately .14 *SD*s above the target for EICs. Note, however, that the EIC slope is still clearly positive and the target is still notably above the mean at the 62nd percentile. The decrease in slope for EICs is a reflection of the positive WE x ML interaction shown in Table THTMLM. Because CFO tends to go down with ML while becoming increasingly salient up the ML pipeline (see Table CFOMIP), it might be conceptualized as having the potential to be an increasingly rare differentiator among higher-level managers. Additional details can be examined in Figure THT1 and Table CFOMIP.

Figure THT1. Model-implied Customer focus scores across job types



[28] Throughout the following sections, these are model-implied means at average work engagement.

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Table CFOMIP. Descriptive results of Customer focus regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS CFO OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	0.01	0.50	0.48	0.68	0.24
Average	0.07	0.53	0.38	0.65	0.16
High	0.11	0.54	0.25	0.60	0.07
People					
Low	-0.06	0.48	0.33	0.63	0.20
Average	0.06	0.53	0.37	0.64	0.15
High	0.19	0.58	0.44	0.67	0.13
Management level					
Entry level IC	0.10	0.54	0.31	0.62	0.11
Team lead	0.10	0.54	0.31	0.62	0.11
First level leader	0.08	0.53	0.35	0.64	0.13
Mid-level leader	0.07	0.53	0.36	0.64	0.14
Functional leader	0.07	0.53	0.38	0.65	0.16
Business unit leader	0.05	0.52	0.40	0.66	0.17
Senior/Top functional executive	0.03	0.51	0.42	0.66	0.19
Senior/Top business group executive	0.02	0.51	0.44	0.67	0.21
CEO	0.01	0.50	0.46	0.68	0.23

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Decision quality* (DQU).** As with CFO, CEOs (*M* = .01) and EICs (*M* = .10) show slightly dissimilar mean levels of DQU, favoring the EICs. DQU is somewhat more differentiating for CEOs however, as evidenced by the comparative slopes in Figure THT2. For EICs, the slope is nonetheless considerable and similar, with the typical high engagement score being approximately .28 *SD* units higher than the EIC mean and within the 65th percentile. For CEOs, the target is approximately .46 *SD* units higher than average for that group and in the 65th percentile as well. Table DQUMIP underscores with more clarity that, like CFO, DQU tends to go down with ML while becoming slightly more salient in terms of predicting engagement up the ML pipeline. As such, it might be conceptualized as having the potential to be an increasingly rare differentiator among higher-level managers.

Figure THT2. Model-implied Decision quality scores across job types

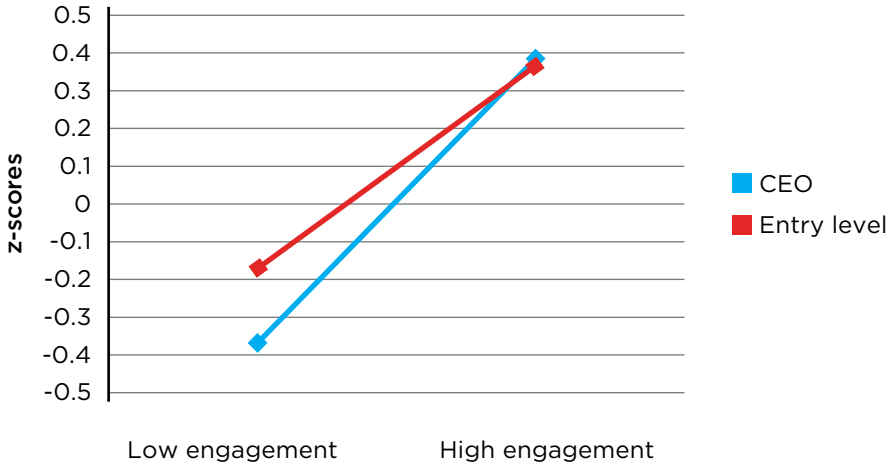

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Table DQUMIP. Descriptive results of Decision quality regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS DQU OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	0.01	0.50	0.58	0.72	0.29
Average	0.07	0.53	0.38	0.65	0.16
High	0.11	0.54	0.17	0.57	0.03
People					
Low	-0.06	0.48	0.51	0.69	0.29
Average	0.06	0.53	0.37	0.64	0.15
High	0.19	0.58	0.26	0.60	0.03
Management level					
Entry level IC	0.10	0.54	0.38	0.65	0.14
Team lead	0.10	0.54	0.35	0.64	0.13
First level leader	0.08	0.53	0.37	0.64	0.14
Mid-level leader	0.07	0.53	0.36	0.64	0.15
Functional leader	0.07	0.53	0.37	0.64	0.15
Business unit leader	0.05	0.52	0.37	0.64	0.16
Senior/Top functional executive	0.03	0.51	0.38	0.65	0.17
Senior/Top business group executive	0.02	0.51	0.39	0.65	0.18
CEO	0.01	0.50	0.40	0.65	0.20

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Balances stakeholders **(BST).** The mean BST level for CEOs (*M* = -.02) is considerably higher than seen for EICs (*M* = -14). BST is positively differentiating for both groups, but slightly more so for the former. Target scores are somewhat dissimilar, being clearly above the global mean for CEOs, while being nearer to the mean for EICs. For CEOs, the high target is a reflection of both the association with management level and the increasingly positive differentiating effect of WE as one moves up levels of ML, I, and P. Table BSTMIP shows that BST tends to increase with management level, while the salience of BST vis-à-vis predicting engagement is typically increased a small amount as one moves up the management pipeline as well. Additional details can be examined in Figure THT3 and Table BSTMIP.

Figure THT3. Model-implied Balances stakeholders scores across job types

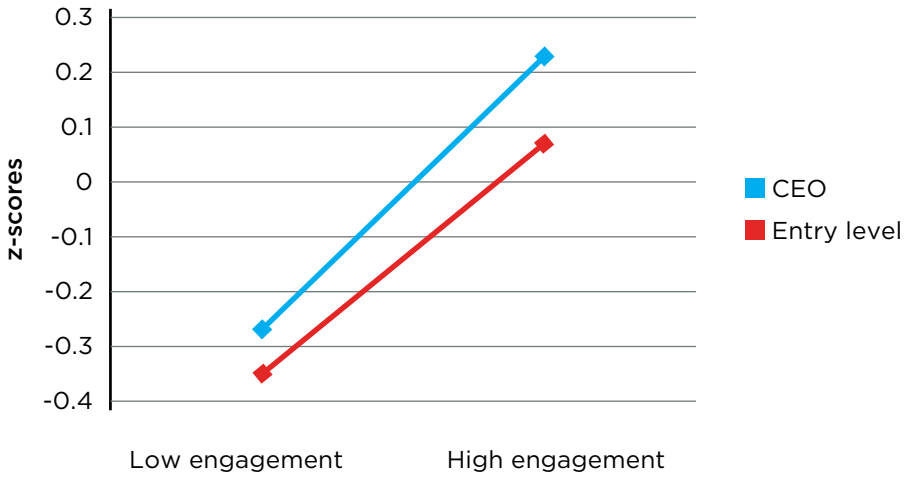

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Table BSTMIP. Descriptive results of Balances stakeholders regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS BST OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.36	0.36	0.05	0.52	0.21
Average	-0.06	0.48	0.17	0.57	0.12
High	0.19	0.58	0.23	0.59	0.02
People					
Low	-0.45	0.33	-0.12	0.45	0.17
Average	-0.07	0.47	0.16	0.56	0.12
High	0.30	0.62	0.45	0.67	0.08
Management level					
Entry level IC	-0.14	0.44	0.07	0.53	0.11
Team lead	-0.09	0.47	0.11	0.54	0.10
First level leader	-0.09	0.46	0.13	0.55	0.11
Mid-level leader	-0.06	0.47	0.15	0.56	0.11
Functional leader	-0.04	0.48	0.18	0.57	0.11
Business unit leader	-0.03	0.49	0.19	0.58	0.11
Senior/Top functional executive	-0.04	0.49	0.20	0.58	0.12
Senior/Top business group executive	-0.03	0.49	0.22	0.59	0.12
CEO	-0.02	0.49	0.24	0.59	0.13

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Global perspective **(GPE).** Average scores for CEOs (*M* = .29) on GPE are much higher compared to EICs (*M* = -.17), such that the two groups are typically separated by approximately .36 *SD*s. WE's impact on GPE for both groups is positive as shown in Figure THT4. The slope and differentiating effect for EICs, however, is notably higher (*β* = .13) for EICs, while being near zero for CEOs (*β* = .03). The culprit effects for the decreased slope among CEOs are the WE x I and WE x P interactions, both of which are set to higher values (in terms of I and P, at their level means) for CEOs (see Table THTMLM). Despite the decreased slope, elevated GPE, as we have shown, is much more common for CEOs and thus their target is considerably higher, being in the 63rd percentile and typically 10 percentile points higher than EICs. The pattern of effects is further elucidated in Table GPEMIP.

Figure THT4. Model-implied Global perspective scores across job types

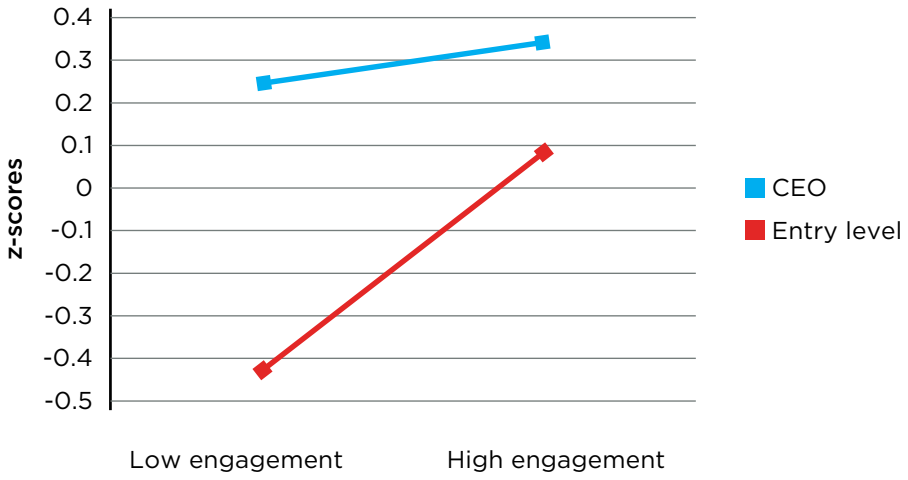

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Table GPEMIP. Descriptive results of Global perspective regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS GPE OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.40	0.34	0.04	0.52	0.22
Average	0.06	0.52	0.21	0.58	0.08
High	0.49	0.69	0.38	0.65	-0.06
People					
Low	-0.31	0.38	0.11	0.54	0.21
Average	0.07	0.53	0.22	0.59	0.08
High	0.37	0.64	0.29	0.61	-0.04
Management level					
Entry level IC	-0.17	0.43	0.09	0.54	0.13
Team lead	-0.05	0.48	0.15	0.56	0.10
First level leader	-0.03	0.49	0.16	0.57	0.10
Mid-level leader	0.04	0.52	0.20	0.58	0.08
Functional leader	0.11	0.54	0.23	0.59	0.06
Business unit leader	0.16	0.56	0.26	0.60	0.05
Senior/Top functional executive	0.20	0.58	0.29	0.61	0.05
Senior/Top business group executive	0.24	0.60	0.32	0.62	0.04
CEO	0.29	0.62	0.34	0.63	0.03

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Cultivates innovation* (CIN).** CEOs (*M* = .22) and EICs (*M* = -.24) are separated in terms of their typical CIN scores by more than .45 *SD*s, in favor of CEOs. CIN, however, is notably more differentiating for the latter (*β* = .09), while having a non-zero but very small differentiating effect for the former (*β* = .01). In other words, CIN differentiates among groups notably, but only notably differentiates between performers within groups for EICs. Considering the relatively elevated ML and P levels for CEOs, the culprit effects in decreasing the slope for CEOs include the CIN x WE x ML and the CIN x WE x P interactions, which are both negative (see Table THTMLM). Given their elevated mean, however, the target CIN score for CEOs (60th percentile) is ultimately higher than the target for EICs (48th percentile), being separated by approximately .30 *SD*s. Table CINMIP shows additional details and illustrates how the differentiating effect of CIN goes down with ML in general.

Figure THT5. Model-implied Cultivates innovation scores across job types

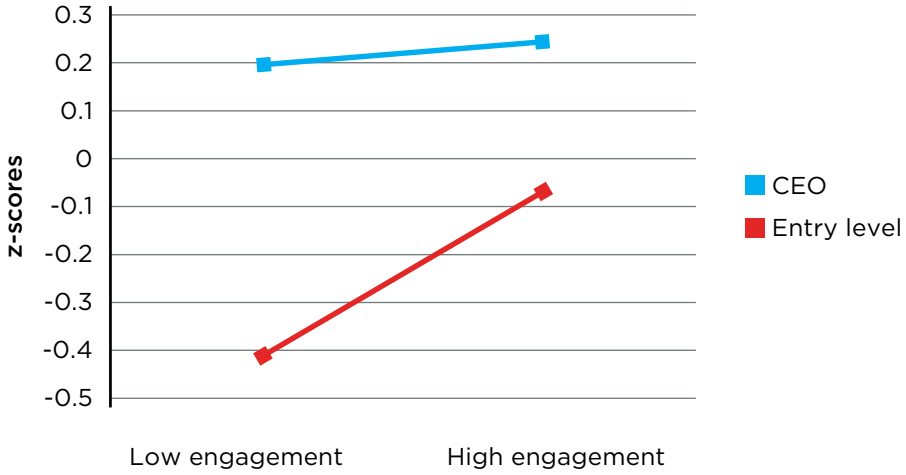

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Table CINMIP. Descriptive results of Cultivates innovation regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS CIN OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.48	0.32	-0.38	0.35	0.05
Average	-0.02	0.49	0.08	0.53	0.05
High	0.44	0.67	0.57	0.72	0.07
People					
Low	-0.31	0.38	-0.05	0.48	0.13
Average	0.00	0.50	0.11	0.54	0.06
High	0.21	0.58	0.16	0.56	-0.03
Management level					
Entry level IC	-0.24	0.40	-0.06	0.48	0.09
Team lead	-0.12	0.45	0.04	0.52	0.08
First level leader	-0.10	0.46	0.04	0.51	0.07
Mid-level leader	-0.03	0.49	0.09	0.54	0.06
Functional leader	0.03	0.51	0.12	0.55	0.05
Business unit leader	0.08	0.53	0.16	0.56	0.04
Senior/Top functional executive	0.13	0.55	0.19	0.58	0.03
Senior/Top business group executive	0.17	0.57	0.21	0.58	0.02
CEO	0.22	0.59	0.25	0.60	0.01

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Strategic mindset* (SVI).** CEOs (*M* = .28) tend to have notably higher mean levels of SVI compared to EICs (*M* = -.26). Moreover, SVI is notably more differentiating for the former (β = .14) compared to the latter (β = .02). As one moves up the management pipeline, in general SVI scores increasingly differentiate among the more and less engaged (see Table SVIMIP). Target scores for CEOs (*z* = .56) are more than .70 *SD*s higher compared to target scores for EICs. The slope for EICs is nonetheless positive and indicates that EICs, like CEOs, are typically more engaged as their SVI scores rise. Additional details can be seen in Figure THT6 and Table SVIMIP.

Figure THT6. Model-implied Strategic mindset scores across job types

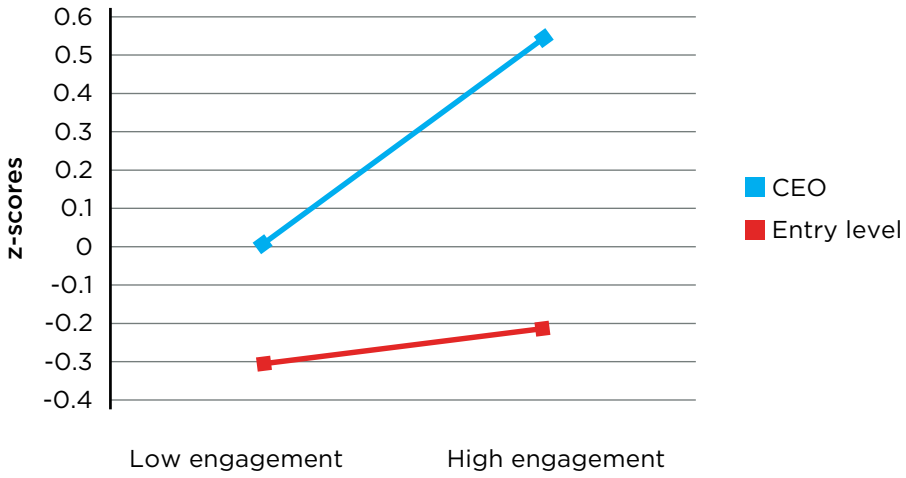

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Table SVIMIP. Descriptive results of Strategic mindset regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS SVI OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.42	0.34	-0.11	0.46	0.16
Average	0.00	0.50	0.14	0.56	0.07
High	0.39	0.65	0.36	0.64	-0.02
People					
Low	-0.35	0.36	-0.12	0.45	0.12
Average	0.01	0.50	0.14	0.56	0.07
High	0.29	0.61	0.37	0.64	0.04
Management level					
Entry level IC	-0.26	0.40	-0.21	0.42	0.02
Team lead	-0.14	0.44	-0.09	0.46	0.02
First level leader	-0.10	0.46	-0.01	0.50	0.05
Mid-level leader	-0.02	0.49	0.09	0.54	0.06
Functional leader	0.05	0.52	0.19	0.58	0.07
Business unit leader	0.11	0.54	0.29	0.61	0.09
Senior/Top functional executive	0.16	0.56	0.37	0.65	0.11
Senior/Top business group executive	0.22	0.59	0.46	0.68	0.12
CEO	0.28	0.61	0.56	0.71	0.14

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Results competency results

***Action oriented* (ACO).** The CEO target score for ACO is typically in the 82nd percentile, and notably higher than the target for EIC, which is in the 58th percentile and about .70 *SD*s lower. On average, without respect to target scores, CEOs (*M* = .43) are also approximately .67 *SD*s higher on ACO compared to EICs (*M* = -.25). The differentiating effect of WE is roughly the same for both groups (β = .23, .22, respectively), although Table ACOMIP shows some trending upward through the management pipeline in terms of ACO's ability to differentiate. Overall, ACO's mean differences across levels of ML and differentiating effect are notable and among the higher in the KF4D system. Additional details can be examined in Figure RES1.

Figure RES1. Model-implied Action oriented scores across job types

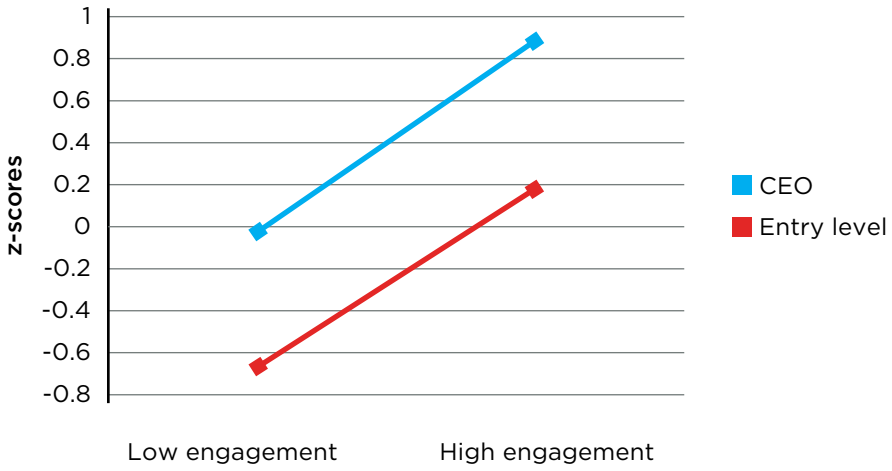

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Table ACOMIP. Descriptive results of Action oriented regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS ACO OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.30	0.38	0.46	0.68	0.38
Average	0.07	0.53	0.51	0.69	0.22
High	0.41	0.66	0.54	0.71	0.07
People					
Low	-0.27	0.39	0.47	0.68	0.37
Average	0.08	0.53	0.51	0.69	0.22
High	0.36	0.64	0.53	0.70	0.09
Management level					
Entry level IC	-0.25	0.40	0.20	0.58	0.22
Team lead	-0.12	0.45	0.28	0.61	0.20
First level leader	-0.06	0.48	0.37	0.64	0.21
Mid-level leader	0.04	0.52	0.46	0.68	0.21
Functional leader	0.13	0.55	0.55	0.71	0.21
Business unit leader	0.21	0.58	0.63	0.74	0.22
Senior/Top functional executive	0.28	0.61	0.72	0.77	0.22
Senior/Top business group executive	0.35	0.64	0.81	0.79	0.23
CEO	0.43	0.67	0.90	0.82	0.23

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Resourcefulness* (RSF).** The pattern of RSF results are somewhat rare. While EICs have typical RSF levels (*M* = .10) that are somewhat higher than typical CEO levels (*M* = -.06), the differentiating effect is larger for the latter (*β* = .14). The steeper WE slope results in target scores that are similar across the groups, being only separated by approximately .03 *SD*s and higher for EICs. In general, RSF's differentiating effect trends upward for higher MLs, while its mean trends downward through higher MLs. As such, RSF might be characterized as an increasingly rare differentiator as one moves up through the management pipeline. In other words, increased RSF level will likely not "get one promoted," but it will help those who have been promoted to be more successful.

Figure RES2. Model-implied Resourcefulness scores across job types

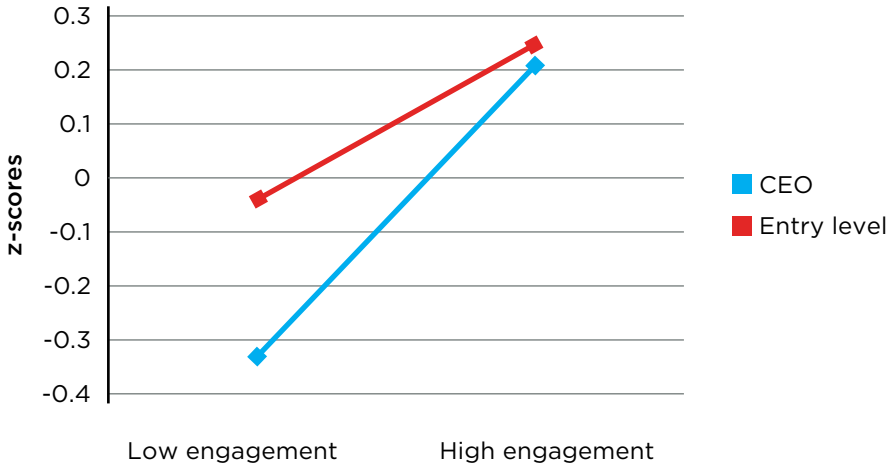

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Table RSFMIP. Descriptive results of Resourcefulness regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS RSF OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.05	0.48	0.31	0.62	0.18
Average	0.04	0.52	0.23	0.59	0.10
High	0.13	0.55	0.16	0.56	0.02
People					
Low	-0.04	0.48	0.37	0.64	0.20
Average	0.04	0.52	0.23	0.59	0.10
High	0.10	0.54	0.09	0.54	-0.01
Management level					
Entry level IC	0.10	0.54	0.25	0.60	0.08
Team lead	0.10	0.54	0.24	0.59	0.07
First level leader	0.07	0.53	0.24	0.59	0.09
Mid-level leader	0.05	0.52	0.23	0.59	0.09
Functional leader	0.03	0.51	0.22	0.59	0.10
Business unit leader	0.01	0.50	0.22	0.59	0.11
Senior/Top functional executive	-0.01	0.49	0.22	0.59	0.12
Senior/Top business group executive	-0.04	0.48	0.22	0.59	0.13
CEO	-0.06	0.48	0.22	0.59	0.14

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Directs work* (DWO).** Results suggest that DWO is a notably important variable for upper-level managers, specifically CEOs. First, CEOs tend to have a markedly high typical DWO level (*M* = .44) compared to lower groups, including EICs (*M* = -.39) whose typical value is nearly a full *SD* lower. The differentiating effect of DWO is also a bit high for the former (*β* = .11) compared to the latter (*β* = .05). In general, DWO becomes more important for distinguishing among the successful as ML rises, while its effect is nonetheless non-zero, even for the lowest-level incumbents.

Figure RES3. Model-implied Directs work scores across job types

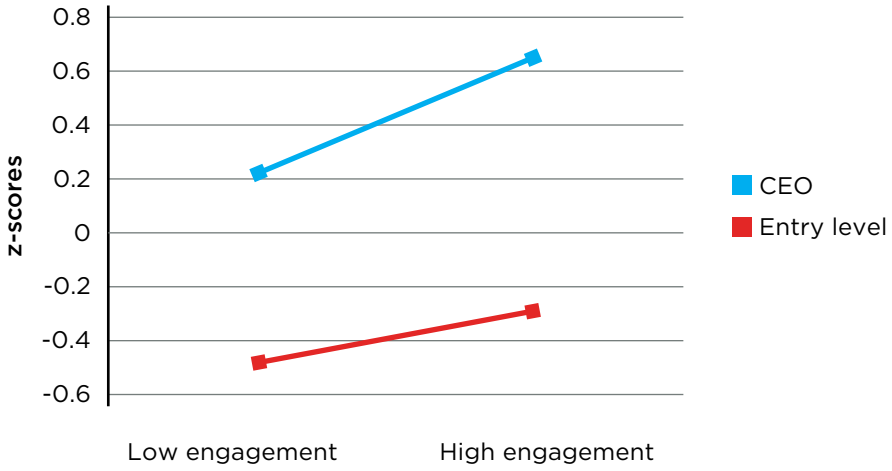

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Table DWOMIP. Descriptive results of Directs work regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS DWO OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.28	0.39	0.04	0.52	0.16
Average	-0.01	0.50	0.13	0.55	0.07
High	0.23	0.59	0.20	0.58	-0.01
People					
Low	-0.24	0.41	0.11	0.54	0.18
Average	-0.01	0.50	0.13	0.55	0.07
High	0.18	0.57	0.12	0.55	-0.03
Management level					
Entry level IC	-0.39	0.35	-0.29	0.39	0.05
Team lead	-0.26	0.40	-0.17	0.43	0.05
First level leader	-0.17	0.43	-0.05	0.48	0.06
Mid-level leader	-0.06	0.48	0.07	0.53	0.06
Functional leader	0.05	0.52	0.18	0.57	0.07
Business unit leader	0.15	0.56	0.30	0.62	0.08
Senior/Top functional executive	0.24	0.59	0.42	0.66	0.09
Senior/Top business group executive	0.34	0.63	0.54	0.71	0.10
CEO	0.44	0.67	0.66	0.75	0.11

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Plans and aligns* (AEX).** At average engagement, AEX scores are notably higher for CEOs (*M* = .20) than EICs (*M* = -.21) and, hence, seem to demarcate membership status. The differentiating effects for CEOs (*β* = .12) and EICs (*β* = .11), however, are not dissimilar, despite a small trend upward through the management pipeline in AEX's ability to differentiate (see Table AEXMIP). Assuming that promotion as well as high engagement in an EIC role are both desirable, the target for EICs, as seen with many scores, is likely a score at or above which engagement and positive outcomes are likely optimized.

Figure RES4. Model-implied Plans and aligns scores across job types

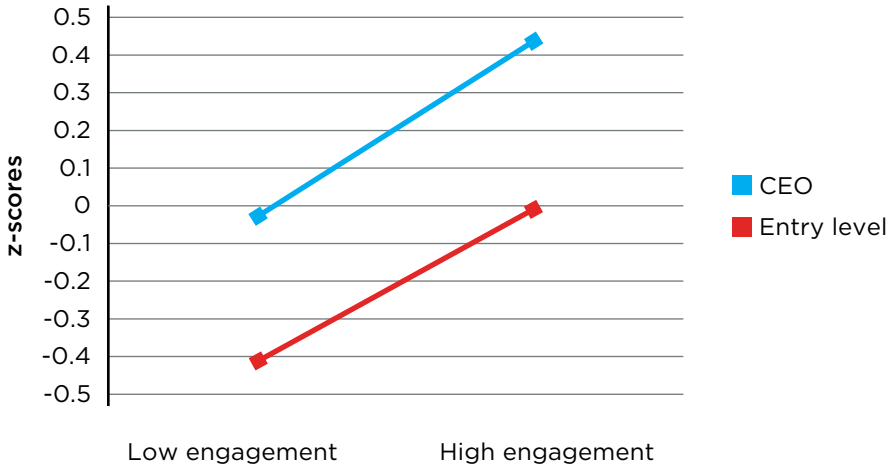

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Table AEXMIP. Descriptive results of Plans and aligns regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS AEX OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.31	0.38	0.22	0.59	0.26
Average	-0.01	0.50	0.19	0.58	0.10
High	0.27	0.61	0.17	0.57	-0.05
People					
Low	-0.23	0.41	0.27	0.61	0.25
Average	-0.01	0.50	0.19	0.58	0.10
High	0.17	0.57	0.10	0.54	-0.03
Management level					
Entry level IC	-0.21	0.42	0.00	0.50	0.11
Team lead	-0.12	0.45	0.05	0.52	0.08
First level leader	-0.09	0.46	0.10	0.54	0.10
Mid-level leader	-0.03	0.49	0.16	0.56	0.10
Functional leader	0.02	0.51	0.21	0.58	0.10
Business unit leader	0.07	0.53	0.27	0.61	0.10
Senior/Top functional executive	0.11	0.55	0.33	0.63	0.11
Senior/Top business group executive	0.16	0.56	0.39	0.65	0.12
CEO	0.20	0.58	0.45	0.67	0.12

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Optimizes work processes* (OWP).** CEOs (*M* = .25) and EICs (*M* = -.22) are separated in terms of their typical OWP scores by more than .40 *SD*s, in favor of CEOs. OWP is slightly more differentiating for the former (β = .19), while having a non-zero and considerable differentiating effect for the latter (β = .17). In other words, OWP differentiates between groups notably, and notably differentiates between performers within both groups (also see Figure RES5). The mean differences (primarily) provide that target scores are notably different. For CEOs, the most engaged are expected to score at or perhaps above the 73rd percentile of OWP, whereas the target for EICs is much lower and in the 55th percentile. Table OWPMIP shows additional details and illustrates how the differentiating effect of CIN goes up with ML in general.

Figure RES5. Model-implied Optimizes work processes scores across job types

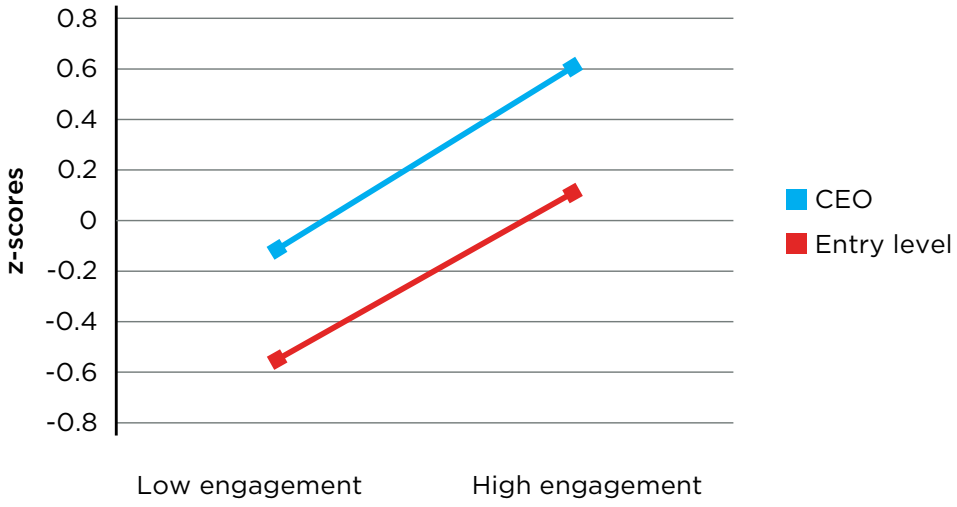

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Table OWPMIP. Descriptive results of Optimizes work processes regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS OWP OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.28	0.39	0.38	0.65	0.33
Average	0.00	0.50	0.34	0.63	0.17
High	0.26	0.60	0.29	0.61	0.02
People					
Low	-0.28	0.39	0.35	0.64	0.32
Average	0.00	0.50	0.34	0.63	0.17
High	0.25	0.60	0.33	0.63	0.04
Management level					
Entry level IC	-0.22	0.41	0.12	0.55	0.17
Team lead	-0.13	0.45	0.17	0.57	0.15
First level leader	-0.09	0.46	0.24	0.60	0.17
Mid-level leader	-0.02	0.49	0.30	0.62	0.16
Functional leader	0.04	0.52	0.36	0.64	0.16
Business unit leader	0.10	0.54	0.43	0.67	0.17
Senior/Top functional executive	0.14	0.56	0.49	0.69	0.18
Senior/Top business group executive	0.19	0.58	0.56	0.71	0.18
CEO	0.25	0.60	0.62	0.73	0.19

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Ensures accountability* (EAC).** The CEO target score for EAC is typically in the 80th percentile, and notably higher than the target for EIC, which is in the 61st percentile and .56 *SD*s lower. On average, without respect to target scores, CEOs (*M* = .36) are also approximately .53 *SD*s higher on EAC compared to EICs (*M* = -.17). The differentiating effect of WE is roughly the same for both groups (β = .24, .22, respectively), although Table EACMIP shows some trending upward through the management pipeline in terms of EAC's ability to differentiate. Overall, EAC's mean differences across levels of ML and differentiating effect are notable and among the higher in the KF4D system and—as with many other KF4D scores that are predictive of promotion and engagement after promotion—EAC targets are likely scores at or above which engagement and positive outcomes are likely optimized for all groups. Additional details can be examined in Figure RES6.

Figure RES6. Model-implied Ensures accountability scores across job types

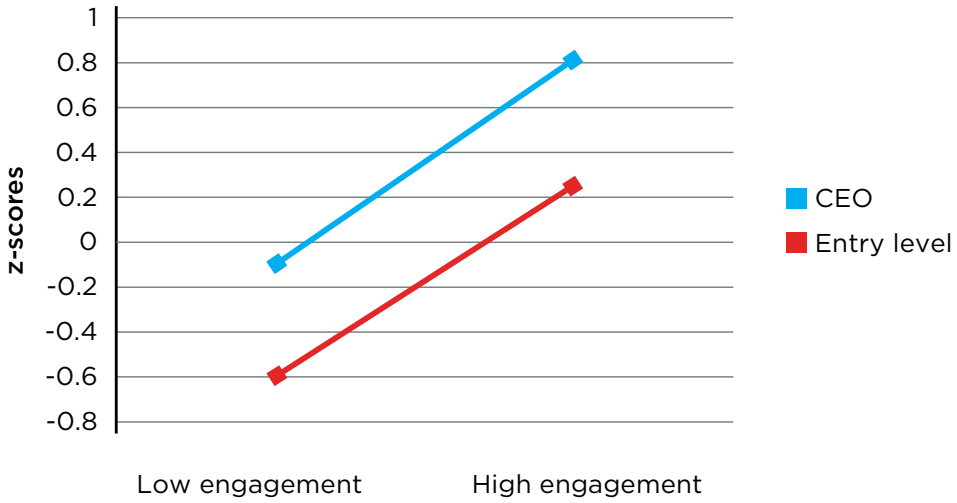

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Table EACMIP. Descriptive results of Ensures accountability regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS EAC OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.13	0.45	0.63	0.74	0.38
Average	0.07	0.53	0.51	0.69	0.22
High	0.25	0.60	0.38	0.65	0.07
People					
Low	-0.10	0.46	0.63	0.74	0.37
Average	0.07	0.53	0.50	0.69	0.22
High	0.22	0.59	0.39	0.65	0.09
Management level					
Entry level IC	-0.17	0.43	0.27	0.61	0.22
Team lead	-0.09	0.47	0.31	0.62	0.20
First level leader	-0.03	0.49	0.40	0.65	0.21
Mid-level leader	0.04	0.52	0.46	0.68	0.21
Functional leader	0.11	0.54	0.53	0.70	0.21
Business unit leader	0.17	0.57	0.60	0.73	0.22
Senior/Top functional executive	0.23	0.59	0.68	0.75	0.23
Senior/Top business group executive	0.30	0.62	0.76	0.77	0.23
CEO	0.36	0.64	0.83	0.80	0.24

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Drives results **(DRE).** Average scores for CEOs (*M* = .22) on DRE are notably higher compared to EICs (*M* = -.03), such that the two groups are typically separated by approximately .19 *SD*s. WE's impact on DRE for both groups is positive, as shown in Figure RES7. The slope and differentiating effect of DRE, however, is notably higher (*β* = .35) for EICs, while being nonetheless substantial and positive for CEOs (*β* = .14). The culprit effects for the decreased slope among CEOs are the DRE x WE x ML interaction and the WE x P interaction on the reference occasion, both of which are ultimately negative for CEOs (see Table RESMLM). The increased WE slope in combination with the higher DRE target for EICs (in the 75th percentile) suggests that DRE may be a more important variable for the success of EICs, and in light of Table DREMIP, for lower levels in general, while remaining considerably important throughout the management pipeline.

Figure RES7. Model-implied Drives results scores across job types

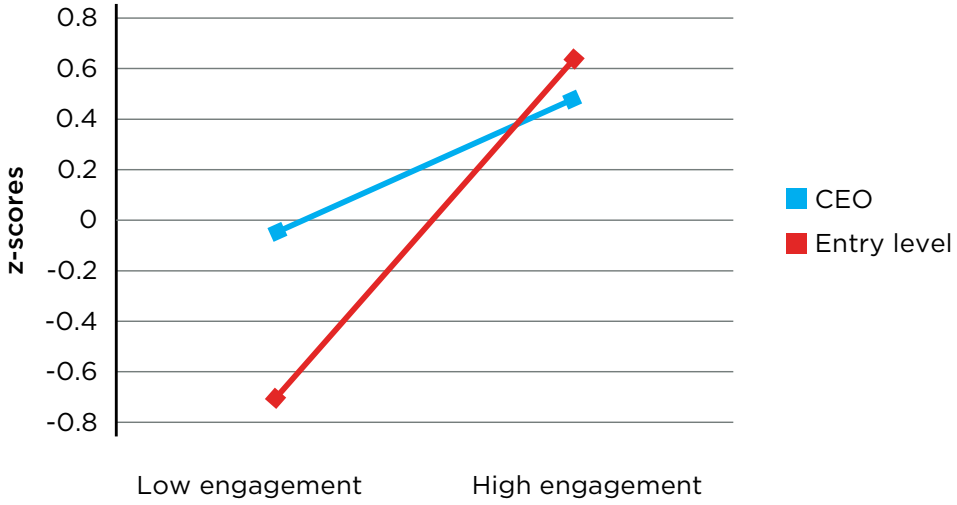

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Table DREMIP. Descriptive results of Drives results regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS DRE OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.20	0.42	0.47	0.68	0.34
Average	0.09	0.54	0.59	0.72	0.25
High	0.37	0.64	0.72	0.76	0.18
People					
Low	-0.14	0.44	0.59	0.72	0.37
Average	0.10	0.54	0.59	0.72	0.25
High	0.29	0.61	0.57	0.72	0.14
Management level					
Entry level IC	-0.03	0.49	0.66	0.75	0.35
Team lead	0.04	0.51	0.66	0.75	0.31
First level leader	0.04	0.52	0.62	0.73	0.29
Mid-level leader	0.09	0.53	0.61	0.73	0.26
Functional leader	0.12	0.55	0.58	0.72	0.23
Business unit leader	0.15	0.56	0.56	0.71	0.21
Senior/Top functional executive	0.17	0.57	0.54	0.71	0.19
Senior/Top business group executive	0.19	0.58	0.51	0.70	0.16
CEO	0.22	0.59	0.49	0.69	0.14

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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People competency results

***Collaborates* (COL).** In general, CEOs (*M* = .32) have higher average COL scores compared to EICs (*M* = -.37), such that the latter are typically .69 *SD*s higher than the former. COL is also a bit more differentiating of engagement for the former (*β* = .12), which is consistent with an overall trend upward in differentiating effect for engagement as one moves up the management pipeline (see Table COLMIP). COL remains at least a small amount differentiating for all MLs however, including EICs (*β* = .07), for whom elevated scores are desirable in general due to their association with promotion, also. Target scores are very different across the groups, being in the 71st percentile for CEOs but below the mean and in the 41st percentile for EICs. Additional details can be examined in Figure PPL1 and Table COLMIP.

Figure PPL1. Model-implied Collaborates scores across job types

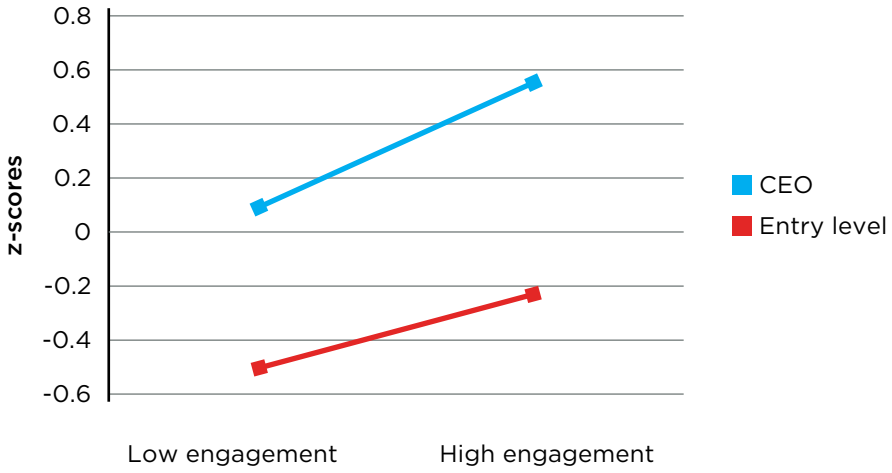

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Table COLMIP. Descriptive results of Collaborates regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS COL OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.35	0.36	0.12	0.55	0.23
Average	-0.04	0.49	0.13	0.55	0.08
High	0.22	0.59	0.11	0.54	-0.06
People					
Low	-0.41	0.34	0.06	0.52	0.24
Average	-0.04	0.48	0.12	0.55	0.08
High	0.29	0.61	0.18	0.57	-0.06
Management level					
Entry level IC	-0.37	0.36	-0.22	0.41	0.07
Team lead	-0.24	0.40	-0.13	0.45	0.06
First level leader	-0.17	0.43	-0.03	0.49	0.07
Mid-level leader	-0.08	0.47	0.07	0.53	0.07
Functional leader	0.01	0.51	0.17	0.57	0.08
Business unit leader	0.09	0.54	0.27	0.60	0.09
Senior/Top functional executive	0.16	0.56	0.36	0.64	0.10
Senior/Top business group executive	0.24	0.60	0.47	0.68	0.11
CEO	0.32	0.63	0.56	0.71	0.12

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Manages conflict* (MCO).** Elevated MCO scores are typically more common for lower-level managers, including EICs (*M* = .09) who have MCO scores that are .16 *SD*s higher than is typical for CEOs (*M* = -.07). The differentiating effect for the former (*β* = .05), however, is smaller than for the latter (*β* = .15), suggesting that MCO becomes more important for performance as one moves up the management pipeline. Given MCO's tendency to decrease up the management pipeline while simultaneously becoming more important for performance, it is perhaps fair to characterize MCO as an increasingly rare differentiator.

Figure PPL2. Model-implied Manages conflict scores across job types

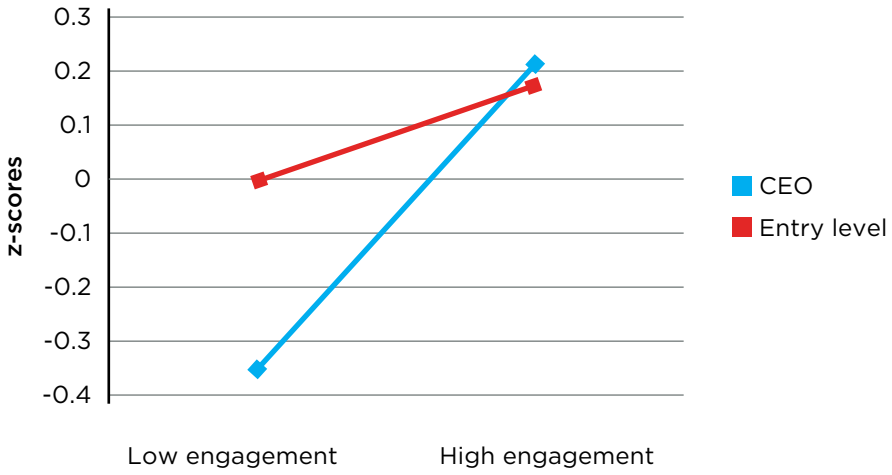

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Table MCOMIP. Descriptive results of Manages conflict regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS MCO OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.10	0.46	0.28	0.61	0.19
Average	0.04	0.51	0.21	0.58	0.09
High	0.14	0.56	0.10	0.54	-0.02
People					
Low	-0.21	0.42	0.11	0.54	0.16
Average	0.03	0.51	0.19	0.58	0.08
High	0.27	0.61	0.31	0.62	0.02
Management level					
Entry level IC	0.09	0.53	0.18	0.57	0.05
Team lead	0.09	0.54	0.17	0.57	0.04
First level leader	0.06	0.52	0.19	0.58	0.06
Mid-level leader	0.05	0.52	0.19	0.58	0.07
Functional leader	0.04	0.51	0.20	0.58	0.08
Business unit leader	0.01	0.50	0.21	0.58	0.10
Senior/Top functional executive	-0.02	0.49	0.21	0.58	0.12
Senior/Top business group executive	-0.04	0.48	0.22	0.59	0.13
CEO	-0.07	0.47	0.22	0.59	0.15

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Interpersonal savvy* (IPS).** At average levels of engagement, CEOs (*M* = -.02) and EICs (*M* = -.04) have virtually equal IPS scores. Target scores, however, are notably disparate, which is a reflection of the increased WE slope for CEOs (*β* = .22), compared to EICs (*β* = .07). For the former, target scores are 12 percentile points higher. In general, there is a trend for the salience of IPS (vis-à-vis predicting engagement) to increase up the management pipeline, suggesting that IPS becomes more important for success among high-level managers. Nonetheless, IPS positively differentiates to some extent between engaged individuals for all management levels. Additional details can be examined in Figure PPL3 and Table IPSMIP.

Figure PPL3. Model-implied Interpersonal savvy scores across job types

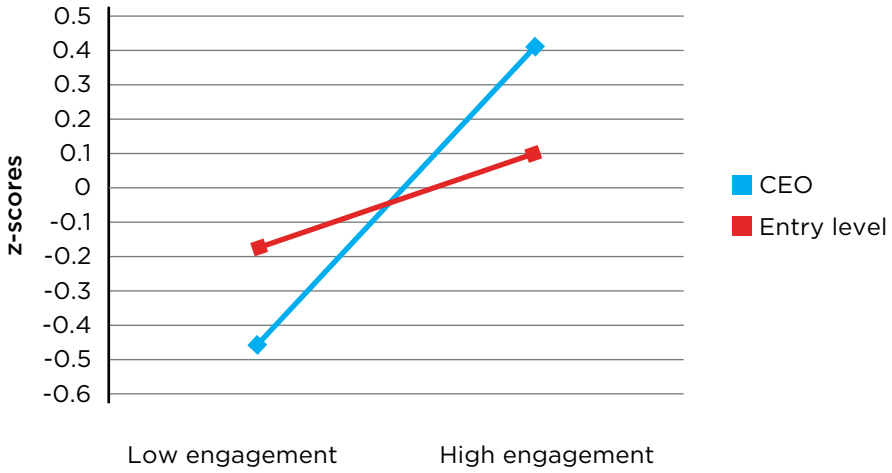

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Table IPSMIP. Descriptive results of Interpersonal savvy regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS IPS OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.42	0.34	0.11	0.54	0.27
Average	0.00	0.50	0.26	0.60	0.13
High	0.38	0.65	0.38	0.65	0.00
People					
Low	-0.49	0.31	0.05	0.52	0.27
Average	0.00	0.50	0.26	0.60	0.13
High	0.46	0.68	0.45	0.67	-0.01
Management level					
Entry level IC	-0.04	0.48	0.11	0.54	0.07
Team lead	0.03	0.51	0.16	0.57	0.07
First level leader	0.00	0.50	0.20	0.58	0.10
Mid-level leader	0.02	0.51	0.24	0.60	0.11
Functional leader	0.03	0.51	0.29	0.61	0.13
Business unit leader	0.02	0.51	0.32	0.63	0.15
Senior/Top functional executive	0.00	0.50	0.35	0.64	0.18
Senior/Top business group executive	-0.01	0.50	0.39	0.65	0.20
CEO	-0.02	0.49	0.43	0.67	0.22

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Builds networks **(NNE).** Average scores for CEOs (*M* = -.06) on NNE are notably lower compared to EICs (*M* = .20), such that the two groups are typically separated by approximately .25 *SD*s. WE's impact on NNE for both groups is positive, as shown in Figure PPL4. The slope and differentiating effect of NNE, however, is somewhat lower (*β* = .17) for EICs, while being also substantial and positive for CEOs (*β* = .21). Target scores are similar across groups, being only 5 percentile points higher for EICs, which is a reflection of their comparatively higher overall mean. Because NNE tends to go down with ML while becoming increasingly salient up the ML pipeline (see Table NNEMIP), it might be conceptualized as having the potential to be an increasingly rare differentiator among higher-level managers. Additional details can be examined in Figure PPL4 and Table NNEMIP.

Figure PPL4. Model-implied Builds networks scores across job types

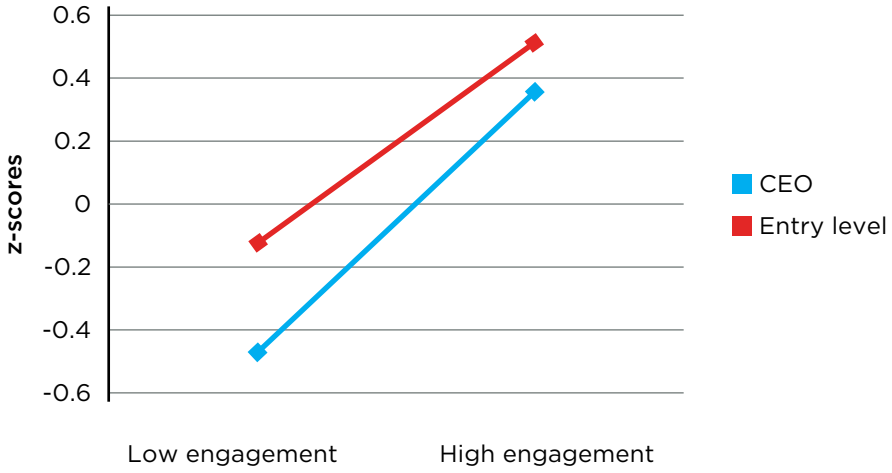

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Table NNEMIP. Descriptive results of Builds networks regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS NNE OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	0.10	0.54	0.75	0.77	0.33
Average	0.09	0.54	0.44	0.67	0.18
High	0.07	0.53	0.14	0.56	0.04
People					
Low	0.05	0.52	0.71	0.76	0.33
Average	0.09	0.54	0.44	0.67	0.18
High	0.14	0.56	0.21	0.58	0.04
Management level					
Entry level IC	0.20	0.58	0.53	0.70	0.17
Team lead	0.17	0.57	0.47	0.68	0.15
First level leader	0.14	0.55	0.47	0.68	0.17
Mid-level leader	0.11	0.54	0.44	0.67	0.17
Functional leader	0.08	0.53	0.42	0.66	0.17
Business unit leader	0.04	0.52	0.40	0.66	0.18
Senior/Top functional executive	0.01	0.50	0.40	0.65	0.19
Senior/Top business group executive	-0.02	0.49	0.39	0.65	0.20
CEO	-0.06	0.48	0.37	0.65	0.21

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Develops talent* (DTA).** As might be expected, DTA increases notably with management level, being .70 *SD*s higher for CEOs (*M* = .38) compared to EICs (*M* = -.32). Its effect is positively differentiating for both groups, but seems to be more salient at higher levels in the management pipeline, as can be seen in Table DTAMIP. Target scores are disparate and higher for CEOs (73rd percentile), as would be expected, given the higher mean and steeper WE slope for CEOs. In general, elevated DTA scores seem desirable in light of the measure's correlation with advancement and its differentiating effect for all levels. Additional details can be examined in Figure PPL5 and Table DTAMIP.

Figure PPL5. Model-implied Develops talent scores across job types

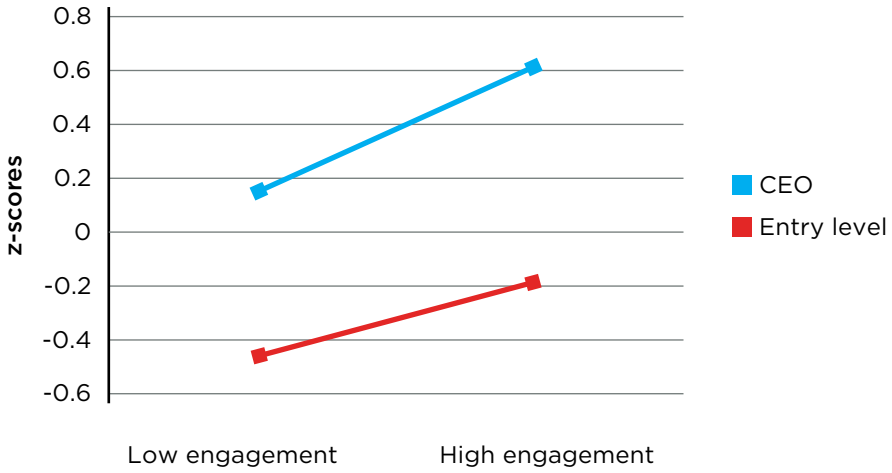

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Table DTAMIP. Descriptive results of Develops talent regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS DTA OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.25	0.40	0.22	0.59	0.24
Average	0.01	0.50	0.17	0.57	0.08
High	0.22	0.59	0.11	0.54	-0.06
People					
Low	-0.24	0.41	0.23	0.59	0.24
Average	0.01	0.50	0.17	0.57	0.08
High	0.21	0.58	0.10	0.54	-0.06
Management level					
Entry level IC	-0.32	0.37	-0.18	0.43	0.07
Team lead	-0.21	0.42	-0.10	0.46	0.06
First level leader	-0.13	0.45	0.01	0.51	0.07
Mid-level leader	-0.04	0.48	0.11	0.54	0.07
Functional leader	0.05	0.52	0.21	0.58	0.08
Business unit leader	0.14	0.55	0.31	0.62	0.09
Senior/Top functional executive	0.22	0.59	0.42	0.66	0.10
Senior/Top business group executive	0.30	0.62	0.52	0.70	0.11
CEO	0.38	0.65	0.62	0.73	0.12

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Values differences **(VDI).** CEOs (*M* = -.10) tend to have lower mean levels of VDI compared to EICs (*M* = .06). VDI is notably more differentiating for the former (*β* = .16) compared to the latter (*β* = .03). As one moves up the management pipeline, in general VDI scores increasingly differentiate among engagement levels (see Table VDIMIP). Target scores for CEOs (*z* = .22, 59th percentile) are .10 *SD*s higher compared to target scores for EICs (*z* = .12, 55th percentile). The slope for EICs is nonetheless positive and indicates that EICs, like CEOs, are typically more engaged as their VDI scores rise. In light of VDI's negative association with ML and increasing salience up the management pipeline, it may be fair to conceptualize VDI as an increasingly rare differentiator at increased levels of ML. Additional details can be seen in Figure PPL6 and Table VDIMIP.

Figure PPL6. Model-implied Values differences scores across job types

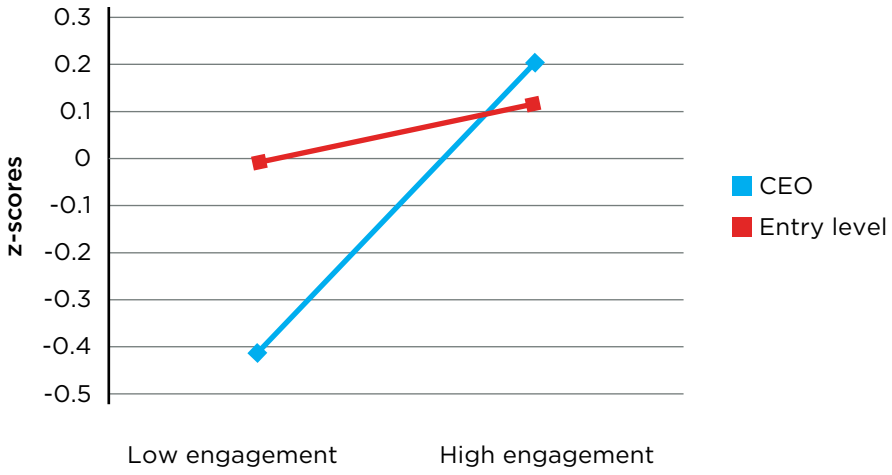

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Table VDIMIP. Descriptive results of Values differences regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS VDI OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.30	0.38	-0.07	0.47	0.12
Average	0.01	0.50	0.17	0.57	0.08
High	0.30	0.62	0.42	0.66	0.06
People					
Low	-0.28	0.39	0.06	0.52	0.17
Average	0.01	0.50	0.18	0.57	0.09
High	0.26	0.60	0.25	0.60	-0.01
Management level					
Entry level IC	0.06	0.52	0.12	0.55	0.03
Team lead	0.08	0.53	0.17	0.57	0.04
First level leader	0.04	0.52	0.16	0.56	0.06
Mid-level leader	0.03	0.51	0.18	0.57	0.07
Functional leader	0.02	0.51	0.19	0.58	0.09
Business unit leader	-0.01	0.50	0.20	0.58	0.11
Senior/Top functional executive	-0.05	0.48	0.20	0.58	0.13
Senior/Top business group executive	-0.08	0.47	0.21	0.58	0.14
CEO	-0.10	0.46	0.22	0.59	0.16

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Builds effective teams* (BET).** BET is an important skill for upper-level management and one that is found at increasingly elevated levels up the management pipeline. CEOs (*M* = .49) have typical BET levels that are nearly a full *SD* higher than EICs (*M* = -.42). The differentiating effect also increases a small amount up the management pipeline, while remaining significant and positive for all levels. Comparative target scores for CEOs (81st percentile) and EICs (46th percentile) reflect both the positive association with ML and the increased salience at higher levels of management. Additional details can be seen in Figure PPL7 and Table BETMIP.

Figure PPL7. Model-implied Builds effective teams scores across job types

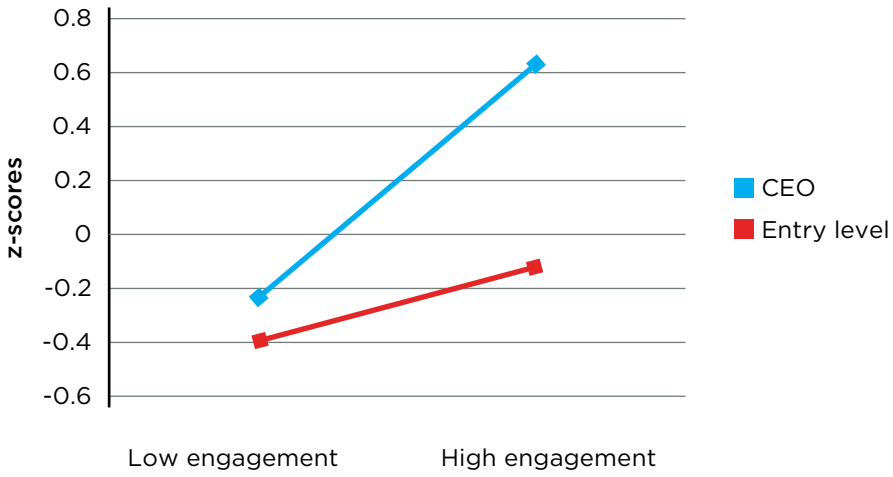

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Table BETMIP. Descriptive results of Builds effective teams regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS BET OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.46	0.32	0.17	0.57	0.32
Average	0.01	0.50	0.35	0.64	0.17
High	0.43	0.67	0.49	0.69	0.03
People					
Low	-0.46	0.32	0.18	0.57	0.32
Average	0.01	0.50	0.35	0.64	0.17
High	0.42	0.66	0.47	0.68	0.03
Management level					
Entry level IC	-0.42	0.34	-0.10	0.46	0.16
Team lead	-0.25	0.40	0.03	0.51	0.14
First level leader	-0.16	0.43	0.15	0.56	0.16
Mid-level leader	-0.04	0.48	0.28	0.61	0.16
Functional leader	0.08	0.53	0.40	0.66	0.16
Business unit leader	0.19	0.57	0.53	0.70	0.17
Senior/Top functional executive	0.28	0.61	0.65	0.74	0.18
Senior/Top business group executive	0.38	0.65	0.77	0.78	0.19
CEO	0.49	0.69	0.90	0.81	0.20

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Communicates effectively* (COM).** CEOs (*M* = .01) and EICs (*M* = .10) show notably different mean levels of COM, such that EICs are typically lower by approximately .42 *SD*s. The steeper slope (*β* = .25) and higher target (74th percentile) for the former also suggest that COM is more salient for CEOs in terms of differentiating among the successful, while remaining positively predictive of engagement for EICs (*β* = .07). The CEO target is approximately .76 *SD*s above the target for EICs, and the target for the latter is slightly below mean at the 46th percentile. The decrease in slope for EICs is a reflection of the positive COM x WE x ML interaction shown in Table PPLMLM. Additional details can be seen in Figure PPL8 and Table COMMIP.

Figure PPL8. Model-implied Communicates effectively scores across job types

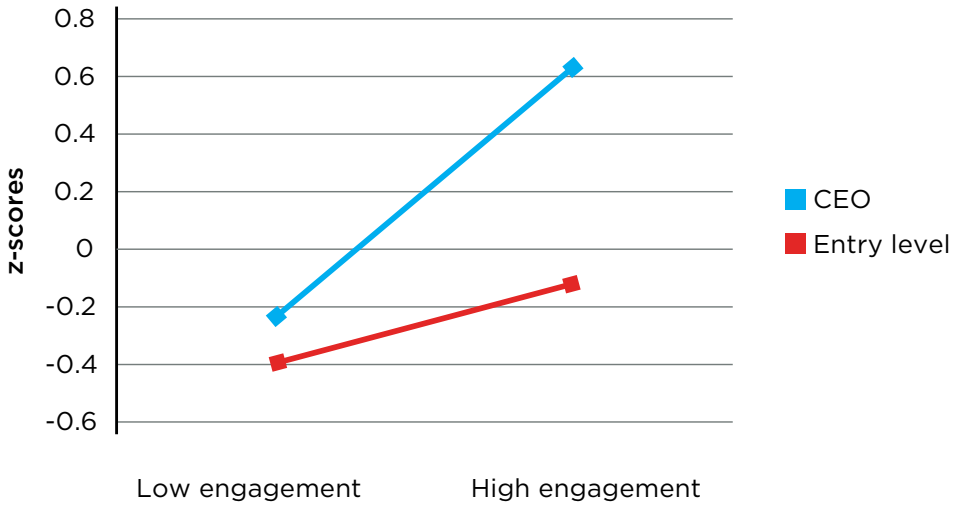

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Table COMMIP. Descriptive results of Communicates effectively regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS COM OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.56	0.29	-0.03	0.49	0.27
Average	-0.02	0.49	0.24	0.59	0.13
High	0.47	0.68	0.47	0.68	0.00
People					
Low	-0.57	0.28	-0.03	0.49	0.27
Average	-0.02	0.49	0.24	0.59	0.13
High	0.48	0.68	0.47	0.68	-0.01
Management level					
Entry level IC	-0.26	0.40	-0.11	0.46	0.07
Team lead	-0.13	0.45	0.01	0.50	0.07
First level leader	-0.09	0.46	0.09	0.54	0.09
Mid-level leader	-0.09	0.47	0.19	0.58	0.14
Functional leader	-0.03	0.49	0.29	0.62	0.16
Business unit leader	0.01	0.51	0.38	0.65	0.18
Senior/Top functional executive	0.05	0.52	0.47	0.68	0.21
Senior/Top business group executive	0.10	0.54	0.56	0.71	0.23
CEO	0.16	0.56	0.65	0.74	0.25

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Drives engagement* (EIN).** EIN means for CEOs (*M* = .46) are considerably higher compared to EICs, being approximately .82 *SD*s (*M* = -.36) higher, on average. Similarly, EIN seems to become somewhat more salient up the management pipeline vis-à-vis predicting engagement, although elevated scores are desirable in both groups (see Table EINMIP). Target scores are notably different, being in the 79th percentile for CEOs and in the 47th for EICs. In general, EIN is an important variable, both in terms of "price of admission" and differentiation, especially for higher-level management. Additional details can be seen in Figure PPL9 and Table EINMIP.

Figure PPL9. Model-implied Drives engagement scores across job types

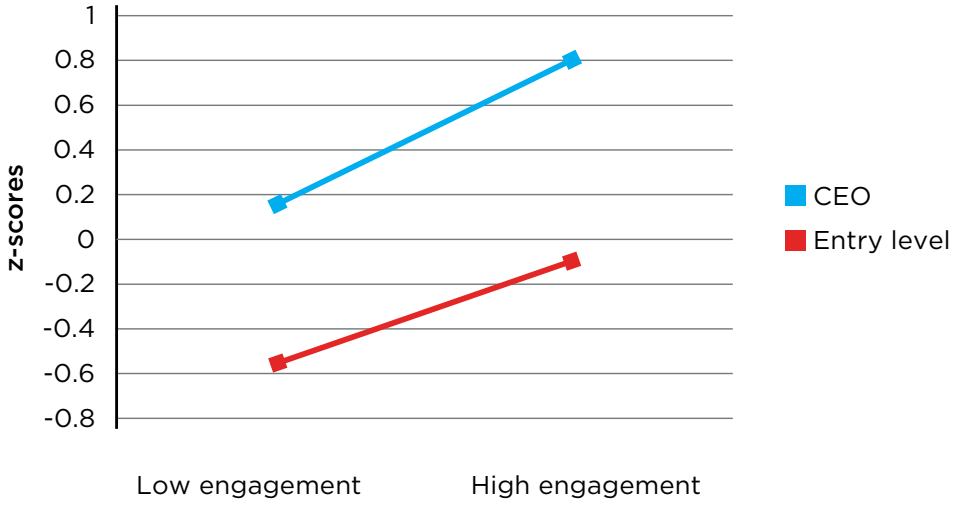

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Table EINMIP. Descriptive results of Drives engagement regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS EIN OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.21	0.42	0.35	0.64	0.28
Average	0.05	0.52	0.31	0.62	0.13
High	0.27	0.61	0.25	0.60	-0.01
People					
Low	-0.21	0.42	0.35	0.64	0.28
Average	0.05	0.52	0.31	0.62	0.13
High	0.27	0.61	0.25	0.60	-0.01
Management level					
Entry level IC	-0.36	0.36	-0.08	0.47	0.14
Team lead	-0.19	0.42	0.01	0.50	0.10
First level leader	-0.08	0.47	0.13	0.55	0.11
Mid-level leader	-0.07	0.47	0.24	0.60	0.16
Functional leader	0.04	0.52	0.35	0.64	0.15
Business unit leader	0.15	0.56	0.47	0.68	0.16
Senior/Top functional executive	0.25	0.60	0.59	0.72	0.17
Senior/Top business group executive	0.36	0.64	0.70	0.76	0.17
CEO	0.46	0.68	0.82	0.79	0.18

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Persuades* (PER).** In general, CEOs (*M* = .23) have higher average PER scores compared to EICs (*M* = -.13), such that the latter are typically .36 *SD*s higher than the former. PER is also more differentiating of engagement for the former (β = .16), which is consistent with an overall trend upward in differentiating effect for engagement as one moves up the management pipeline (see Table PERMIP). PER remains only a small and perhaps trivial amount differentiating for EICs (β = .03), for whom elevated scores are nonetheless desirable in general due to their association with promotion also. Target scores are very different across the groups, being in the 84th percentile for CEOs but below the mean and in the 48th percentile for EICs. Additional details can be examined in Figure PPL10 and Table PERMIP.

Figure PPL10. Model-implied Persuades scores across job types

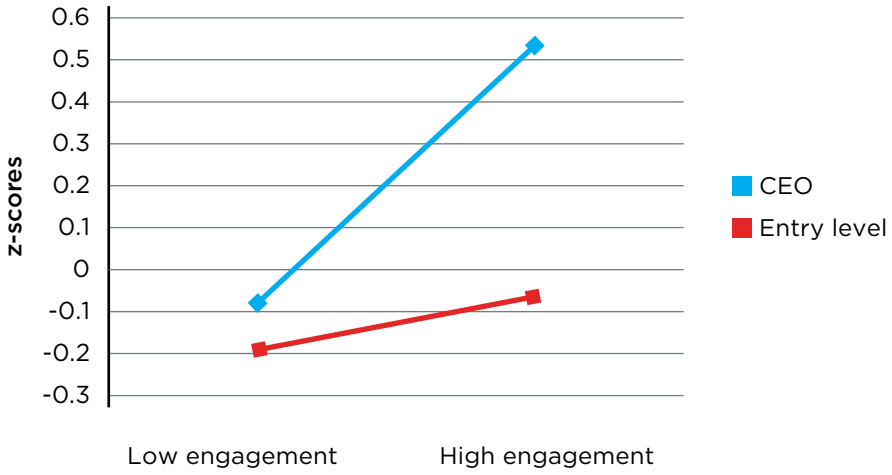

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Table PERMIP. Descriptive results of Persuades regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS PER OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.21	0.42	0.13	0.55	0.17
Average	0.25	0.60	0.42	0.66	0.09
High	0.65	0.74	0.65	0.74	0.00
People					
Low	-0.20	0.42	-0.03	0.49	0.09
Average	0.25	0.60	0.42	0.66	0.09
High	0.65	0.74	0.77	0.78	0.06
Management level					
Entry level IC	-0.13	0.45	-0.06	0.48	0.03
Team lead	-0.03	0.51	0.04	0.54	0.03
First level leader	-0.01	0.54	0.11	0.59	0.06
Mid-level leader	0.05	0.58	0.19	0.64	0.07
Functional leader	0.10	0.62	0.27	0.69	0.09
Business unit leader	0.13	0.66	0.34	0.73	0.10
Senior/Top functional executive	0.16	0.69	0.40	0.77	0.12
Senior/Top business group executive	0.20	0.72	0.48	0.80	0.14
CEO	0.23	0.75	0.55	0.84	0.16

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Self competency results

***Courage* (COU).** Average scores for CEOs (*M* = .55) on COU are notably higher compared to EICs (*M* = -.41), such that the two groups are typically separated by approximately .96 *SD*s, which is the largest average difference of any competency measured in the KF4D system. WE's impact on COU for both groups is positive, as shown in Figure SEL1. The slope and differentiating effect of COU, however, is notably higher (*β* = .15) for CEOs, while being nonetheless non-zero and positive for EICs (*β* = .04). The culprit effect for the decreased slope among EICs is the positive (COU) x WE x ML interaction (see Table SELMLM). The increased WE slope in combination with the higher COU target for CEOs (in the 81st percentile) suggests that COU is a more important variable for the success of CEOs and, in light of Table COUMIP, for upper levels in general, while remaining nonetheless important throughout the management pipeline for advancement and increased engagement. Additional details can be examined in Figure SEL1 and Table COUMIP.

Figure SEL1. Model-implied Courage scores across job types

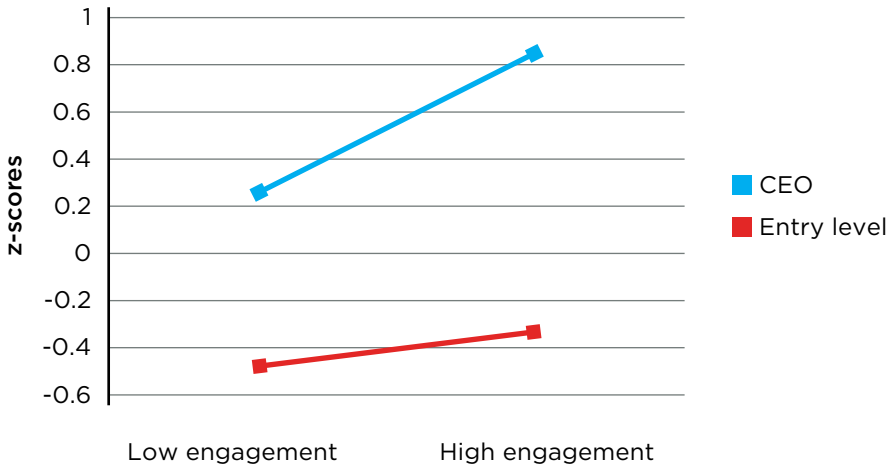

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Table COUMIP. Descriptive results of Courage regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS COU OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.37	0.36	-0.01	0.50	0.18
Average	0.04	0.52	0.21	0.58	0.09
High	0.40	0.66	0.37	0.65	-0.01
People					
Low	-0.34	0.37	-0.07	0.47	0.13
Average	0.04	0.52	0.21	0.58	0.08
High	0.36	0.64	0.45	0.67	0.05
Management level					
Entry level IC	-0.41	0.34	-0.33	0.37	0.04
Team lead	-0.24	0.40	-0.17	0.43	0.04
First level leader	-0.15	0.44	-0.02	0.49	0.06
Mid-level leader	-0.02	0.49	0.13	0.55	0.07
Functional leader	0.11	0.54	0.28	0.61	0.09
Business unit leader	0.22	0.59	0.43	0.67	0.10
Senior/Top functional executive	0.33	0.63	0.57	0.71	0.12
Senior/Top business group executive	0.44	0.67	0.72	0.76	0.14
CEO	0.55	0.71	0.86	0.81	0.15

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Instills trust* (ITR).** ITR is scarcely associated with ML, such that CEOs and EICs have essentially the same mean (*M* = .04). In terms of predicting engagement, however, ITR is somewhat more salient for CEOs (*β* = .15) than for the latter (*β* = .04), suggesting that ITR becomes increasingly important for performance at higher levels of management (see Table ITRMIP). The target scores for CEOs and EICs are separated by about 9 percentile points (approximately .23 *SD*s) and is clearly above the mean for the former (64th percentile), while being just above the mean for the latter (55th percentile). Additional details can be examined in Figure SEL2 and Table ITRMIP.

Figure SEL2. Model-implied Instills trust scores across job types

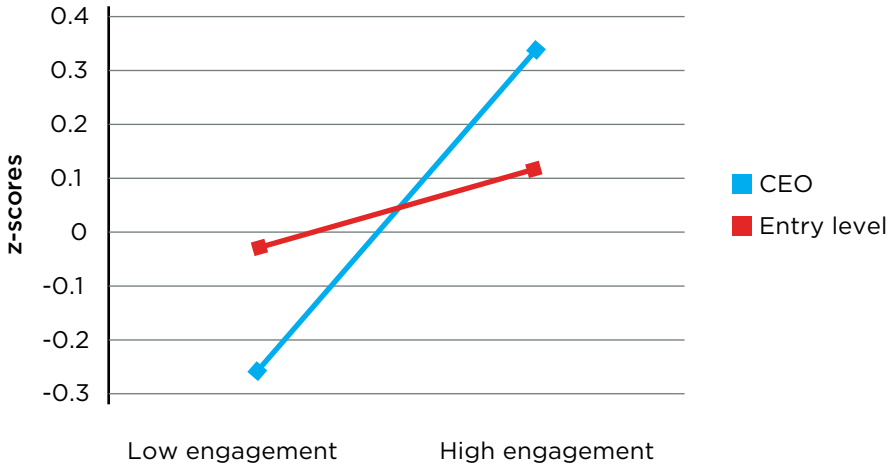

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Table ITRMIP. Descriptive results of Instills trust regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS ITR OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.15	0.44	0.21	0.58	0.18
Average	0.06	0.52	0.23	0.59	0.09
High	0.25	0.60	0.22	0.59	-0.01
People					
Low	-0.17	0.43	0.09	0.54	0.13
Average	0.06	0.52	0.22	0.59	0.08
High	0.27	0.61	0.37	0.64	0.05
Management level					
Entry level IC	0.04	0.52	0.12	0.55	0.04
Team lead	0.07	0.53	0.15	0.56	0.04
First level leader	0.06	0.52	0.18	0.57	0.06
Mid-level leader	0.06	0.53	0.21	0.58	0.07
Functional leader	0.07	0.53	0.24	0.60	0.09
Business unit leader	0.06	0.53	0.27	0.61	0.10
Senior/Top functional executive	0.05	0.52	0.29	0.61	0.12
Senior/Top business group executive	0.05	0.52	0.32	0.63	0.14
CEO	0.04	0.52	0.35	0.64	0.15

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Self-development **(SDV).** SDV is clearly and negatively associated with ML, such that CEOs (*M* = -.52) and EICs (*M* = .69) are separated by more than a full *SD*, in favor of EICs. In terms of predicting engagement, however, SDV salience is similar for both groups (*β* = .05, .04, respectively) and of a modest near-zero magnitude. As such, the target scores for CEOs and EICs are separated by an amount similar to separation at the mean (approximately 1.19 *SD*s). The target is far above the mean for EICs (78th percentile), while being far below the mean for CEOs (34th percentile). The pattern of relationships suggests that, especially for higher-level managers, SDV targets are likely an ideal point—despite the positive association with WE. This is because SDV scores that are too high would be associated with membership in a lower ML group and they add little value in terms of increased engagement. Additional details can be examined in Figure SEL3 and Table SDVMIP.

Figure SEL3. Model-implied Self-development scores across job types

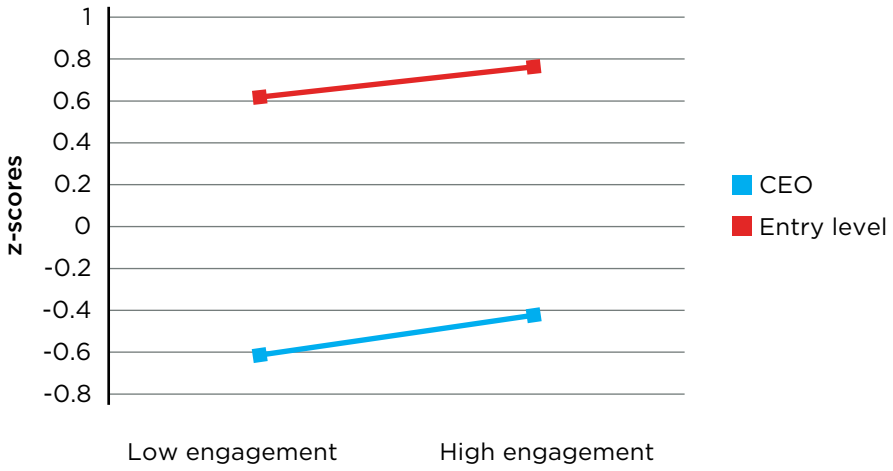

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Table SDVMIP. Descriptive results of Self-development regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS SDV OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	0.22	0.59	0.51	0.69	0.14
Average	0.16	0.56	0.23	0.59	0.04
High	0.13	0.55	-0.01	0.50	-0.07
People					
Low	0.22	0.59	0.42	0.66	0.10
Average	0.16	0.56	0.23	0.59	0.04
High	0.12	0.55	0.11	0.54	-0.01
Management level					
Entry level IC	0.69	0.75	0.77	0.78	0.04
Team lead	0.55	0.71	0.60	0.72	0.02
First level leader	0.39	0.65	0.46	0.68	0.04
Mid-level leader	0.24	0.60	0.31	0.62	0.03
Functional leader	0.09	0.54	0.16	0.56	0.04
Business unit leader	-0.06	0.48	0.01	0.51	0.04
Senior/Top functional executive	-0.21	0.42	-0.13	0.45	0.04
Senior/Top business group executive	-0.37	0.36	-0.27	0.39	0.05
CEO	-0.52	0.30	-0.42	0.34	0.05

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Manages ambiguity* (MAB).** The mean MAB level for CEOs (*M* = .21) is considerably higher than seen for EICs (*M* = -.33). MAB is technically positively differentiating for both groups, but considerably more so for the former (*β* = .18) while being near-zero for the latter (*β* = .01). Target scores are rather dissimilar, being clearly above the global mean for CEOs and in the 72nd percentile, while being below the mean for EICs and in the 38th percentile. For CEOs, the high target is a reflection of the ultimately increasingly positive differentiating effect of WE as one moves up levels of I. Table MABMIP shows that, overall, MAB tends to increase with management level, while the salience of MAB, vis-à-vis predicting engagement, is typically increased a notable amount as one moves up the management pipeline as well. Additional details can be examined in Figure SEL4 and Table MABMIP.

Figure SEL4. Model-implied Manages ambiguity scores across job types

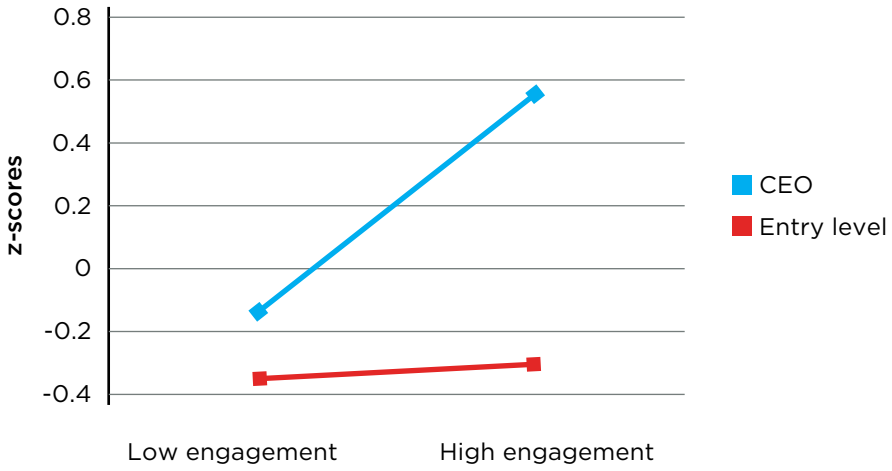

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Table MABMIP. Descriptive results of Manages ambiguity regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS MAB OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.57	0.28	-0.42	0.34	0.07
Average	-0.06	0.47	0.10	0.54	0.08
High	0.41	0.66	0.61	0.73	0.10
People					
Low	-0.48	0.32	-0.25	0.40	0.11
Average	-0.06	0.48	0.12	0.55	0.09
High	0.29	0.61	0.39	0.65	0.05
Management level					
Entry level IC	-0.33	0.37	-0.30	0.38	0.01
Team lead	-0.19	0.42	-0.13	0.45	0.03
First level leader	-0.17	0.43	-0.06	0.48	0.05
Mid-level leader	-0.08	0.47	0.07	0.53	0.07
Functional leader	-0.01	0.50	0.18	0.57	0.09
Business unit leader	0.05	0.52	0.28	0.61	0.12
Senior/Top functional executive	0.10	0.54	0.37	0.65	0.14
Senior/Top business group executive	0.15	0.56	0.47	0.68	0.16
CEO	0.21	0.58	0.57	0.72	0.18

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Nimble learning **(NLE).** The pattern of NLE results is among the somewhat rare. While EICs have typical NLE levels (*M* = .26) that are considerably higher than typical CEO levels (*M* = -.27), the differentiating effect is larger for the latter (*β* = .13) than the former (*β* = .06). Despite the steeper WE slope for CEOs, target scores are nonetheless dissimilar across the groups, being separated by approximately .38 *SD*s and higher for EICs. The target for CEOs is at the mean, while being well above the mean and in the 65th percentile for EICs. In general, NLE's differentiating effect trends upward for higher MLs, while its mean trends downward through higher MLs. As such, NLE might be characterized as an increasingly rare differentiator as one moves up through the management pipeline. In other words, increased NLE level will likely not "get one promoted," but it will help those who have been promoted to be more successful. On the other hand, excessively high NLE scores for upper-level managers may also render one peculiar for the group. Additional details can be examined in Figure SEL5 and Table NLEMIP.

Figure SEL5. Model-implied Nimble learning scores across job types

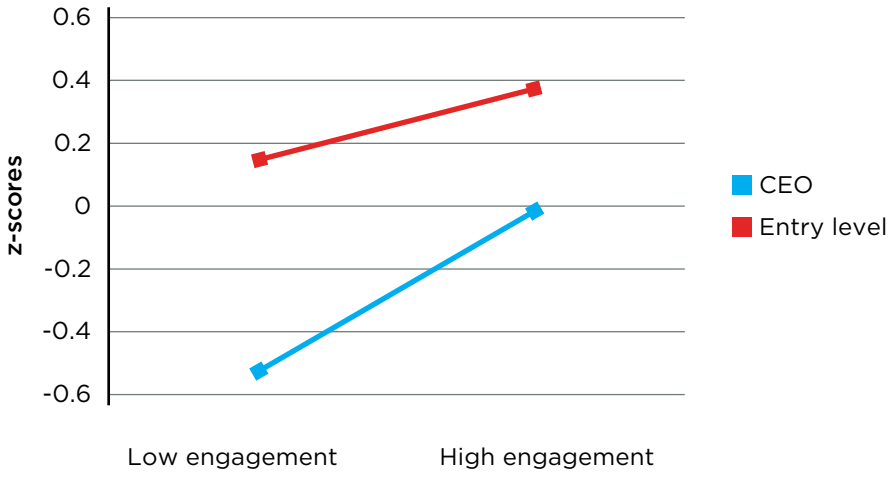

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Table NLEMIP. Descriptive results of Nimble learning regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS NLE OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.01	0.50	0.42	0.66	0.21
Average	0.04	0.52	0.20	0.58	0.09
High	0.07	0.53	-0.01	0.50	-0.04
People					
Low	-0.09	0.46	0.30	0.62	0.20
Average	0.03	0.51	0.19	0.58	0.08
High	0.16	0.56	0.14	0.56	-0.02
Management level					
Entry level IC	0.26	0.60	0.38	0.65	0.06
Team lead	0.21	0.58	0.30	0.62	0.05
First level leader	0.14	0.55	0.27	0.61	0.07
Mid-level leader	0.07	0.53	0.22	0.59	0.07
Functional leader	0.01	0.50	0.17	0.57	0.08
Business unit leader	-0.06	0.48	0.13	0.55	0.09
Senior/Top functional executive	-0.13	0.45	0.08	0.53	0.11
Senior/Top business group executive	-0.20	0.42	0.04	0.52	0.12
CEO	-0.27	0.39	0.00	0.50	0.13

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Being resilient* (BRE).** The CEO target score for BRE is typically in the 80th percentile, and notably higher than target for EICs, which is in the 51st percentile and .83 *SD*s lower. On average, without respect to target scores, CEOs (*M* = .18) are also approximately .32 *SD*s higher on BRE compared to EICs (*M* = -.14). The differentiating effect of WE is notably different across the groups (*β* = .33, .08, respectively), and much more differentiating for CEOs. Overall, BRE's differentiating effects, especially for upper-level management, are notable and among the higher in the KF4D system. As with many other KF4D scores that are predictive of promotion and engagement after promotion, BRE targets are likely scores at or above which engagement and positive outcomes are likely optimized for all groups. Additional details can be examined in Figure SEL6 and Table BREMIP.

Figure SEL6. Model-implied Being resilient scores across job types

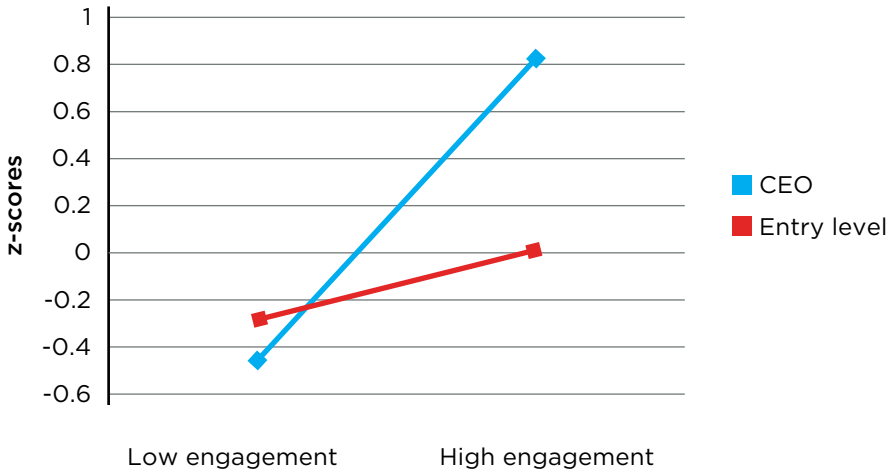

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Table BREMIP. Descriptive results of Being resilient regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS BRE OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.47	0.32	0.16	0.56	0.32
Average	0.04	0.52	0.40	0.66	0.18
High	0.50	0.69	0.59	0.72	0.05
People					
Low	-0.46	0.32	0.18	0.57	0.32
Average	0.04	0.52	0.40	0.66	0.18
High	0.48	0.68	0.57	0.72	0.04
Management level					
Entry level IC	-0.14	0.44	0.02	0.51	0.08
Team lead	-0.03	0.49	0.14	0.56	0.09
First level leader	-0.02	0.49	0.23	0.59	0.13
Mid-level leader	0.03	0.51	0.34	0.63	0.16
Functional leader	0.08	0.53	0.45	0.67	0.18
Business unit leader	0.11	0.54	0.55	0.71	0.22
Senior/Top functional executive	0.13	0.55	0.65	0.74	0.26
Senior/Top business group executive	0.16	0.56	0.75	0.77	0.30
CEO	0.18	0.57	0.85	0.80	0.33

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Situational adaptability* (SAD).** CEOs (*M* = -.18) and EICs (*M* = .08) show somewhat different mean levels of SAD, such that EICs are typically a bit higher by approximately .26 *SD*s. The steeper slope for the former suggests that SAD is, however, a bit more salient for CEOs in terms of differentiating among the successful, although their target is still lower than the EIC target and is right near the mean. The EIC target is approximately .12 *SD*s above the target for CEOs. While being less differentiating, the EIC slope is still clearly positive and the target is still above the mean at the 54th percentile. The decrease in slope for EICs is a reflection of the positive WE x ML interaction shown in Table SELMLM. Because SAD tends to go down with ML while becoming increasingly salient up the ML pipeline (see Table SADMIP), it might be conceptualized as having the potential to be an increasingly rare differentiator among higher-level managers. Additional details can be examined in Figure SEL7 and Table SADMIP.

Figure SEL7. Model-implied Situational adaptability scores across job types

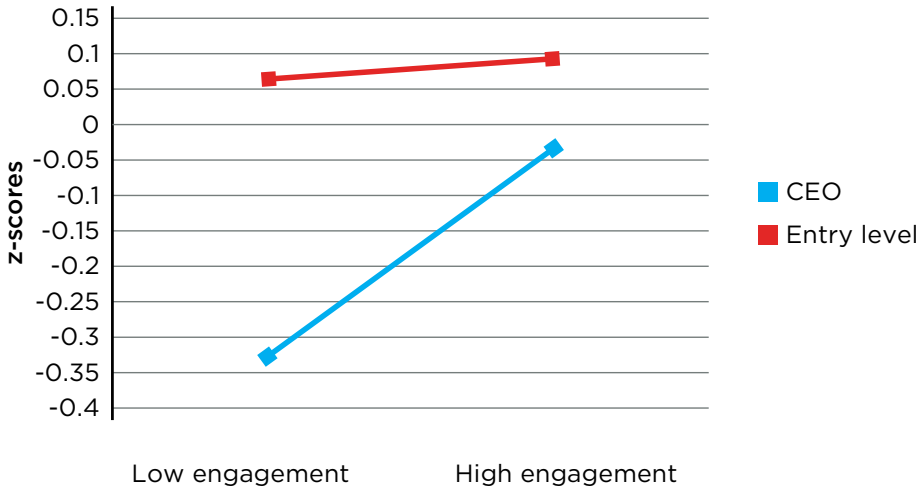

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Table SADMIP. Descriptive results of Situational adaptability regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS SAD OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.33	0.37	-0.01	0.50	0.16
Average	-0.01	0.50	0.05	0.52	0.03
High	0.28	0.61	0.08	0.53	-0.10
People					
Low	-0.35	0.36	-0.05	0.48	0.15
Average	0.04	0.52	0.04	0.52	0.00
High	0.30	0.62	0.15	0.56	-0.08
Management level					
Entry level IC	0.08	0.53	0.09	0.54	0.01
Team lead	0.10	0.54	0.09	0.53	0.00
First level leader	0.04	0.51	0.07	0.53	0.02
Mid-level leader	0.02	0.51	0.06	0.52	0.02
Functional leader	-0.01	0.50	0.04	0.52	0.03
Business unit leader	-0.05	0.48	0.03	0.51	0.04
Senior/Top functional executive	-0.10	0.46	0.01	0.50	0.05
Senior/Top business group executive	-0.14	0.44	-0.01	0.50	0.06
CEO	-0.18	0.43	-0.03	0.49	0.08

Note. N = 1669. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Traits results

In the section that follows, we do not outline results with specific narratives for each trait as done with competencies. Rather, we summarize results and highlight some of the more unusual findings, while directing the reader to rely on the guidance given in the competency narratives to aid in interpretation, if necessary. We display Figures analogous to THT1 through SEL7 and Tables analogous to CFOMIP through SADMIP for traits. As with competencies, results in each case show mean differences across MLs, target scores across management levels, and show whether the differentiating effect of WE trends in any direction across management levels as well.

Agility subdomains. For each AG subdomain, except for FO, scores are positively associated with ML. The strongest ML association is for TA, where EICs and CEOs are separated by .64 *SD*s. In most cases, with the exception of FO, AG subdomains are equally differentiating of engagement across levels of the management pipeline. The strongest differentiator is, again, TA (β = .15), followed closely by AD (β = .14), CU (β = .13), and RI (β = .13), respectively. Among the AG subdomains, FO displays unusual behavior, as might be expected given its negative association with higher-order AG. Unlike the other AG subdomains, FO scores decrease up the management pipeline, while simultaneously becoming decreasingly differentiating of engagement. Target FO scores for CEOs and EICs are in the 48th and 66th percentiles, respectively. Because FO is negatively associated with ML with being *decreasingly* predictive of engagement, it might be characterized as an ideal point target, especially for upper-level managers whose status as an upper-level manager is perhaps jeopardized if FO becomes excessively high. Additional details for all AG subdomain results can be examined in Figures AG1 through AG5 and in Tables ADMIP through TAMIP.

Figure AG1. Model-implied Adaptability scores across job types

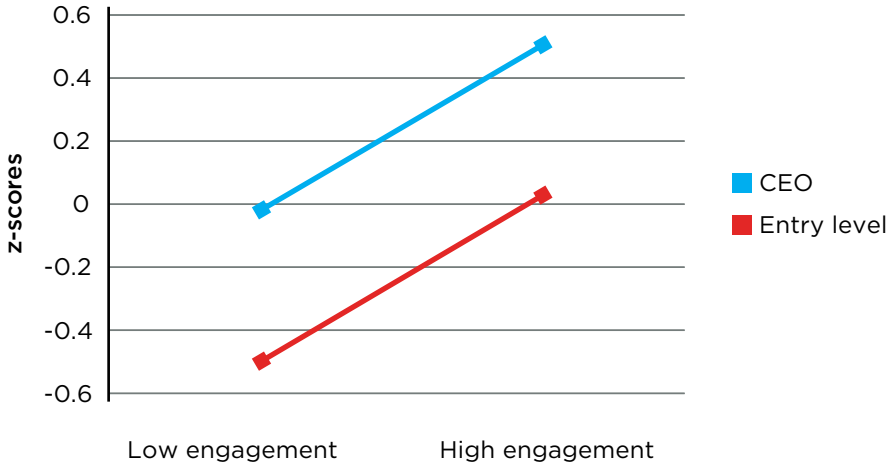

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Table ADMIP. Descriptive results of Adaptability regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS AD OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.40	0.34	-0.09	0.47	0.16
Average	-0.09	0.46	0.25	0.60	0.17
High	0.19	0.58	0.57	0.72	0.19
People					
Low	-0.38	0.35	-0.06	0.47	0.16
Average	-0.09	0.47	0.26	0.60	0.17
High	0.14	0.56	0.51	0.70	0.18
Management level					
Entry level IC	-0.24	0.41	0.04	0.51	0.14
Team lead	-0.14	0.45	0.14	0.56	0.14
First level leader	-0.09	0.46	0.18	0.57	0.14
Mid-level leader	-0.02	0.49	0.25	0.60	0.14
Functional leader	0.05	0.52	0.32	0.63	0.14
Business unit leader	0.10	0.54	0.37	0.65	0.14
Senior/Top functional executive	0.14	0.55	0.41	0.66	0.14
Senior/Top business group executive	0.19	0.58	0.47	0.68	0.14
CEO	0.24	0.60	0.52	0.70	0.14

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure AG2. Model-implied Curiosity scores across job types

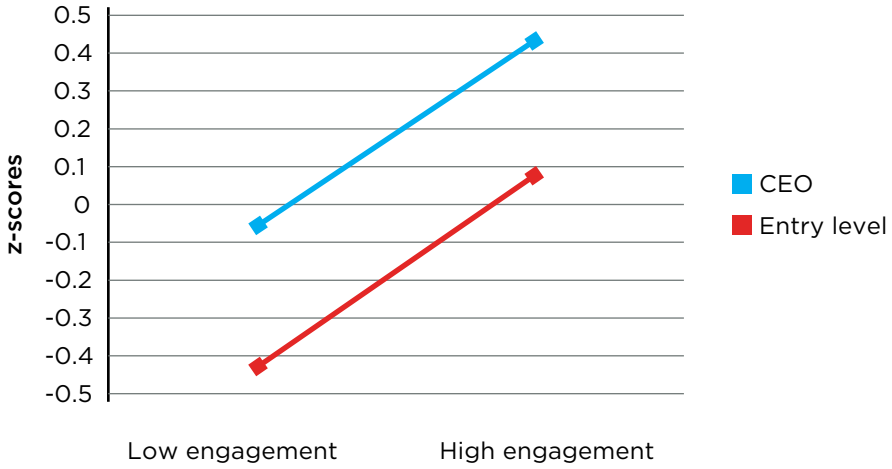

Table CUMIP. Descriptive results of Curiosity regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS CU OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.36	0.36	-0.09	0.46	0.14
Average	0.00	0.50	0.26	0.60	0.13
High	0.35	0.64	0.60	0.73	0.13
People					
Low	-0.37	0.36	-0.07	0.47	0.15
Average	-0.10	0.46	0.24	0.59	0.17
High	0.12	0.55	0.48	0.68	0.18
Management level					
Entry level IC	-0.18	0.43	0.08	0.53	0.13
Team lead	-0.10	0.46	0.16	0.56	0.13
First level leader	-0.07	0.47	0.19	0.58	0.13
Mid-level leader	-0.01	0.49	0.24	0.60	0.13
Functional leader	0.04	0.52	0.30	0.62	0.13
Business unit leader	0.08	0.53	0.34	0.63	0.13
Senior/Top functional executive	0.11	0.54	0.36	0.64	0.13
Senior/Top business group executive	0.15	0.56	0.41	0.66	0.13
CEO	0.19	0.57	0.44	0.67	0.13

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure AG3. Model-implied Focus scores across job types

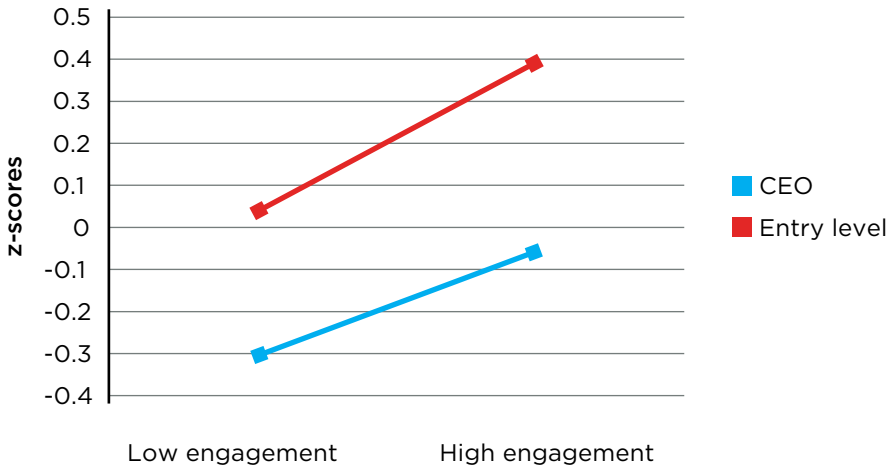

Table FOMIP. Descriptive results of Focus regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS FO OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	0.19	0.58	0.49	0.69	0.15
Average	-0.04	0.48	0.17	0.57	0.11
High	-0.25	0.40	-0.13	0.45	0.06
People					
Low	0.18	0.57	0.44	0.67	0.13
Average	-0.04	0.48	0.16	0.56	0.10
High	-0.23	0.41	-0.06	0.48	0.09
Management level					
Entry level IC	0.22	0.59	0.40	0.66	0.09
Team lead	0.14	0.55	0.31	0.62	0.09
First level leader	0.10	0.54	0.27	0.61	0.08
Mid-level leader	0.04	0.52	0.20	0.58	0.08
Functional leader	-0.01	0.50	0.14	0.55	0.07
Business unit leader	-0.05	0.48	0.09	0.54	0.07
Senior/Top functional executive	-0.09	0.46	0.05	0.52	0.07
Senior/Top business group executive	-0.14	0.45	0.00	0.50	0.07
CEO	-0.18	0.43	-0.05	0.48	0.06

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure AG4. Model-implied Risk-taking scores across job types

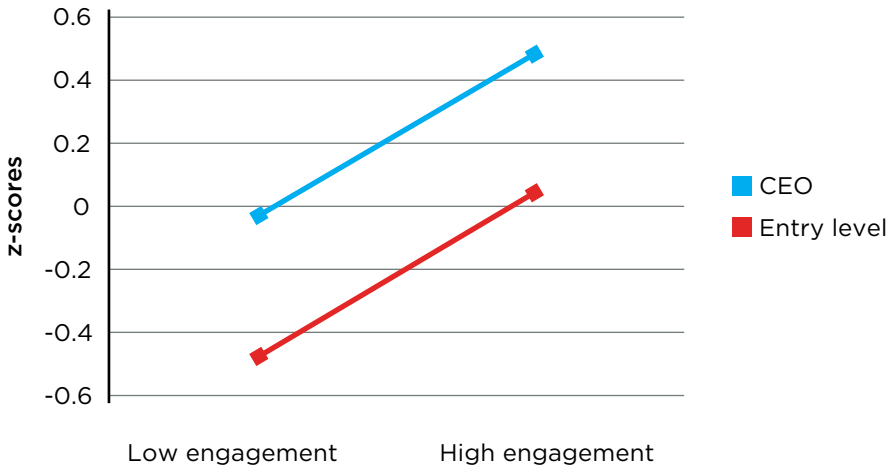

Table RIMIP. Descriptive results of Risk-taking regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS RI OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.51	0.31	-0.24	0.41	0.14
Average	-0.11	0.46	0.24	0.59	0.18
High	0.26	0.60	0.69	0.75	0.22
People					
Low	-0.44	0.33	-0.13	0.45	0.16
Average	-0.11	0.46	0.25	0.60	0.18
High	0.16	0.56	0.54	0.71	0.19
Management level					
Entry level IC	-0.22	0.41	0.05	0.52	0.14
Team lead	-0.12	0.45	0.15	0.56	0.14
First level leader	-0.08	0.47	0.19	0.57	0.13
Mid-level leader	-0.02	0.49	0.25	0.60	0.13
Functional leader	0.05	0.52	0.31	0.62	0.13
Business unit leader	0.09	0.54	0.36	0.64	0.13
Senior/Top functional executive	0.13	0.55	0.40	0.65	0.13
Senior/Top business group executive	0.18	0.57	0.45	0.67	0.13
CEO	0.23	0.59	0.49	0.69	0.13

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure AG5. Model-implied Tolerance of ambiguity scores across job types

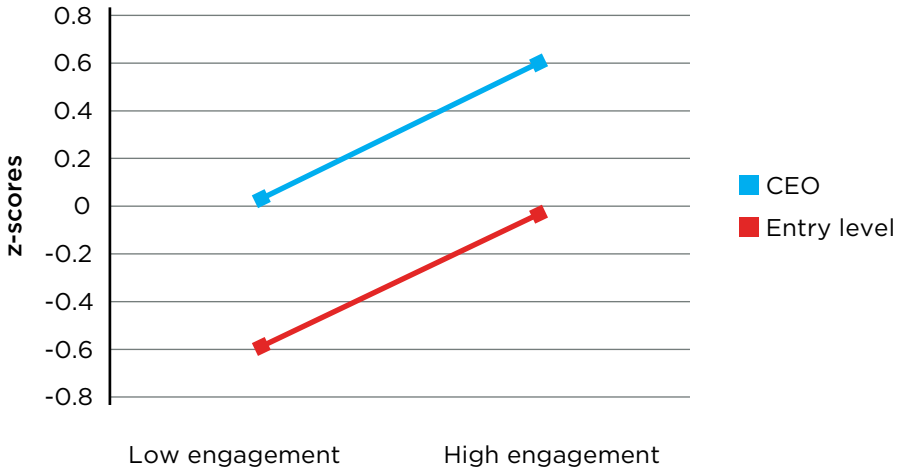

Table TAMIP. Descriptive results of Tolerance of ambiguity regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS TA OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.65	0.26	-0.38	0.35	0.14
Average	-0.13	0.45	0.25	0.60	0.19
High	0.36	0.64	0.85	0.80	0.25
People					
Low	-0.56	0.29	-0.24	0.41	0.16
Average	-0.12	0.45	0.26	0.60	0.19
High	0.24	0.59	0.67	0.75	0.22
Management level					
Entry level IC	-0.32	0.38	-0.03	0.49	0.15
Team lead	-0.18	0.43	0.11	0.54	0.15
First level leader	-0.12	0.45	0.17	0.57	0.15
Mid-level leader	-0.03	0.49	0.26	0.60	0.15
Functional leader	0.06	0.52	0.35	0.64	0.15
Business unit leader	0.12	0.55	0.42	0.66	0.15
Senior/Top functional executive	0.18	0.57	0.47	0.68	0.15
Senior/Top business group executive	0.25	0.60	0.55	0.71	0.15
CEO	0.32	0.62	0.61	0.73	0.15

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Striving subdomains. All STV subdomains are positively associated with ML. The strongest ML association is found for NA, where CEOs and EICs are separated by .33 *SD*s, in favor of the former. In all cases, the WE slope is attenuated a small amount at increased levels of ML, although the effect is never seen to be below β = .16 and is as high as β = .28 for even the highest levels of management. Target scores, regardless of management level, are well above the mean in every case, being only as low as the 63rd percentile in any case, viz., PE and CR for EICs. In all cases, targets are higher for higher levels of management and reach as high as the 77th percentile. Additional details for all STV subdomain results can be examined in Figures ST1 through ST4 and in Tables NAMIP through CFMIP.

Figure ST1. Model-implied Need for achievement scores across job types

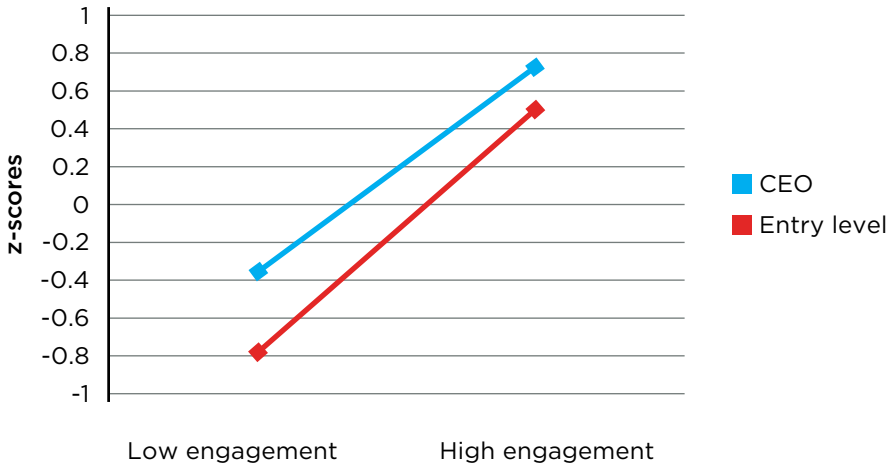

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Table NAMIP. Descriptive results of Need for achievement regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS NA OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.51	0.31	0.26	0.60	0.39
Average	-0.27	0.39	0.50	0.69	0.39
High	-0.04	0.48	0.71	0.76	0.38
People					
Low	-0.47	0.32	0.30	0.62	0.39
Average	-0.27	0.39	0.50	0.69	0.39
High	-0.10	0.46	0.66	0.75	0.38
Management level					
Entry level IC	-0.14	0.44	0.52	0.70	0.33
Team lead	-0.08	0.47	0.58	0.72	0.33
First level leader	-0.05	0.48	0.59	0.72	0.32
Mid-level leader	0.00	0.50	0.63	0.73	0.31
Functional leader	0.05	0.52	0.66	0.75	0.31
Business unit leader	0.08	0.53	0.68	0.75	0.30
Senior/Top functional executive	0.11	0.54	0.70	0.76	0.29
Senior/Top business group executive	0.15	0.56	0.72	0.77	0.29
CEO	0.19	0.57	0.75	0.77	0.28

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure ST2. Model-implied Credibility scores across job types

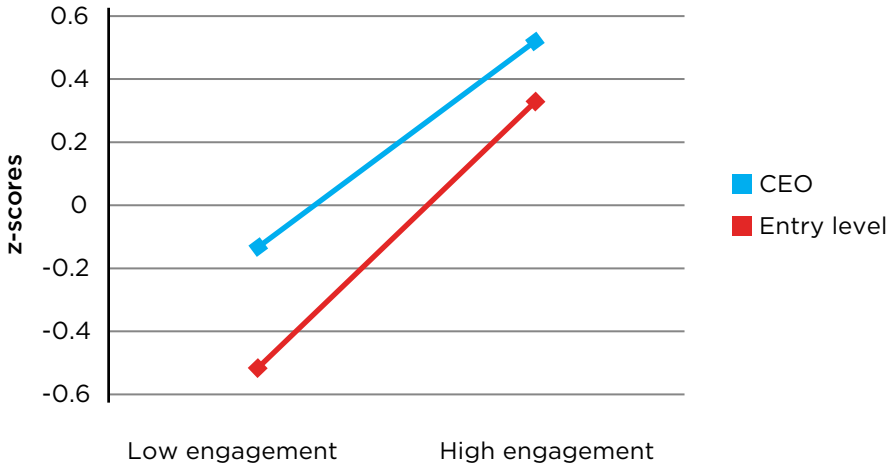

Table CRMIP. Descriptive results of Credibility regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS CR OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.31	0.38	0.23	0.59	0.27
Average	-0.13	0.45	0.35	0.64	0.24
High	0.01	0.50	0.43	0.67	0.21
People					
Low	-0.32	0.37	0.12	0.55	0.22
Average	-0.14	0.44	0.35	0.64	0.25
High	0.02	0.51	0.57	0.72	0.28
Management level					
Entry level IC	-0.09	0.46	0.34	0.63	0.22
Team lead	-0.03	0.49	0.40	0.66	0.22
First level leader	-0.01	0.50	0.40	0.66	0.21
Mid-level leader	0.03	0.51	0.43	0.67	0.20
Functional leader	0.07	0.53	0.46	0.68	0.19
Business unit leader	0.10	0.54	0.48	0.68	0.19
Senior/Top functional executive	0.13	0.55	0.50	0.69	0.18
Senior/Top business group executive	0.16	0.56	0.51	0.70	0.18
CEO	0.19	0.58	0.53	0.70	0.17

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure ST3. Model-implied Persistence scores across job types

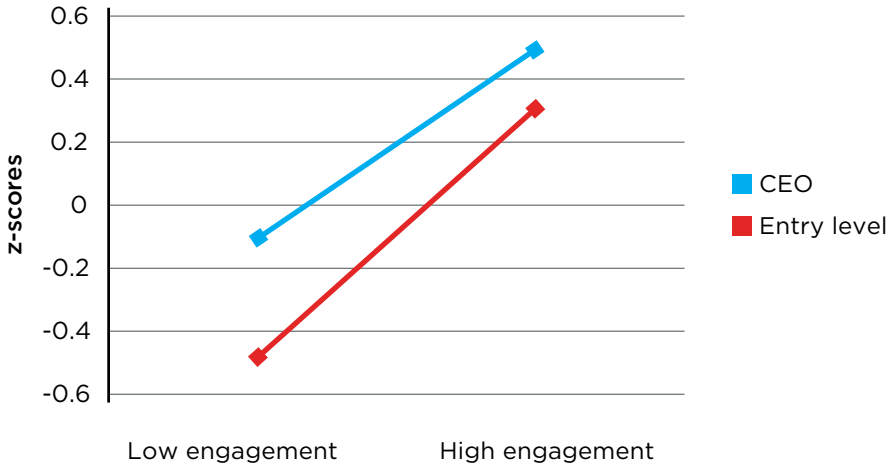

Table PEMIP. Descriptive results of Persistence regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS PE OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.29	0.39	0.23	0.59	0.26
Average	-0.12	0.45	0.33	0.63	0.23
High	0.02	0.51	0.40	0.66	0.19
People					
Low	-0.30	0.38	0.10	0.54	0.20
Average	-0.12	0.45	0.33	0.63	0.23
High	0.04	0.52	0.56	0.71	0.26
Management level					
Entry level IC	-0.09	0.46	0.32	0.63	0.20
Team lead	-0.03	0.49	0.38	0.65	0.20
First level leader	-0.01	0.50	0.38	0.65	0.19
Mid-level leader	0.03	0.51	0.41	0.66	0.19
Functional leader	0.07	0.53	0.43	0.67	0.18
Business unit leader	0.10	0.54	0.45	0.67	0.17
Senior/Top functional executive	0.13	0.55	0.47	0.68	0.17
Senior/Top business group executive	0.16	0.56	0.49	0.69	0.16
CEO	0.19	0.58	0.51	0.69	0.16

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure ST4. Model-implied Confidence scores across job types

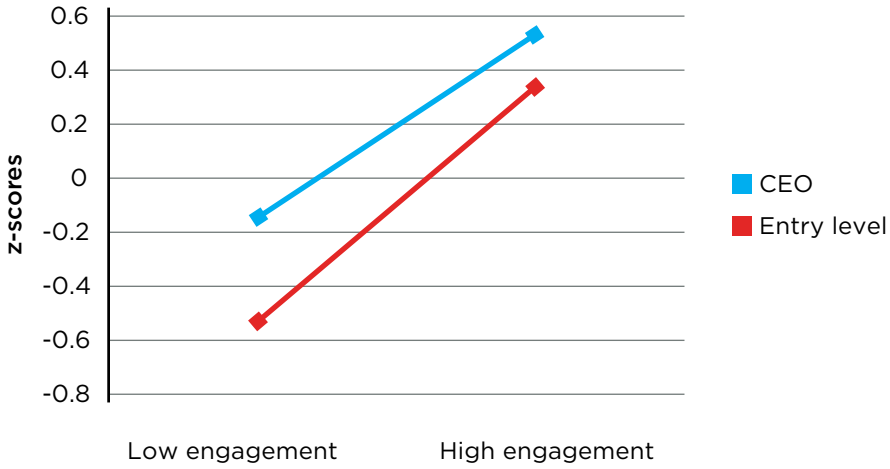

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Table CFMIP. Descriptive results of Confidence regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS CF OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.32	0.37	0.23	0.59	0.28
Average	-0.15	0.44	0.36	0.64	0.26
High	0.01	0.50	0.45	0.67	0.22
People					
Low	-0.33	0.37	0.13	0.55	0.23
Average	-0.15	0.44	0.35	0.64	0.25
High	0.01	0.50	0.57	0.72	0.28
Management level					
Entry level IC	-0.10	0.46	0.35	0.64	0.23
Team lead	-0.04	0.49	0.41	0.66	0.22
First level leader	-0.01	0.49	0.41	0.66	0.21
Mid-level leader	0.03	0.51	0.44	0.67	0.21
Functional leader	0.07	0.53	0.47	0.68	0.20
Business unit leader	0.10	0.54	0.49	0.69	0.19
Senior/Top functional executive	0.13	0.55	0.51	0.69	0.19
Senior/Top business group executive	0.16	0.56	0.52	0.70	0.18
CEO	0.19	0.58	0.54	0.71	0.18

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Positivity subdomains. All PO subdomains are positively associated with ML. The strongest ML association is found for SS, where CEOs and EICs are separated by .30 *SD*s, in favor of the former. CEOs and EICs are separated by .15 *SD*s and .16 *SD*s for OP and CP, respectively. In all cases, the WE slope is again attenuated a small amount at increased levels of ML, and the effect goes as low as β = .03 for SS among CEOs. Target scores, regardless of management level, are at least at the mean in every case, and are usually higher. Despite the attenuation of the WE slope up the management pipeline, targets are higher for higher levels of management in every case, and reach as high as the 63rd percentile. The most disparate targets across management level are seen for SS, while targets for OP and CP are much more similar, such that CEO and EIC targets are only separated by .05 *SD*s (2 percentile points) for OP and .11 *SD*s (5 percentile points) for CP. Additional details for all PO subdomain results can be examined in Figures PO1 through PO3 and in Tables OPMIP through SSMIP.

Figure PO1. Model-implied Optimism scores across job types

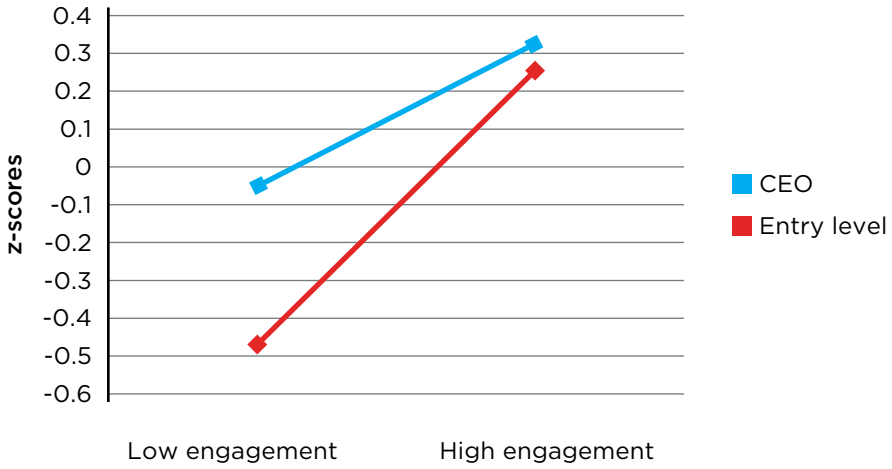

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Table OPMIP. Descriptive results of Optimism regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS OP OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.29	0.39	0.20	0.58	0.25
Average	-0.13	0.45	0.24	0.59	0.19
High	0.02	0.51	0.25	0.60	0.12
People					
Low	-0.30	0.38	0.07	0.53	0.19
Average	-0.13	0.45	0.23	0.59	0.18
High	0.03	0.51	0.40	0.66	0.19
Management level					
Entry level IC	-0.11	0.46	0.27	0.61	0.19
Team lead	-0.06	0.48	0.30	0.62	0.18
First level leader	-0.04	0.48	0.29	0.61	0.16
Mid-level leader	0.00	0.50	0.30	0.62	0.15
Functional leader	0.03	0.51	0.31	0.62	0.14
Business unit leader	0.06	0.52	0.32	0.62	0.13
Senior/Top functional executive	0.08	0.53	0.32	0.63	0.12
Senior/Top business group executive	0.11	0.54	0.33	0.63	0.11
CEO	0.14	0.55	0.33	0.63	0.10

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure PO2. Model-implied Composure scores across job types

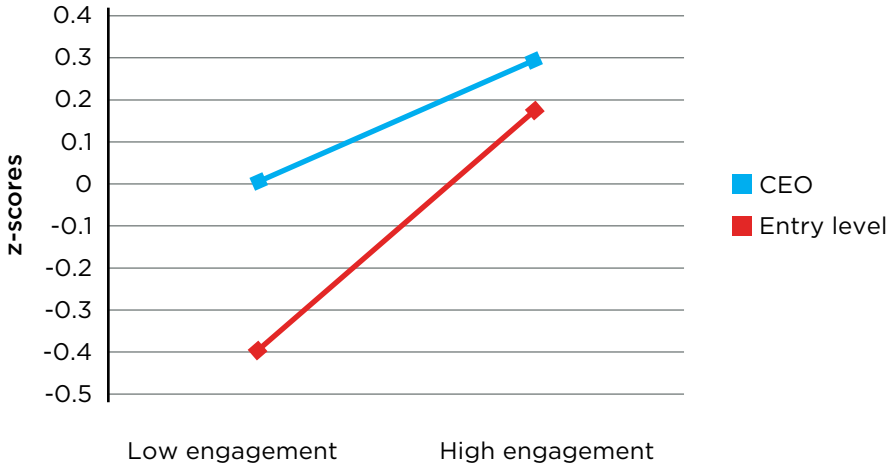

Table CPMIP. Descriptive results of Composure regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS CP OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.26	0.40	0.13	0.55	0.20
Average	-0.09	0.46	0.19	0.58	0.14
High	0.05	0.52	0.23	0.59	0.09
People					
Low	-0.27	0.39	0.06	0.52	0.17
Average	-0.09	0.46	0.19	0.58	0.14
High	0.06	0.52	0.32	0.63	0.13
Management level					
Entry level IC	-0.11	0.46	0.19	0.57	0.15
Team lead	-0.06	0.48	0.22	0.59	0.14
First level leader	-0.04	0.48	0.22	0.59	0.13
Mid-level leader	0.00	0.50	0.24	0.59	0.12
Functional leader	0.03	0.51	0.25	0.60	0.11
Business unit leader	0.06	0.53	0.27	0.60	0.10
Senior/Top functional executive	0.09	0.54	0.28	0.61	0.09
Senior/Top business group executive	0.12	0.55	0.29	0.61	0.08
CEO	0.15	0.56	0.30	0.62	0.08

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure PO3. Model-implied Situational self-awareness scores across job types

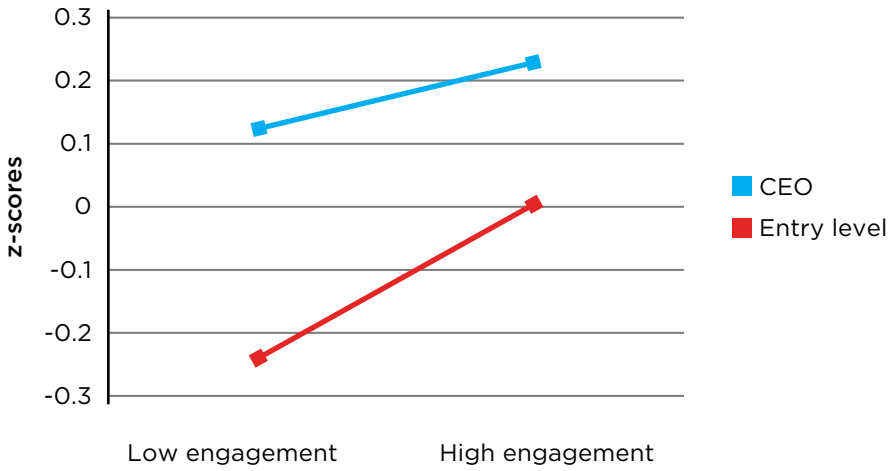

Table SSMIP. Descriptive results of Situational self-awareness regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS SS OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.19	0.42	-0.03	0.49	0.08
Average	-0.02	0.49	0.09	0.54	0.06
High	0.12	0.55	0.20	0.58	0.04
People					
Low	-0.20	0.42	0.02	0.51	0.11
Average	-0.02	0.49	0.09	0.54	0.06
High	0.14	0.56	0.14	0.56	0.00
Management level					
Entry level IC	-0.12	0.45	0.01	0.50	0.06
Team lead	-0.07	0.47	0.04	0.52	0.05
First level leader	-0.04	0.49	0.07	0.53	0.05
Mid-level leader	0.00	0.50	0.10	0.54	0.05
Functional leader	0.04	0.52	0.13	0.55	0.04
Business unit leader	0.08	0.53	0.15	0.56	0.04
Senior/Top functional executive	0.11	0.54	0.18	0.57	0.03
Senior/Top business group executive	0.14	0.56	0.21	0.58	0.03
CEO	0.18	0.57	0.23	0.59	0.03

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Presence subdomains. Among the PR subdomains, only EM is negatively associated with ML, while all others are positively associated. CEOs (*M* = -.13) are typically .22 *SD*s lower on EM than EICs (*M* = .09). The differentiating effect for WE vis-à-vis EM is small (*β* = .04) and consistent across MLs. For all other PR subdomains, the differentiating effect of WE is generally larger and attenuated at higher MLs. The strongest ML association is found for IN, where CEOs and EICs are separated by .80 *SD*s, in favor of the former. CEOs and EICs are separated by .63 *SD*s and .14 *SD*s for AS and SO, respectively. In general, the strongest effect for WE is found for IN, whose differentiating effects is as high as *β* = .15 for EICs and as low as *β* = .09 for CEOs. The general magnitude of WE's differentiating effect vis-à-vis AS is similar and is as high as *β* = .13 for EICs and as low as *β* = .08 for CEOs. All targets for all levels are at least very near the mean and in many cases higher. Only EM has targets that are higher for *lower* levels of management. All other targets tend to increase at higher MLs. The highest targets are seen for AS and IN among CEOs and are at or above the 70th percentile. Additional details for all PR subdomain results can be examined in Figures PR1 through PR4 and in Tables EMMIP through SOMIP.

Figure PR1. Model-implied Empathy scores across job types

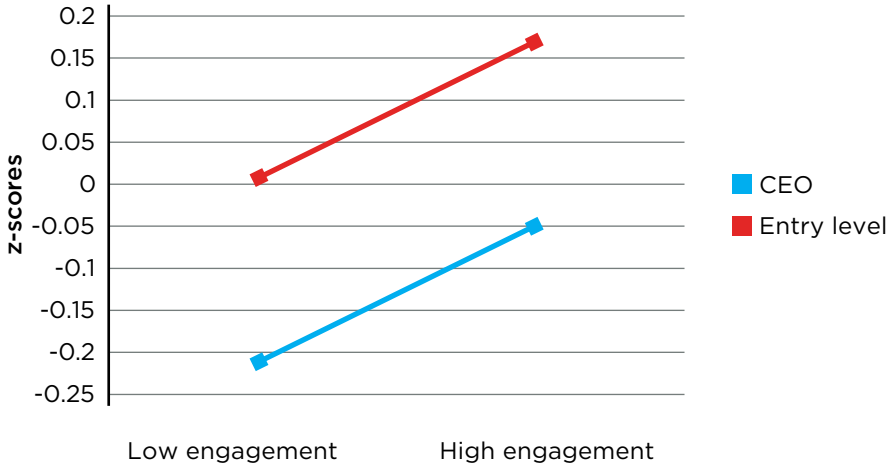

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Table EMMIP. Descriptive results of Empathy regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS EM OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.15	0.44	-0.04	0.48	0.06
Average	-0.03	0.49	0.07	0.53	0.05
High	0.06	0.52	0.16	0.56	0.05
People					
Low	-0.24	0.41	-0.13	0.45	0.06
Average	-0.04	0.48	0.07	0.53	0.06
High	0.17	0.57	0.27	0.61	0.05
Management level					
Entry level IC	0.09	0.54	0.17	0.57	0.04
Team lead	0.09	0.54	0.18	0.57	0.04
First level leader	0.05	0.52	0.13	0.55	0.04
Mid-level leader	0.03	0.51	0.11	0.54	0.04
Functional leader	0.00	0.50	0.08	0.53	0.04
Business unit leader	-0.03	0.49	0.05	0.52	0.04
Senior/Top functional executive	-0.06	0.47	0.02	0.51	0.04
Senior/Top business group executive	-0.10	0.46	-0.01	0.49	0.04
CEO	-0.13	0.45	-0.05	0.48	0.04

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure PR2. Model-implied Assertiveness scores across job types

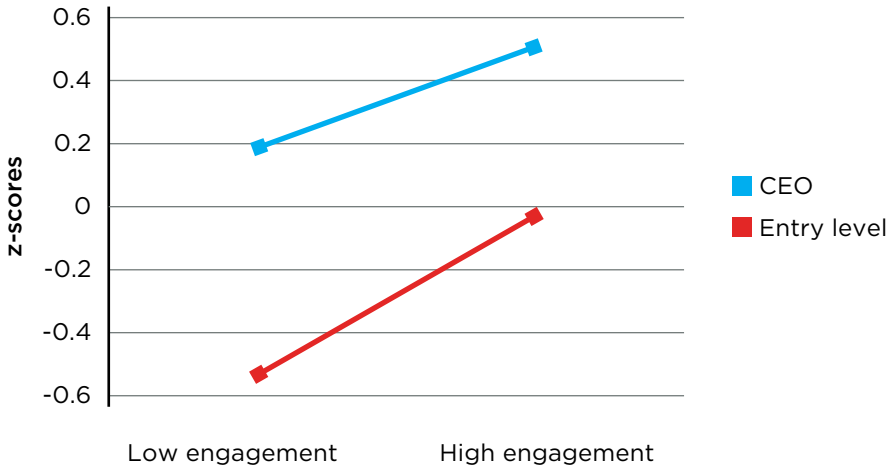

Table ASMIP. Descriptive results of Assertiveness regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS AS OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.38	0.35	-0.12	0.45	0.13
Average	-0.08	0.47	0.19	0.58	0.14
High	0.16	0.56	0.45	0.67	0.15
People					
Low	-0.47	0.32	-0.24	0.41	0.12
Average	-0.09	0.46	0.18	0.57	0.14
High	0.26	0.60	0.59	0.72	0.17
Management level					
Entry level IC	-0.28	0.39	-0.02	0.49	0.13
Team lead	-0.15	0.44	0.10	0.54	0.13
First level leader	-0.10	0.46	0.14	0.55	0.12
Mid-level leader	-0.01	0.49	0.22	0.59	0.12
Functional leader	0.07	0.53	0.29	0.61	0.11
Business unit leader	0.14	0.56	0.35	0.64	0.10
Senior/Top functional executive	0.21	0.58	0.40	0.66	0.10
Senior/Top business group executive	0.28	0.61	0.45	0.68	0.09
CEO	0.35	0.64	0.51	0.70	0.08

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure PR3. Model-implied Influence scores across job types

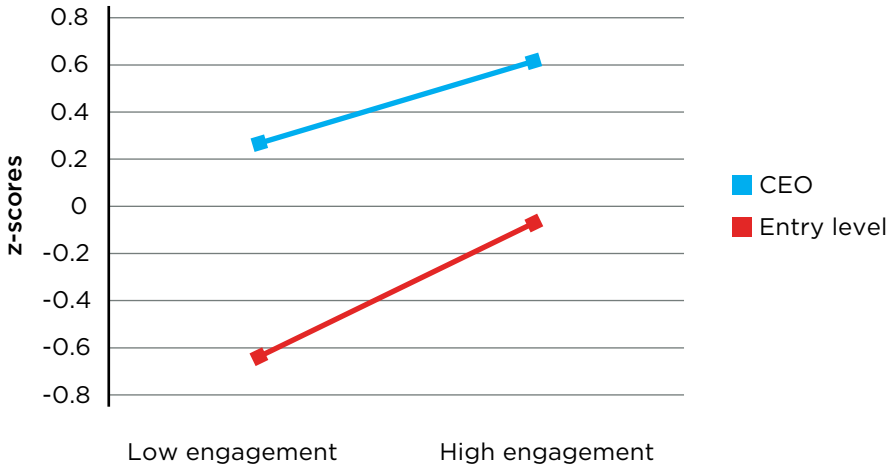

Table INMIP. Descriptive results of Influence regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS IN OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.43	0.33	-0.14	0.44	0.15
Average	-0.09	0.46	0.22	0.59	0.16
High	0.18	0.57	0.50	0.69	0.16
People					
Low	-0.51	0.31	-0.26	0.40	0.13
Average	-0.10	0.46	0.21	0.58	0.16
High	0.28	0.61	0.59	0.72	0.16
Management level					
Entry level IC	-0.36	0.36	-0.06	0.48	0.15
Team lead	-0.20	0.42	0.09	0.54	0.15
First level leader	-0.13	0.45	0.14	0.55	0.14
Mid-level leader	-0.02	0.49	0.24	0.59	0.13
Functional leader	0.08	0.53	0.33	0.63	0.12
Business unit leader	0.17	0.57	0.40	0.66	0.11
Senior/Top functional executive	0.26	0.60	0.47	0.68	0.11
Senior/Top business group executive	0.35	0.64	0.55	0.71	0.10
CEO	0.44	0.67	0.62	0.73	0.09

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure PR4. Model-implied Sociability scores across job types

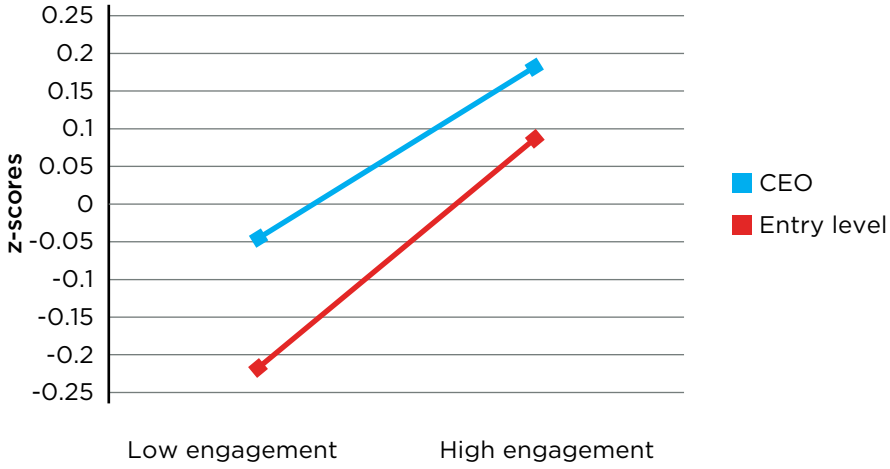

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Table SOMIP. Descriptive results of Sociability regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS SO OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.24	0.41	-0.08	0.47	0.08
Average	-0.05	0.48	0.12	0.55	0.09
High	0.10	0.54	0.28	0.61	0.09
People					
Low	-0.33	0.37	-0.18	0.43	0.08
Average	-0.06	0.48	0.12	0.55	0.09
High	0.21	0.58	0.40	0.66	0.10
Management level					
Entry level IC	-0.07	0.47	0.09	0.54	0.08
Team lead	-0.01	0.50	0.15	0.56	0.08
First level leader	-0.02	0.49	0.13	0.55	0.07
Mid-level leader	0.01	0.50	0.16	0.56	0.07
Functional leader	0.03	0.51	0.17	0.57	0.07
Business unit leader	0.04	0.52	0.18	0.57	0.07
Senior/Top functional executive	0.05	0.52	0.18	0.57	0.06
Senior/Top business group executive	0.06	0.52	0.18	0.57	0.06
CEO	0.07	0.53	0.19	0.57	0.06

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Agreeableness subdomains. All AGR subdomains are positively associated with ML, except for HU, which is essentially unrelated, showing stable scores across MLs. The effect of WE on HU is small and basically consistent across levels as well, such that means for each ML are at the 50th percentile and targets for HU are at either the 54th or 55th percentile in every case vis-à-vis ML. In general, for everyone, HU scores a small amount above the mean seem desirable. The strongest ML association is found for OD, where CEOs and EICs are typically separated by .20 *SD*s, in favor of the former. The effect of ML on AF is similar in magnitude, such that CEOs and EICs are separated by .19 *SD*s, again in favor of the former. The effect of WE is positive and notable for all A GR subdomains, sans HU, where it is low and stable across MLs. OD and AF have the strongest associations with WE, although in both cases the association is attenuated a small amount as ML increases. TR is also positively associated with ML as well as WE, although both effects are relatively small, such that CEOs and EICs are only separated by .08 *SD*s and the strongest effect for WE is found among EICs at β = .09. Additional details for all AGR subdomain results can be examined in Figures AR1 through AR4 and in Tables AFMIP through HUMIP.

Figure AR1. Model-implied Affiliation scores across job types

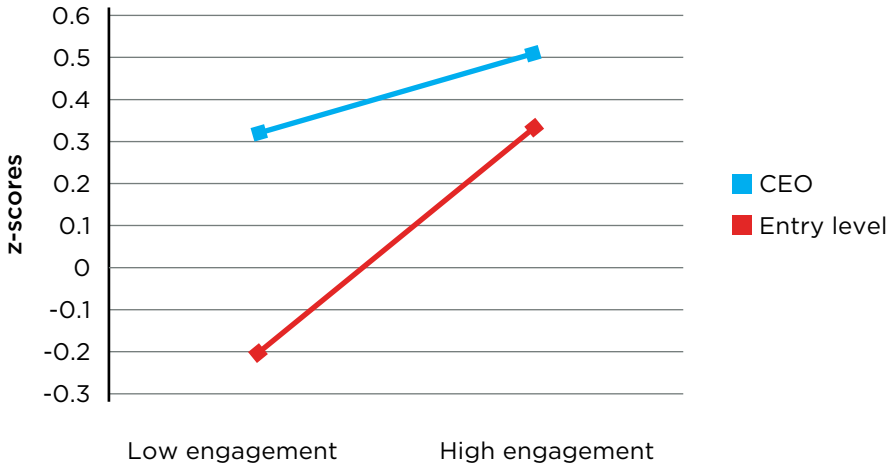

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Table AFMIP. Descriptive results of Affiliation regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS AF OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.33	0.37	0.05	0.52	0.19
Average	-0.07	0.47	0.20	0.58	0.14
High	0.16	0.56	0.32	0.63	0.08
People					
Low	-0.34	0.37	-0.01	0.50	0.17
Average	-0.07	0.47	0.19	0.58	0.13
High	0.17	0.57	0.39	0.65	0.11
Management level					
Entry level IC	-0.07	0.47	0.17	0.57	0.12
Team lead	-0.02	0.49	0.22	0.59	0.12
First level leader	-0.01	0.50	0.22	0.59	0.11
Mid-level leader	0.02	0.51	0.24	0.60	0.11
Functional leader	0.05	0.52	0.26	0.60	0.11
Business unit leader	0.07	0.53	0.28	0.61	0.10
Senior/Top functional executive	0.08	0.53	0.29	0.61	0.10
Senior/Top business group executive	0.10	0.54	0.30	0.62	0.10
CEO	0.12	0.55	0.31	0.62	0.09

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure AR2. Model-implied Trust scores across job types

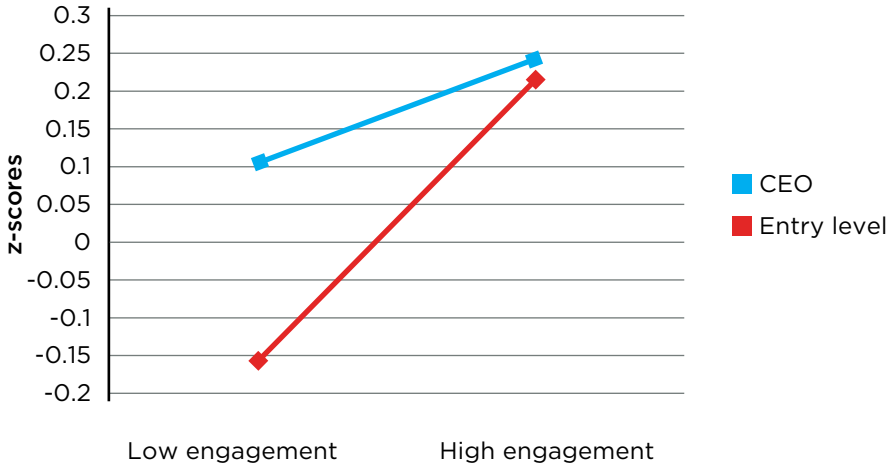

Table TRMIP. Descriptive results of Trust regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS TR OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.17	0.43	0.09	0.54	0.13
Average	-0.06	0.48	0.13	0.55	0.10
High	0.05	0.52	0.16	0.56	0.06
People					
Low	-0.17	0.43	0.06	0.52	0.12
Average	-0.05	0.48	0.13	0.55	0.09
High	0.05	0.52	0.20	0.58	0.08
Management level					
Entry level IC	-0.03	0.49	0.15	0.56	0.09
Team lead	0.00	0.50	0.16	0.56	0.08
First level leader	0.00	0.50	0.16	0.56	0.08
Mid-level leader	0.01	0.51	0.17	0.57	0.08
Functional leader	0.02	0.51	0.17	0.57	0.07
Business unit leader	0.03	0.51	0.18	0.57	0.07
Senior/Top functional executive	0.04	0.52	0.18	0.57	0.07
Senior/Top business group executive	0.05	0.52	0.18	0.57	0.07
CEO	0.05	0.52	0.19	0.57	0.07

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure AR3. Model-implied Openness to differences scores across job types

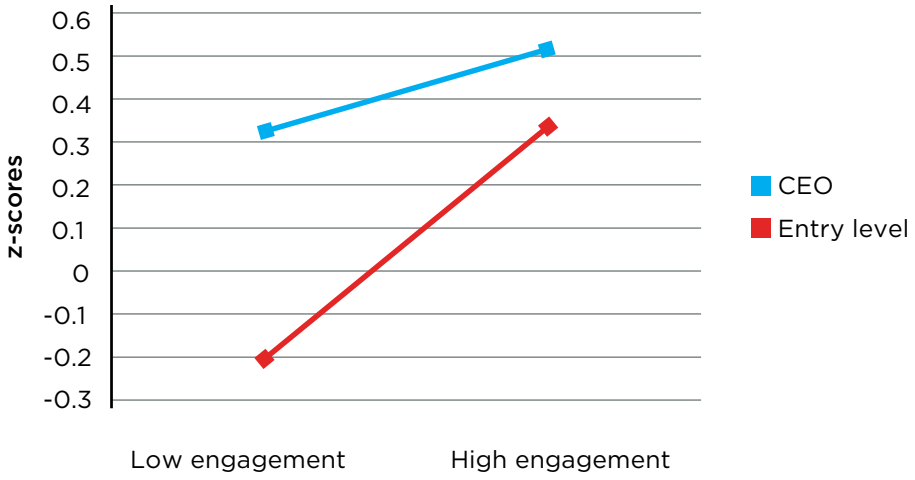

Table ODMIP. Descriptive results of Openness to differences regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS OD OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.33	0.37	0.05	0.52	0.19
Average	-0.07	0.47	0.20	0.58	0.14
High	0.16	0.56	0.32	0.63	0.08
People					
Low	-0.35	0.36	-0.01	0.50	0.17
Average	-0.07	0.47	0.20	0.58	0.14
High	0.17	0.57	0.39	0.65	0.11
Management level					
Entry level IC	-0.08	0.47	0.18	0.57	0.13
Team lead	-0.02	0.49	0.22	0.59	0.12
First level leader	-0.01	0.50	0.22	0.59	0.12
Mid-level leader	0.02	0.51	0.24	0.60	0.11
Functional leader	0.05	0.52	0.26	0.60	0.11
Business unit leader	0.07	0.53	0.28	0.61	0.10
Senior/Top functional executive	0.09	0.53	0.29	0.61	0.10
Senior/Top business group executive	0.10	0.54	0.30	0.62	0.10
CEO	0.12	0.55	0.31	0.62	0.10

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure AR4. Model-implied Humility scores across job types

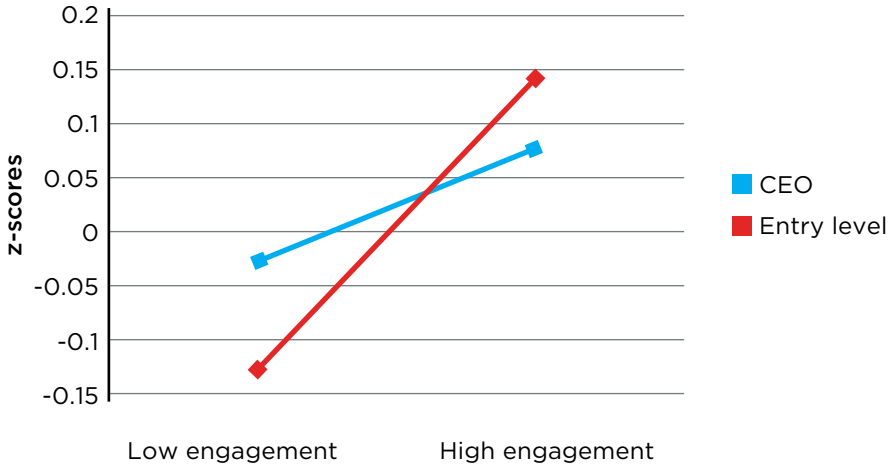

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Table HUMIP. Descriptive results of Humility regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS HU OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.07	0.47	0.10	0.54	0.09
Average	-0.04	0.48	0.09	0.54	0.07
High	-0.03	0.49	0.09	0.54	0.06
People					
Low	-0.07	0.47	0.10	0.54	0.09
Average	-0.04	0.48	0.09	0.54	0.07
High	-0.03	0.49	0.09	0.54	0.06
Management level					
Entry level IC	0.00	0.50	0.13	0.55	0.06
Team lead	0.00	0.50	0.12	0.55	0.06
First level leader	0.01	0.50	0.12	0.55	0.06
Mid-level leader	0.01	0.50	0.12	0.55	0.06
Functional leader	0.01	0.50	0.12	0.55	0.05
Business unit leader	0.01	0.50	0.11	0.55	0.05
Senior/Top functional executive	0.01	0.50	0.11	0.54	0.05
Senior/Top business group executive	0.01	0.50	0.11	0.54	0.05
CEO	0.01	0.50	0.11	0.54	0.05

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Higher-order trait domains. Each higher-order trait factor is positively associated with ML. The strongest association is seen for AG where CEOs (*M* = .35) and EICs (*M* = -.34) are separated by .69 *SD*s. In all cases, the WE slope is again attenuated a small amount at increased levels of ML, although the effect of WE goes only as low as *β* = .13 for AG among CEOs. Target scores, regardless of management level, are at least at the mean in every case, and usually higher. Despite the attenuation of the WE slope up the management pipeline for all measures, targets are higher for higher levels of management in every case, and reach as high as the 73rd percentile. The strongest associations with WE are seen for the PO higher-order trait factor, followed closely by PR and STV. In general, higher-order trait factors are notably predictive measures, both of ML and WE across levels of ML.

Figure SP1. Model-implied higher-order Agility scores across job types

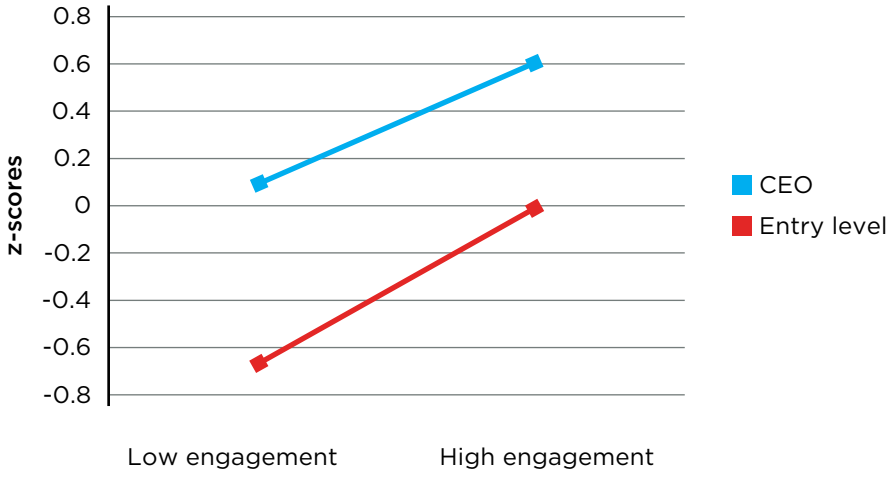

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Table AGMIP. Descriptive results of higher-order Agility regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS AG OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.51	0.31	-0.24	0.41	0.14
Average	-0.11	0.46	0.18	0.57	0.15
High	0.26	0.60	0.58	0.72	0.16
People					
Low	-0.45	0.33	-0.17	0.43	0.14
Average	-0.11	0.46	0.19	0.58	0.15
High	0.18	0.57	0.47	0.68	0.15
Management level					
Entry level IC	-0.34	0.37	0.00	0.50	0.17
Team lead	-0.19	0.42	0.14	0.56	0.17
First level leader	-0.13	0.45	0.19	0.58	0.16
Mid-level leader	-0.03	0.49	0.28	0.61	0.16
Functional leader	0.07	0.53	0.37	0.65	0.15
Business unit leader	0.14	0.56	0.44	0.67	0.15
Senior/Top functional executive	0.20	0.58	0.48	0.69	0.14
Senior/Top business group executive	0.28	0.61	0.55	0.71	0.14
CEO	0.35	0.64	0.62	0.73	0.13

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure SP2. Model-implied higher-order Striving scores across job types

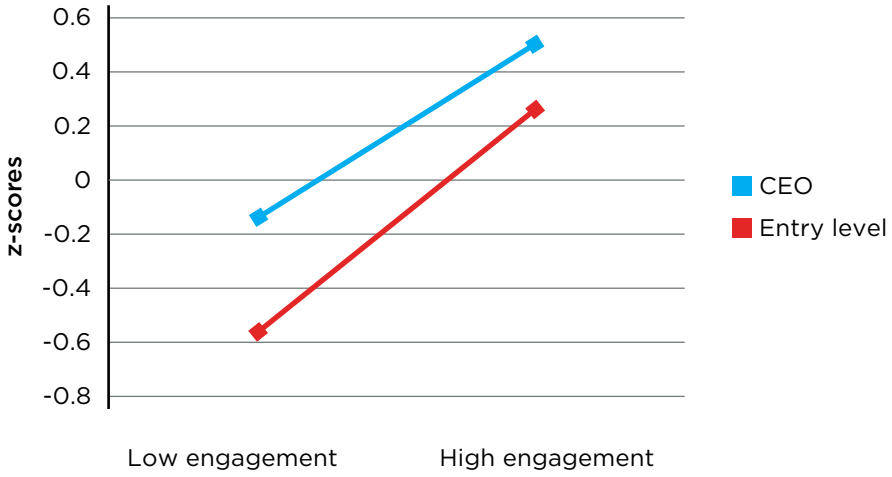

Table STMIP. Descriptive results of higher-order Striving regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS STV OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.32	0.37	0.14	0.56	0.23
Average	-0.11	0.46	0.28	0.61	0.20
High	0.08	0.53	0.39	0.65	0.16
People					
Low	-0.34	0.37	0.09	0.54	0.22
Average	-0.11	0.46	0.28	0.61	0.20
High	0.10	0.54	0.45	0.67	0.18
Management level					
Entry level IC	-0.15	0.44	0.28	0.61	0.21
Team lead	-0.07	0.47	0.34	0.63	0.21
First level leader	-0.05	0.48	0.35	0.64	0.20
Mid-level leader	0.00	0.50	0.39	0.65	0.19
Functional leader	0.05	0.52	0.42	0.66	0.19
Business unit leader	0.08	0.53	0.45	0.67	0.18
Senior/Top functional executive	0.11	0.54	0.47	0.68	0.18
Senior/Top business group executive	0.15	0.56	0.49	0.69	0.17
CEO	0.18	0.57	0.52	0.70	0.17

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure SP3. Model-implied higher-order Positivity scores across job types

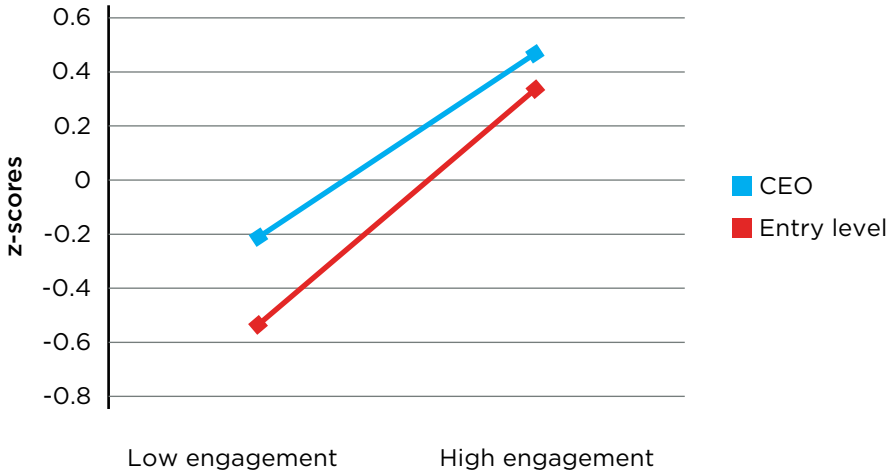

Table POMIP. Descriptive results of higher-order Positivity regressed on Ideas, People, Management level, and related interactions

JOB VARIABLES/ MANAGEMENT LEVELS	AVERAGE *z*-SCORE	AVERAGE PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS PO OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.27	0.39	0.14	0.56	0.21
Average	-0.11	0.46	0.21	0.58	0.16
High	0.08	0.53	0.26	0.60	0.09
People					
Low	-0.31	0.38	0.06	0.52	0.19
Average	-0.11	0.46	0.20	0.58	0.16
High	0.07	0.53	0.35	0.64	0.14
Management level					
Entry level IC	-0.10	0.46	0.35	0.64	0.23
Team lead	-0.04	0.48	0.39	0.65	0.22
First level leader	-0.03	0.49	0.39	0.65	0.21
Mid-level leader	0.01	0.50	0.41	0.66	0.20
Functional leader	0.03	0.51	0.43	0.67	0.20
Business unit leader	0.06	0.52	0.44	0.67	0.19
Senior/Top functional executive	0.08	0.53	0.46	0.68	0.19
Senior/Top business group executive	0.10	0.54	0.47	0.68	0.18
CEO	0.13	0.55	0.48	0.68	0.18

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure SP4. Model-implied higher-order Presence scores across job types

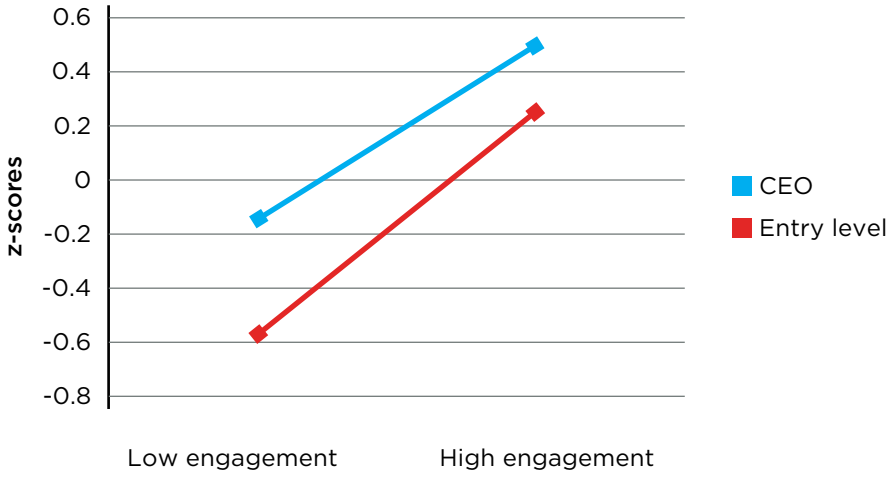

Table PRMIP. Descriptive results of Higher-order Presence regressed on ideas, people, management level and related interactions.

JOB VARIABLES/ MANAGEMENT LEVELS	MODEL IMPLIED AVG *z*-SCORE	MODEL IMPLIED AVG. PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS PRE OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.33	0.37	0.05	0.52	0.19
Average	-0.11	0.46	0.20	0.58	0.16
High	0.01	0.50	0.33	0.63	0.16
People					
Low	-0.34	0.37	0.00	0.50	0.17
Average	-0.11	0.46	0.20	0.58	0.16
High	0.10	0.54	0.38	0.65	0.14
Management Level					
Entry level IC	-0.22	0.41	0.10	0.54	0.16
Team lead	-0.12	0.45	0.18	0.57	0.15
First-level leader	-0.07	0.47	0.22	0.59	0.14
Mid-level leader	0.00	0.50	0.27	0.61	0.14
Functional leader	0.07	0.53	0.33	0.63	0.13
Business unit leader	0.12	0.55	0.37	0.64	0.12
Senior/Top functional executive	0.16	0.56	0.40	0.65	0.12
Senior/Top business group executive	0.22	0.59	0.44	0.67	0.11
CEO	0.27	0.61	0.48	0.69	0.11

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Figure SP5. Model-implied higher-order Agreeableness scores across job types

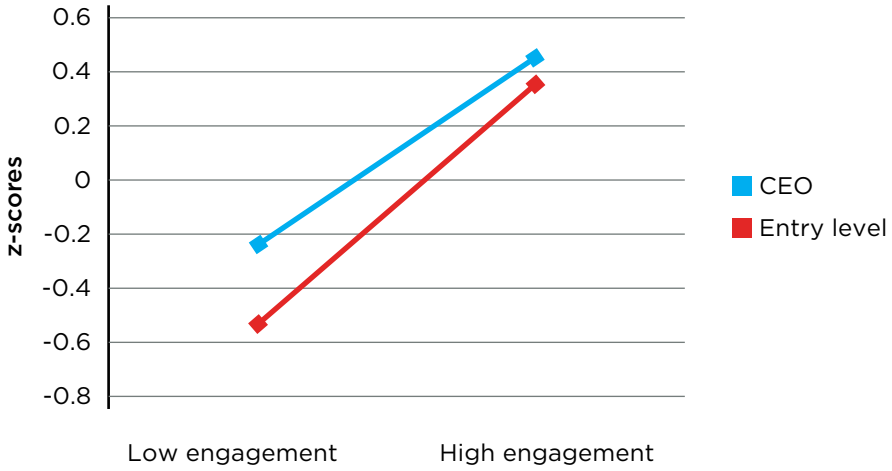

Table ARMIP. Descriptive results of Higher-order Agreeableness regressed on ideas, people, management level and related interactions.

JOB VARIABLES/ MANAGEMENT LEVELS	AVG *z*-SCORE	AVG. PERCENTILE	HIGH PERFORMANCE TARGET *z*-SCORE	HIGH PERFORMANCE TARGET PERCENTILE	HOW DIFFERENTIATING IS AGR OF PERFORMANCE? (PARTIAL β)
Ideas					
Low	-0.25	0.40	0.16	0.56	0.21
Average	-0.11	0.46	0.21	0.58	0.16
High	0.01	0.50	0.23	0.59	0.11
People					
Low	-0.30	0.38	0.07	0.53	0.19
Average	-0.11	0.46	0.21	0.58	0.16
High	0.06	0.52	0.34	0.63	0.14
Management Level					
Entry level IC	-0.09	0.46	0.20	0.58	0.15
Team lead	-0.04	0.48	0.24	0.59	0.14
First-level leader	-0.03	0.49	0.26	0.60	0.15
Mid-level leader	0.00	0.50	0.28	0.61	0.14
Functional leader	0.02	0.51	0.31	0.62	0.14
Business unit leader	0.04	0.52	0.33	0.63	0.15
Senior/Top functional executive	0.05	0.52	0.35	0.64	0.15
Senior/Top business group executive	0.07	0.53	0.37	0.65	0.15
CEO	0.08	0.53	0.40	0.65	0.16

Note. N = 27699. People and Ideas levels are evaluated at their respective mean Management levels and Ideas or People score. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Drivers results

***Balance* (BALA).** In general, the highest mean scores for BALA are seen in the CCL and REG cultures and, as would be expected given its focus on results drive, the lowest are seen in the CMP culture. In all cultures, both mean and target scores decrease as ML increases. The steepest decreases for means across ML are seen in the REG culture, where CEOs (*M* = -.30) are typically .49 *SD*s lower on BALA than EICs (*M* = .19). BALA's relationship with WE is notable and negative in every case, and in all cultures except REG, the predictive utility of WE becomes stronger at increased levels of ML. The strongest associations between BALA and WE are seen for CEOs in the CCL (β = -.27) and CMP (β = -.31) cultures, and for EICs in the REG culture (β = -.31). Target scores range from the 18th to the 39th percentile, depending on ML and culture, and are generally lower for upper-level management. Target scores are never above or within 10 percentile points of the global mean. Additional details can be examined in Table BALAMIP.

Table BALAMIP. Descriptive results of Balance regressed on Ideas, People, Management level, Culture, and related interactions

	REGULATORY CULTURE			INNOVATIVE CULTURE			COMPETITIVE CULTURE			COLLABORATIVE CULTURE		
Management level	Average percentile	Target percentile	Partial β	Average percentile	Target percentile	Partial β	Average percentile	Target percentile	Partial β	Average percentile	Target percentile	Partial β
Entry level IC	0.57	0.34	-0.31	0.49	0.33	-0.21	0.48	0.29	-0.24	0.58	0.39	-0.24
Team lead	0.54	0.31	-0.30	0.46	0.30	-0.22	0.45	0.27	-0.25	0.54	0.35	-0.25
First level leader	0.52	0.31	-0.28	0.45	0.29	-0.22	0.44	0.26	-0.25	0.53	0.33	-0.26
Mid-level leader	0.50	0.29	-0.27	0.43	0.27	-0.22	0.42	0.24	-0.25	0.51	0.30	-0.27
Functional leader	0.47	0.28	-0.26	0.41	0.25	-0.23	0.40	0.23	-0.26	0.49	0.28	-0.28
Business unit leader	0.45	0.27	-0.24	0.40	0.24	-0.23	0.39	0.21	-0.26	0.47	0.26	-0.29
Senior/Top functional executive	0.43	0.26	-0.23	0.38	0.23	-0.23	0.38	0.20	-0.26	0.45	0.24	-0.29
Senior/Top business group executive	0.40	0.25	-0.22	0.37	0.21	-0.23	0.36	0.19	-0.26	0.43	0.22	-0.30
CEO	0.38	0.24	-0.20	0.36	0.20	-0.24	0.35	0.18	-0.27	0.41	0.20	-0.31

Note. N = 27699. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Collaboration* (COLL).** For all cultures, COLL averages tend to increase with ML. The highest overall averages are seen in the REG and CCL cultures, wherein the highest general target scores are also seen. Target scores for COLL are never below the mean, and in every culture, the relationship between WE and COLL is attenuated at increased levels of the management pipeline. As is perhaps expectable, the strongest association between WE and COLL scores is found in the CCL culture, where targets are as low as the 55th percentile for EICs and as high as the 70th for CEOs. COLL is least differentiating in the CMP culture, wherein targets are near the mean, are only separated by 1 percentile point across any ML, and wherein COLL's differentiating effect is zero for the highest levels of management. Relatively low differentiation is also seen in the INN culture, where the association between WE and COLL is as low as β = .04 for the highest levels of management. Additional details can be examined in Table COLLMIP.

Table COLLMIP. Descriptive results of Collaboration regressed on Ideas, People, Management level, Culture, and related interactions

	REGULATORY CULTURE			INNOVATIVE CULTURE			COMPETITIVE CULTURE			COLLABORATIVE CULTURE		
Management level	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**
Entry level IC	0.51	0.60	0.11	0.45	0.51	0.08	0.49	0.54	0.06	0.44	0.55	0.14
Team lead	0.55	0.63	0.11	0.46	0.53	0.08	0.51	0.55	0.06	0.48	0.59	0.14
First level leader	0.56	0.64	0.10	0.47	0.52	0.07	0.51	0.55	0.05	0.50	0.60	0.13
Mid-level leader	0.58	0.65	0.10	0.48	0.53	0.07	0.52	0.55	0.04	0.53	0.62	0.12
Functional leader	0.60	0.67	0.09	0.49	0.54	0.06	0.53	0.55	0.03	0.55	0.64	0.12
Business unit leader	0.61	0.68	0.08	0.49	0.54	0.06	0.53	0.55	0.02	0.57	0.66	0.11
Senior/Top functional executive	0.63	0.68	0.07	0.49	0.54	0.05	0.54	0.55	0.01	0.59	0.67	0.11
Senior/Top business group executive	0.64	0.69	0.07	0.50	0.54	0.04	0.54	0.55	0.00	0.61	0.69	0.10
CEO	0.66	0.70	0.06	0.51	0.54	0.04	0.55	0.55	0.00	0.64	0.70	0.09

Note. N = 27699. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Power* (POWR).** Among all KF4D drivers, POWR is the least differentiating in terms of WE within management levels. In CMP, CCL, and INN cultures, the association between POWR and WE is only trivially non-zero, and the association in REG cultures (β = .05) is not much higher. Moreover, the small near-zero associations are stable across all levels of the management pipeline for all cultures. POWR's association with ML, however, is notable in every case, such that the average POWR scores for CEOs and EICs are at least .32 *SD*s different in every case, and as high as .38 *SD*s different, in favor of CEOs. Target percentiles are always higher for increased MLs and are generally highest in CMP cultures, as might be expected. The lowest targets are seen in the CCL culture, where even the highest levels of management have targets below the mean. Additional details can be examined in Table POWRMIP, which shows typical and target POWR scores for every ML across each culture type.

Table POWRMIP. Descriptive results of Power regressed on Ideas, People, Management level, Culture, and related interactions

	REGULATORY CULTURE			INNOVATIVE CULTURE			COMPETITIVE CULTURE			COLLABORATIVE CULTURE		
Management level	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**
Entry level IC	0.41	0.45	0.05	0.44	0.43	-0.01	0.46	0.47	0.01	0.34	0.35	0.01
Team lead	0.43	0.47	0.05	0.47	0.46	-0.01	0.49	0.50	0.01	0.37	0.37	0.01
First level leader	0.45	0.48	0.05	0.48	0.48	-0.01	0.50	0.51	0.01	0.38	0.39	0.01
Mid-level leader	0.46	0.50	0.05	0.50	0.50	-0.01	0.52	0.53	0.01	0.40	0.41	0.01
Functional leader	0.48	0.52	0.05	0.53	0.52	-0.01	0.54	0.55	0.01	0.42	0.43	0.01
Business unit leader	0.50	0.53	0.05	0.54	0.53	-0.01	0.56	0.57	0.01	0.44	0.44	0.01
Senior/Top functional executive	0.51	0.55	0.05	0.56	0.55	-0.01	0.57	0.58	0.01	0.45	0.46	0.01
Senior/Top business group executive	0.52	0.56	0.05	0.57	0.57	-0.01	0.59	0.60	0.01	0.46	0.47	0.01
CEO	0.54	0.57	0.05	0.59	0.58	-0.01	0.61	0.61	0.01	0.48	0.49	0.01

Note. N = 27699. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Challenge* (CHAL).** As we have seen previously (Table WAID), CHAL is the most *positively* differentiating of all the drivers. Partial *β*s range from .20 to .14, are of equal magnitude across cultures, and are attenuated a small amount as ML increases. The highest means and target scores are seen in the CMP, as might be expected given the achievement-oriented nature of that culture. The lowest targets are seen in the CCL culture, where even the highest-level managers are expected to be just above the mean (54th percentile) for optimal engagement. This is in stark contrast to the target for CEOs in the CMP culture, whose target is .86 *SD*s higher and in the 83rd percentile. Across cultures, typical CHAL scores increase up the management pipeline, and the strongest increases are seen again in the CMP culture, but also in the INN culture where the differences between CEOs and EICs are .95 and .68 *SD*s, respectively. Additional details can be seen in Table CHALMIP, which shows typical and target CHAL scores for every ML across each culture type.

Table CHALMIP. Descriptive results of Challenge regressed on Ideas, People, Management level, Culture, and related interactions

	REGULATORY CULTURE			INNOVATIVE CULTURE			COMPETITIVE CULTURE			COLLABORATIVE CULTURE		
Management level	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**
Entry level IC	0.43	0.59	0.20	0.37	0.52	0.20	0.39	0.54	0.20	0.40	0.55	0.20
Team lead	0.47	0.62	0.19	0.42	0.57	0.19	0.45	0.60	0.19	0.42	0.57	0.19
First level leader	0.47	0.62	0.18	0.44	0.59	0.18	0.49	0.63	0.18	0.41	0.56	0.18
Mid-level leader	0.50	0.64	0.18	0.48	0.62	0.18	0.54	0.67	0.18	0.42	0.56	0.18
Functional leader	0.52	0.65	0.17	0.51	0.65	0.17	0.59	0.71	0.17	0.42	0.56	0.17
Business unit leader	0.54	0.66	0.16	0.55	0.67	0.16	0.63	0.75	0.16	0.43	0.56	0.16
Senior/Top functional executive	0.55	0.67	0.16	0.57	0.69	0.16	0.67	0.77	0.16	0.43	0.55	0.16
Senior/Top business group executive	0.57	0.68	0.15	0.60	0.71	0.15	0.71	0.80	0.15	0.43	0.55	0.15
CEO	0.58	0.69	0.14	0.63	0.74	0.14	0.75	0.83	0.14	0.43	0.54	0.14

Note. N = 27699. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Structure* (STRC).** In every culture, both average and target STRC scores trend downward across increased MLs. The steepest downward trends are seen in the CCL culture, where average and target STRC scores for CEOs and EICs are separated by -.65 and -.66 *SD*s, respectively. The highest targets and averages for STRC are seen in the REG culture, as might be expected given the emphasis on process, efficiency, and structure in that culture. Nonetheless, targets for STRC within the REG culture and all cultures are always lower than averages. In all cultures, sans CCL, the differentiating effect of STRC is negative and stronger at higher MLs, although the effect never exceeds an absolute value of .11. In CCL cultures, STRC is not more salient vis-à-vis differentiating among the engaged for higher levels as in all other cultures, but its effect remains stable across MLs at β = -.13. Additional details can be seen in Table STRCMIP, which shows typical and target STRC scores for every ML across each culture type.

Table STRCMIP. Descriptive results of Structure regressed on Ideas, People, Management level, Culture, and related interactions

	REGULATORY CULTURE			INNOVATIVE CULTURE			COMPETITIVE CULTURE			COLLABORATIVE CULTURE		
Management level	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**	**Average percentile**	**Target percentile**	**Partial β**
Entry level IC	0.74	0.67	-0.09	0.69	0.64	-0.07	0.66	0.63	-0.04	0.75	0.66	-0.13
Team lead	0.70	0.63	-0.10	0.65	0.59	-0.08	0.61	0.57	-0.05	0.71	0.61	-0.13
First level leader	0.69	0.61	-0.10	0.64	0.58	-0.08	0.61	0.56	-0.06	0.69	0.59	-0.13
Mid-level leader	0.66	0.58	-0.10	0.62	0.55	-0.09	0.58	0.53	-0.07	0.65	0.55	-0.13
Functional leader	0.64	0.56	-0.11	0.60	0.52	-0.09	0.56	0.50	-0.07	0.62	0.52	-0.13
Business unit leader	0.62	0.53	-0.11	0.58	0.50	-0.09	0.54	0.48	-0.08	0.59	0.49	-0.13
Senior/Top functional executive	0.60	0.52	-0.11	0.57	0.49	-0.10	0.53	0.46	-0.08	0.57	0.46	-0.13
Senior/Top business group executive	0.58	0.49	-0.11	0.55	0.47	-0.10	0.51	0.44	-0.09	0.54	0.43	-0.13
CEO	0.56	0.47	-0.11	0.53	0.45	-0.10	0.50	0.42	-0.09	0.51	0.40	-0.13

Note. N = 27699. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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***Independence* (INDY).** In all cultures, with one exception, typical INDY scores tend to decrease at higher levels up the management pipeline. The single exception is found in CMP cultures, where typical scores are essentially stable across MLs. Average INDY scores are generally lowest in the REG culture, as might be expected given the emphasis on regulation, structure, and process in that culture that would ostensibly discourage "pursuing one's own vision." In all cultures, INDY's salience vis-à-vis differentiating among the engaged is higher among lower-level management and negative in almost every case. The strongest differentiation is seen in the CCL culture in general and more particularly among EICs in the CCL culture (β = -.15). The weakest associations between WE and INDY are generally seen in the CMP culture, where the negative effect seen at most MLs becomes zero and slightly positive for one level below CEOs and CEOs, respectively. Target scores range from as low as the 29th percentile for CEOs in REG cultures to as high as the 44th percentile for CEOs in CMP and INN cultures. In INN and CMP, target scores rise with ML; whereas, in REG and CCL cultures, target scores are virtually stable across MLs. Additional details can be seen in Table INDYMIP, which shows typical and target INDY scores for every ML across each culture type.

Table INDYMIP. Descriptive results of Independence regressed on Ideas, People, Management level, Culture, and related interactions

	REGULATORY CULTURE			INNOVATIVE CULTURE			COMPETITIVE CULTURE			COLLABORATIVE CULTURE		
Management level	Average percentile	Target percentile	Partial β	Average percentile	Target percentile	Partial β	Average percentile	Target percentile	Partial β	Average percentile	Target percentile	Partial β
Entry level IC	0.37	0.28	-0.12	0.46	0.38	-0.10	0.42	0.35	-0.08	0.45	0.34	-0.15
Team lead	0.37	0.30	-0.11	0.47	0.41	-0.09	0.43	0.38	-0.07	0.45	0.35	-0.13
First level leader	0.36	0.29	-0.10	0.46	0.40	-0.08	0.42	0.38	-0.06	0.43	0.34	-0.12
Mid-level leader	0.35	0.29	-0.08	0.46	0.41	-0.06	0.43	0.39	-0.04	0.42	0.34	-0.10
Functional leader	0.35	0.30	-0.07	0.46	0.42	-0.05	0.43	0.41	-0.03	0.41	0.34	-0.09
Business unit leader	0.34	0.30	-0.06	0.46	0.43	-0.04	0.43	0.41	-0.02	0.39	0.33	-0.08
Senior/Top functional executive	0.33	0.30	-0.05	0.45	0.43	-0.03	0.43	0.42	-0.01	0.38	0.33	-0.07
Senior/Top business group executive	0.32	0.29	-0.04	0.45	0.43	-0.02	0.43	0.43	0.00	0.36	0.32	-0.06
CEO	0.31	0.29	-0.03	0.44	0.44	-0.01	0.43	0.44	0.02	0.35	0.32	-0.05

Note. N = 27699. Management level levels are evaluated at their mean Ideas and People scores, as shown in Table WAIM.

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Target score vector distance tests

The analyses described above were conducted to develop equations by which work-analysis variables, management level, and organizational culture could be considered together in order to obtain mathematically produced optimal-case and customized *target profiles* on KF4D-Ent traits, drivers, and competencies. As we have noted, the equations by which the profiles can be produced are shown in Figures AGLCM, STLCM, POLCM, PRLCM, ARLCM, and SPLCM for traits, Tables THTMLM, RESMLM, PPLMLM, and SELMLM for competencies, and Tables BALAMLM, COLLMLM, POWRMLM, CHALMLM, STRCMLM, and INDYMLM for drivers. Where applicable, respondents in the analyses by which the equations were produced have variable work-analysis scores, management level, and company culture, such that many or all of them have different and custom target trait and target driver profiles associated with their own jobs. Knowing this, we ask a different question in order to obtain more insight concerning the value-added utility of the KF4D-Ent assessment and our empirically developed target profiles.

We use each of our N = 1,669 incumbents' (Sample 2) work-analysis, management level, and culture ratings in conjunction with the target profile equations that take these same values as arguments, in order to produce a target vector having 61 elements (all KF4D-Ent trait and driver scores) for each individual. The target vector is used with incumbents' actual 61 element vector in order to compute a Euclidean (absolute value) *target vector minus observed vector* scalar distance for each individual. The scalar distance values are then reversed (multiplied by -1) and standardized (M = 0, SD = 1), such that higher values indicate better fit to the target profile. The work engagement variable was then dichotomized, such that respondents having work engagement scores < 70th percentile were coded 0, and those having ≥ 70th percentile work engagement scores were coded 1 and conceptualized as *highly engaged*. A simple single-term logistic regression was then conducted wherein the binary work engagement variable served as the dependent variable, and the continuous and standardized scalar vector distance was centered at the mean and served as the independent variable. Results of the logistic regression are displayed in Table VLOG and confirm that individuals having a better fit to target profiles are notably more likely to be highly engaged. The logit or *log-odds* value associated with the distance variable in Table VLOG can be converted to an odds ratio simply by taking its exponential, viz., odds ratio = $e$logit. Table VLOG shows that the log-odds increase associated with a standardized unit increase in vector distance is .58, which also means that individuals whose KF4D-Ent vector fits 1.00 standard deviation better than average are $e^{1.00*.58}$ = 1.79 times more likely to be highly engaged. Table VRATIO shows similar results, wherein high fit is conceptualized as (population) 99th percentile fit and other levels of fit are operationalized as indicated. Using the model terms to simulate a maximum contrast, for example, results indicate that respondents with a high fit (99th percentile) to target scores are approximately 15 times more likely to be highly engaged than those with a low fit (1st percentile). Clearly, this analysis is limited because the vector distances are based, to some extent (competencies), on the same sample that was employed to develop the target profile equations. While it is far more desirable to run this same test on a completely separate sample, the results nonetheless offer compelling evidence for the value-added utility of the KF4D-Ent assessment system with emphasis on KF4D-Ent context-driven target profiles.

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Table VLOG. Results of regressing binary engagement grouping on target vector distances

TERM	LOGIT	*SE*	*t*	*p*
Intercept	0.24	0.05	5.74	0.0001
Standardized distance from target vector	0.58	0.06	9.18	0.0001

Note. N = 1669. The dependent variable is binary and indicates whether respondents are below the 70th percentile of Work engagement, or not. Vector distance is standardized (*M* = 0, *SD* = 1) and centered at the sample mean. The vector distance is scaled such that higher scores reflect closer fit to the target profile.

Table VRATIO. High engagement odds ratios for various levels of fit to KF4D target profiles

HIGH TARGET PROFILE FIT COMPARED TO	ODDS RATIO FOR HIGH-FITTING GROUP	PERCENTAGE OF INCREASED LIKELIHOOD
Average fit	3.81	281%
Moderately low fit	4.91	391%
Low fit	14.52	1352%

Average, moderately low, and low fit are the 50th, 33rd, and 1st population percentiles, respectively.

Adverse impact analyses

An important question to examine is how various sub-groups score on assessment tools. This helps to anticipate the expected effect of using the tools on the demographics of the workforce. Fairness of assessments is a markedly important objective at Korn Ferry, and assessments are designed not to disadvantage any group. Adverse impact occurs when employee selection procedures used in making employment decisions have the effect of selecting persons belonging to a historically disadvantaged group at a rate that is substantially lower than that of the group with the higher selection rate. Adverse impact may occur due to the characteristics of an assessment tool or other components included in the selection process, or, due to characteristics of the labor pool, recruitment practices, or other process factors.

Korn Ferry has carefully evaluated the trait-based scales in KF4D-Ent for the potential of adverse impact using the score thresholds included in this technical manual. A typical way of describing the potential for adverse impact is in terms of effect size, comparing individuals from historically disadvantaged groups with the majority group. An effect size can be interpreted as a small, medium, or large difference in average score. A commonly used interpretation is as follows: an effect size of 0.2 is considered a small effect, 0.5 a medium effect, and ≥ 0.8 a large effect (Cohen's δ; Cohen, 1988).

Our goal is to keep group differences to a minimum. To place the effort in context, a review of the literature (Hough, Oswald, & Ployhart, 2001) describes cognitive ability test effect sizes of up to -1.0, resulting in substantial disadvantage to some minority groups. By contrast, non-cognitive, or trait-based measures, tend to have far smaller effect sizes, with most near zero and some ranging up toward absolute values of .30. In general, these are far smaller effect sizes. KF4D-Ent does not use cognitive ability tests, relying instead on tests of non-cognitive characteristics and of competencies. In general, with standard and reasonable uses of assessments, Cohen's δ effect sizes having absolute values ≤ .25 are unlikely to provide either substantial advantage or disadvantage for any group. Mean and median absolute value (Cohen's δ) effect sizes for each grouping of KF4D-Ent scores are displayed in Table AIES. KF4D-Ent scores typically produce small or negligible effect sizes across

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gender and ethnic groups, and aggregated effect sizes are never ≥ .15 and are typically considerably lower. Note also that the KF4D-Ent target profile vector distances discussed in the previous section *do not* significantly vary across ethnic groups or gender according to examination of bivariate point-biserial correlations and related significance testing (p = .91, p = .83, for ethnicity and gender, respectively, using bivariate tests on distance means adjusted for management experience and management level),[29] as shown in Table AIVM. Our examination of adverse impact is ultimately far more detailed than the aggregate findings shown in Table AIES.

Table AIVM. Average vector distances across ethnicity and gender

VARIABLE	LEVEL	ADJUSTED MEAN DISTANCE	*SD*	POINT-BISERIAL CORRELATION
Ethnicity				0.03
	African American	-0.13	1.00	
	Hispanic-Latino	0.00	1.22	
	Asian	0.00	0.70	
	White/Caucasian	-0.04	1.07	
Gender				0.01
	Female	-0.06	0.97	
	Male	-0.04	1.14	

Note. Management experience and Management level served as covariates. The omnibus test for ethnicity was non-significant, F (3, 508) = .18, p = .91, as was the t-test for gender differences, t (509) = .04, p = .83. Dependent variable values are scaled (M = 0, SD = 1) such that higher values indicate a better fit to the target vector.

Table AIES. Mean and median absolute value effect sizes for ethnicity and gender contrasts across KF4D groupings

	AFRICAN AMERICAN		HISPANIC-LATINO		ASIAN		FEMALE	
KF4D SCORE GROUPING	MEAN δ	MEDIAN δ	MEAN δ	MEDIAN δ	MEAN δ	MEDIAN δ	MEAN δ	MEDIAN δ
Competencies	0.15	0.13	0.11	0.07	0.14	0.12	0.14	0.12
Higher-order traits	0.06	0.03	0.06	0.06	0.10	0.09	0.10	0.09
Trait subdomains	0.09	0.08	0.04	0.04	0.07	0.07	0.07	0.07
Drivers	0.08	0.08	0.06	0.07	0.11	0.10	0.10	0.09
Overall	0.10	0.08	0.07	0.07	0.11	0.10	0.10	0.09

Note. White/Caucasian participants served as the reference group for ethnic contrasts. Effect sizes are absolute value Cohen's δ. The overall mean and median are computed from the aggregated estimates that are shown such that each grouping is equally weighted.

[29] Unadjusted means are also not significantly different, having p > .20 in both cases.

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Appendix A: Learning agility

Overview

Korn Ferry's Four Dimensional Enterprise Assessment (KF4D-Ent) items can be scored and combined to provide information about individuals' learning agility. Learning agility is the willingness and ability to learn from experience, and subsequently apply that learning to perform successfully under new or first-time conditions (Lombardo & Eichinger, 2000). Individuals who are highly learning agile are nimble and adaptable in changing environments. When faced with new situations, such as job transitions, learning agile individuals apply fresh approaches, ideas, and solutions instead of defaulting to favorite problem-solving tactics or established solutions. That is, learning agile leaders find novel ways to handle unfamiliar challenges successfully.

Learning agility is related to multiple indicators of career success. Compared to their peers, individuals high in learning agility are seen as more competent, performing better in new and challenging situations. They are also less likely to get into trouble, and have greater potential for advancement (Bedford, 2011; Dragoni, Tesluk, Russell, & Oh, 2009; Lombardo & Eichinger, 2000; Spreitzer, McCall, & Mahoney, 1997).

When predicting performance and promotability, learning agility contributes additional validity above and beyond intelligence and personality (Connolly & Viswesvaran, 2002; De Meuse et al., 2010). In addition, learning agility accounts for whether or not individuals will be seen as having high potential above and beyond job performance (Dries, Vantilborgh, & Pepermans, 2012).

Given these findings, it is not surprising that individuals high in learning agility are promoted more quickly and more often than their peers. For example, Korn Ferry research found that managers with high learning agility received twice as many promotions over a 10-year period as those with low learning agility (Dai, Tang, & Feil, 2014; Dai et al., 2013). Our research also revealed that following promotion, highly learning agile leaders perform significantly better than their peers (Eichinger & Lombardo, 2004).

Given the relationship between learning agility and career success, it is clear that individuals with high learning agility stand out as having high potential. Not surprisingly, learning agility is one of the domains most often included in the high potential assessment suites of organizations recognized for making leadership development a priority. More than 50% of top development organizations reported measuring learning agility (Church, Rotolo, Ginther, & Levine, 2015).

To some extent, the link between learning agility and career success may be fueled by the range and depth of job challenges highly agile individuals handle. In one Korn Ferry study, individuals with higher learning agility reported having more challenging job experiences, such as launching a new product, managing a merger or acquisition, and handling a crisis. In turn, having more challenging job experiences was associated with greater compensation and higher organizational level (Dai & Hezlett, 2017). In a separate study, prior career variety was associated with learning agility. That is, individuals with more education, who had worked for more organizations and/or more functional areas were likely to be more learning agile (Dries et al., 2012). Although additional research is needed to clarify the causal relationship between learning agility, job challenges, and career variety, the positive associations observed to date are consistent with the notion that learning agility can be developed.

Consistent with its conceptualization, initial evidence suggests learning agility itself facilitates a leader's development and progression. Learning agility has been positively related to senior executives' gains in leadership competencies over an 18-month period (Trathen, 2007).

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KF4D Enterprise learning agility measures

Learning agility is widely seen as a multidimensional concept (De Meuse, Dai, Swisher, Eichinger, & Lombardo, 2012). This view is supported by factor analyses with both multi-rater and self-report measures (KF, 2013). KF4D-Ent assesses five learning agility dimensions: Mental agility, People agility, Results agility, Change agility, and Situational self-awareness.

Mental agility. Mental agility is an individual's tendency to be inquisitive and approach problems in novel ways. Individuals with high Mental agility enthusiastically approach complex issues, new challenges, and unfamiliar situations with broad curiosity. They seek out, explore, and investigate information to develop a broad perspective. In contrast, individuals scoring lower on Mental agility tend to focus on information that is readily apparent, take a narrow perspective, and favor existing understanding of and solutions to problems.

Mental agility involves curiosity and inquisitiveness, rather than mental ability or intelligence. Intelligence involves an individual's capacity to reason, think abstractly, and solve problems. It is related to effective performance in many roles, including leadership. However, it is distinct from Mental agility, which is also related to leadership effectiveness. Learning agility captures the willingness and ability to evolve and adapt. Empirical research has found relationships between measures of intelligence and learning agility are very small (Bedford, 2011; Connolly, 2001). Consistent with this, the correlation between scores on the Raven's Advanced Progressive Matrices, a culture-free test of fluid intelligence, and the KF4D-Ent Mental agility scale is r = .12 (p < .001, n = 16,168).

People agility. People agility involves skill in reading others and applying the insights gained when working with others. Individuals high in People agility understand the value of getting work done with and through people, being attuned to individuals' needs and motivations, and having an effective influencing style. Individuals who score low on People agility are less politically agile and prefer to let conflicts work themselves out. They are more likely to approach every situation involving people the same way.

Change agility. Change agility involves embracing change and taking well-reasoned risks in the face of that change to promote new possibilities and to take ideas from vision to reality. Individuals with high Change agility like change, continuously explore new options, and are interested in leading change efforts. They enjoy tinkering with tasks and processes, striving for continuous improvement. In contrast, individuals low on Change agility prefer well-established approaches, stability, and routine.

Results agility. Results agility refers to an individual's motivation to deliver outstanding results in new and tough situations. Individuals high in Results agility are energized by novel, tough assignments. They enjoy overcoming obstacles and value accomplishing things against the odds. Embracing challenges and driving to succeed are hallmarks of high potential leaders (Ready, Conger, Hill, & Steckler, 2010). Those lower on Results agility prefer attainable and well-understood, perhaps routine, goals.

Situational self-awareness. As previously discussed in Section 3 of this manual, Situational self-awareness (SS) involves an individual's ability to regulate emotions, accept circumstances, live in the moment, and reserve judgment. High SS people are expected to have improved self-regulation of physiological reactions, thoughts, behaviors, and emotions (Glomb, Duffy, Bono, & Yang, 2011), facilitating the handling of novel and changing situations. Across studies and measurement instruments, SS has repeatedly shown compelling evidence of construct validity and has displayed key correlations with many other psychological constructs and outcomes (Haigh et al., 2011; Feldman et al., 2007). Situational self-awareness and mindfulness measures correlate positively with curiosity

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and exploration, cognitive flexibility, emotional regulation, mood repair, and positive affect (Kumar et al., 2008; Johnson, 2007). The capacity to maintain a non-judgmental awareness of one's inner state enables individuals to navigate unfamiliar situations and novel challenges.

Criterion-related validity

Criterion-related validity is a common form of assessment validation that is based on showing that assessment scores are related to one or more desired outcomes. In introducing the concept of learning agility, we summarized prior criterion-related validity research establishing that learning agility is linked to a number of career-related outcomes that are important to individuals and organizations. Here, we describe research examining how the KF4D-Ent measures of learning agility relate to valued outcomes, including management level, work engagement, and organizational commitment, as well as work experience.

Learning agility and advancement. Table LAADVANCE displays *effect sizes* for the differences in score for Individual contributors against each higher organizational level. This is the foundation of differentiation of those who have advanced from those who have not.

More specifically, an effect size is a quantitative measure of the strength of a phenomenon, in this case, the standardized mean difference between groups. An effect size can be interpreted as small, medium, or large, depending on its context. A commonly used interpretation is as follows: an effect size of 0.2 is considered a small effect, 0.5 a medium effect, and 0.8 and up a large effect (Cohen, 1988).

A pattern of positive, increasing effect sizes indicates that scores on the learning agility scales increase as an individual's level in the organization increases. Near-zero effects would show that the learning agility measures were unrelated to organizational level, and a trend of negative (particularly increasingly negative effects) would mean that learning agility decreases with an individual's level in the organization.

In Table LAADVANCE, **bold** indicates a statistically significant difference between the Individual contributors and the contrasted leadership group. The results show that there were progressively higher average scores for persons who have advanced to the next level for all learning agility scales. Most measures have medium to large effect sizes. This indicates that individuals who score higher on the KF4D-Ent learning agility scales, on average, are similar to those who have successfully advanced in organizations, supporting the validity of these scales as an indicator of career success.

Table LAADVANCE. Effect sizes for different position levels (Individual contributor *N* = 1002)

	INDIVIDUAL CONTRIBUTOR TO FIRST LEVEL LEADER (*N* = 4111)	INDIVIDUAL CONTRIBUTOR TO MID-LEVEL LEADER (*N* = 4601)	INDIVIDUAL CONTRIBUTOR TO FUNCTIONAL LEADER (*N* = 4968)	INDIVIDUAL CONTRIBUTOR TO BUSINESS UNIT LEADER (*N* = 4842)	INDIVIDUAL CONTRIBUTOR TO SENIOR FUNCTIONAL EXECUTIVE (*N* = 3385)	INDIVIDUAL CONTRIBUTOR TO SENIOR BUSINESS EXECUTIVE (*N* = 1456)
Mental agility	**.137**	**.267**	**.436**	**.495**	**.560**	**.635**
People agility	**.095**	**.258**	**.295**	**.402**	**.435**	**.470**
Change agility	**.155**	**.282**	**.418**	**.572**	**.626**	**.704**
Results agility	**.153**	**.299**	**.374**	**.441**	**.474**	**.571**
Situational self-awareness	**.099**	**.143**	**.170**	**.236**	**.227**	**.272**

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Learning agility, work engagement, and organizational commitment. Work engagement, the amount of discretionary effort an individual is willing to expend toward their work, is a critical component of leadership performance. In a recent meta-analysis, work engagement has been demonstrated to provide substantial prediction of task and contextual work performance (M_r = .43 and .34, respectively), as well as prediction of organizational commitment (M_r = .31; Christian, Garza, & Slaughter, 2011).

In Table LAENGAGE, correlations of KF-Ent learning agility measures with work engagement and organizational commitment are displayed. In addition to the association with advancement described above, learning agility is an important predictor of work engagement. This indicates that, in addition to differentiating by organizational level, many scales also differentiate those who are likely to be better, committed performers because they are more engaged in their work. For work engagement, correlations are reported both raw and corrected for the reliability of the criterion variable. Correlations between learning agility scales and organizational commitment are lower. As might be expected, individuals who thrive on change may be more engaged with their work and not necessarily highly committed to a specific organization. Nevertheless, both People agility and Results agility have small positive relationships with organizational commitment.

Table LAENGAGE. Correlations of learning agility scales with work engagement and organizational commitment

		Work engagement r'_{tt} = .72		Organizational commitment r'_{tt} = .73	
	N	Raw	Corrected	Raw	Corrected
Mental agility	26201	.246	.290	.049	.058
People agility	26201	.144	.169	.146	.172
Change agility	26201	.216	.255	.048	.057
Results agility	26201	.351	.413	.170	.200
Situational self-awareness	26201	.062	.073	.090	.106

Multiple regression using work engagement as the dependent variable and the five learning agility scales as the predictors indicates that each learning agility scale uniquely predicts work engagement and that learning agility scales collectively account for a meaningful part of the variance in work engagement (Multiple R = .391, (F [5, 26195] = 946.175, p < .000). Mental agility, Results agility, People agility, and Situational self-awareness each uniquely account for significant variance and collectively account for a meaningful part of the variance in organizational commitment (Multiple R = .212, (F [4, 26196] = 308.223, p < .000).

Learning agility and work experience. It is perhaps axiomatic that the accumulation of work experience is essential for ongoing career success and advancement in an organization. Naturally, experience is a function, in part, of the passage of time. However, personal characteristics are also likely contributors to the acquisition of experience. We tested the incremental contribution of learning agility to the passage of time in the acquisition of two classes of work experience.

Quantitative and qualitative approaches to understanding work-related experience are broadly recognized and used. Initially, time-based measures of experience were utilized in research and applied to talent management work to capture the quantity of individuals' work-relevant experience. However, limitations of quantitative measures were identified. These included that two individuals

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with the same amount of job or career tenure may differ in terms of the content, quality, and breadth of their experiences. In addition, research demonstrated that varying types of experiences have different potential for learning and development (McCauley, Ruderman, Ohlott, & Morrow, 1994). Consequently, best practice now involves going beyond traditional time-based measures of tenure and experience for assessing the developmental quality of experience (Quinones, Ford, & Teachout, 1995; Tesluk & Jacobs, 1998).

In examining how learning agility contributes to gaining two kinds of qualitative experiences, we controlled for participants' self-reported years of full-time work experience. First, "horizontal experience" is captured by Perspective. It represents the leadership "variations" the participant has gained from working in different organizations, industries, functions, roles, countries, etc. Perspective helps leaders move beyond a narrow "the way we do things here" mindset and have a broader set of approaches and ways of viewing work. Second, the extent to which a leader has experience with seminal challenges that have been found to be particularly developmental is measured by Key challenges. Key challenges also reflect the leader's role in the challenge—e.g., participant, leader, or sponsor. Not every leader will face each challenge during their career.

For each dependent variable, a hierarchical multiple regression was completed with the number of years of work experience entered first. Our sample reported a mean of 18.6 years of full-time work experience, with substantial variance (*SD* = 8.18). For both Perspective and Key challenges experience, learning agility measures accounted for incremental variance in experience accounted for beyond years of full-time work experience. In each case, Mental agility, People agility, Results agility, and Change agility were significant predictors. For Key challenges experience, learning agility measures accounted for more variance in acquisition of experience than did the passage of time.

Table LAEXPREGRESS. Summary of hierarchical regression analysis for variables predicting experience

Perspective experience					
Variable	***R***	**Δ*R2***	***F***	***df***	***sig***
Years of work experience	.430	.185	6271.302	1, 27694	<.000
Learning agility	.481	.047	1391.809	6, 27689	<.000
Key challenges experience					
Variable	***R***	**Δ*R2***	***F***	***df***	***sig***
Years of work experience	.319	.102	3140.543	1, 27694	<.000
Learning agility	.469	.118	1298.850	6, 27689	<.000

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Fairness and group differences

An important question to examine is how various sub-groups score on assessment tools. Fairness of assessments is a markedly important objective at Korn Ferry, and assessments are designed not to disadvantage any group in the intended use of the assessment. In selection contexts, adverse impact occurs when employee selection procedures used in making employment decisions have the effect of selecting individuals belonging to a historically disadvantaged group at a rate that is substantially lower than that of the group with the higher selection rate. Adverse impact may occur due to the characteristics of an assessment tool or other components included in the selection process, or, due to characteristics of the labor pool, recruitment practices, or other process factors.

Korn Ferry has carefully evaluated scores on the KF4D-Ent measures of learning agility for group differences. A typical way of describing the potential for adverse impact at the mean is in terms of effect size, comparing individuals from historically disadvantaged groups with the majority group. An effect size can be interpreted as a small, medium, or large difference in average score.

Our goal is to keep group differences to a minimum. To place the effort in context, a review of the literature (Hough et al., 2001) describes cognitive ability test effect sizes of up to -1.0, resulting in substantial disadvantage to some minority groups. By contrast, non-cognitive, or trait-based, measures tend to have far smaller effect sizes, with most near zero and some ranging up toward absolute values of .30. In general, these are far smaller effect sizes. The KF4D-Ent measures of learning agility are non-cognitive characteristics. In general, with standard and reasonable uses of assessments, Cohen's δ effect sizes having absolute values ≤ .25 are unlikely to provide either substantial advantage or disadvantage for any group.

Data sources

All learning agility data for which individuals reported Ethnicity (ETH) and Gender (G) were used in the analysis in order to maximize sample sizes of underrepresented groups. In each analysis, though sample sizes vary, the maximum available cases with complete data were used in order to maximize our ability to arrive at stable inferences. Reporting of ethnicity is required only in the US and is optional for participants. Sample sizes are reported below in Table LASAMPLE.

Table LASAMPLE. Sample sizes for group differences analyses for ethnicity and gender

	LEARNING AGILITY
Total Ethnicity *N*	5713
White	4572
Hispanic or Latino	287
Black or African American	236
Asian	618
Total Gender *N*	5865
Male	3738
Female	2127

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Analytic strategy

Data were analyzed using a repeated-measures multivariate analysis of covariance (MANCOVA). Learning agility assessment scores served as dependent variables in each analysis. Management level, full-time work experience (years), categorical education, categorical employer size, categorical industry, and categorical job function were included as covariates. These served to isolate the effects of gender and ethnicity and avoid spurious findings or non-findings based on related omitted variable bias and/or unequal cell sizes. A single simultaneous gender and ethnicity analysis was conducted to isolate effects. Two post-hoc analyses were completed, one for gender and one for ethnicity. We report standard deviation unit discrepancies (Cohen's δ) from reference groups and the 4/5ths "impact ratio" (IRA) consistent with EEOC guidelines.

Results

Post-hoc contrasts for gender reveal minimal mean differences and implied impact ratios, as shown in Table LAGENDER. No pairwise contrast exceeds the 4/5ths conventional threshold beyond which differences are seen as practically problematic; impact ratios at the mean are > .89 for females. All effect sizes are < .13 (mean = -0.07, median = -0.09). Group differences are likely to be even smaller if typical selection thresholds well below the mean are used. These small differences are unlikely to result in meaningful differences in application.

Table LAGENDER. Gender contrasts on learning agility variables

	FEMALES *n* = 2127	
SCALE	**ES**	**IR**
Mean	-0.07	0.95
Median	-0.09	0.93

Note. Male participants served as the reference group (*n* = 3738). ES = Cohen's δ effect size. IR = Impact ratio.

We examined contrasts between Caucasians and all other ethnic groups on each scale in Table LAETHNICITY. No comparison indicates a potential impact ratio < .90 at the mean for a historically disadvantaged group. No effect size was greater in magnitude than -.12. Group differences are likely to be even smaller if typical selection thresholds well below the mean are used. These small group differences are unlikely to result in meaningful group differences in application.

When evaluated in aggregate, learning agility scales are unlikely to meaningfully disadvantage any group.

Table LAETHNICITY. Ethnicity contrasts on KF4D variables

	AFRICAN AMERICAN *n* = 236		HISPANIC-LATINO *n* = 287		ASIAN *n* = 618	
Scale	**ES**	**IR**	**ES**	**IR**	**ES**	**IR**
Mean	0.01	1.02	0.02	1.02	-0.12	0.90
Median	-0.02	0.98	0.03	1.03	-0.11	0.91

Note. Caucasian participants served as the reference group (*n* = 4572). ES = Cohen's δ effect size. IR = Impact ratio.

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Appendix B: Risk factors

Overview

Promising and successful leaders and professionals sometimes lose momentum in their careers. Rather than steadily progressing, they may stall, stumble, or drift off course. Such derailment, which may affect as many as 50% of leaders (Kaiser, LeBreton, & Hogan, 2015), results in high costs, lost time/productivity, and other undesirable consequences for both employers and the individuals who have derailed (Benson & Campbell, 2007; Lombardo, Ruderman, & McCauley, 1988; Van Velsor & Leslie, 1995). In addition to the millions of dollars of direct and indirect financial costs, derailed managers may fail to build cohesive teams, erode the morale of coworkers, damage customer relationships, and fail to meet business objectives (Bunker, Kram, & Ting, 2002; Hughes, Ginnett, & Curphy, 2008). While derailment may be precipitated by events such as disappointing business outcomes, root causes can often be traced to an inability to self-manage (Kaiser et al., 2015; Vredenburgh & Brender, 1998) and/or interpersonal deficiencies (Benson & Campbell, 2007), suggesting individual differences are an important determining factor. Groundbreaking research in the 1980s identified personality traits as important antecedents of management derailment (Hogan, Hogan, & Kaiser, 2010). Recent reviews (O'Boyle, Forsyth, Banks, & McDaniel, 2012; Spain, Harms, & LeBreton, 2014) and special issues (Guenole, 2014; Harms & Spain, 2015) highlight the interest in derailing personality traits.

KF4D Enterprise risk factors measures

KF4D Enterprise provides scores on the risk factors that signal a tendency to behave in ways that can cause problems for otherwise successful people. There may be a particularly high likelihood of these behaviors being demonstrated in stressful, ambiguous, or complex situations.

A high score on a risk factor provides an early indicator that proactive development may be helpful. Evidence of risk factors indicates a possible tendency toward certain behavior; they are not destiny. Some individuals who score high on risk factors will not encounter situations that trigger potentially problematic behaviors. Others, equipped with awareness of their risk factors, may expand their repertoire of behaviors and avoid defaulting to potentially problematic patterns when faced with challenging circumstances. Consequently, risk factors scores are not intended to be used in employment decisions. They are intended for individual insight and development purposes only.

Each risk factor scale uses profiles or configurations of scores on traits or on traits and drivers. These traits and drivers are drawn from the KF4D traits and drivers scales. Consequently, to a large extent, the risk factors are grounded in the Big Five and related models and approaches to understanding personality. Drivers have been incorporated into risk factors to address calls to provide greater insight into how personality affects workplace behavior, particularly behavior that is detrimental to others (Spain, Harms, & LeBreton, 2013). The risk factors are not based on nor intended to reflect taxonomies of clinical personality disorders. That is, they are not designed to, nor is it likely they would reveal, impairments in mental health. In the following sections, each of the risk factors is described and literature relevant to them is reviewed. We also provide an empirical analysis of their relations with outcomes, and review group differences.

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Avoidant. Avoidant involves a tendency to be reluctant to take charge and work with others. Effective professionals and leaders appreciate and seek out collaboration and teamwork to gain support, make tough decisions, and accomplish work successfully. Individuals who have high scores on Avoidant may be resistant to take a stand, or they may avoid complicated, difficult, or conflict-ridden situations, even when active collaboration is critical for success. Leaders who are highly avoidant have been described as "passively destructive" due to their uncommunicative and aloof tendencies (Leary, Green, Denson, Schoenfeld, Henley, & Langford, 2013).

Constructs similar to Avoidant have been linked to a variety of negative work outcomes, particularly for those who work with highly avoidant leaders. For example, Leary, Green, Denson, Schoenfeld, Henley, and Langford (2013) found that leaders' scores on an analog of Avoidant correlated with employees' burnout, which the authors attribute to the emotional exhaustion and cynicism which may stem from working for this type of passive leader. In a related study, Treglown, Palaiou, Zarola, and Furnham (2016) found that employees with elevated Avoidant-like leanings, such as the tendency to avoid social situations out of fear of rejection, were more likely to experience workplace burnout. Khoo and Burch (2008) found that an analog of Avoidant was significantly negatively correlated with transformational leadership, a charismatic style characterized in part by ability to establish and communicate a vision which engages and connects followers to broader organizational goals. That is, leaders high on Avoidant-like characteristics are less likely to have a leadership style that inspires and engages their direct reports. Past research also has found that leaders with Avoidant characteristics appear to experience slower times to promotion compared with others who did not have this risk factor (Furnham, Crump, & Ritchie, 2013).

Closed. Closed refers to a tendency to be dismissive of differing perspectives and rigid in thinking or approach, especially when it involves people, ideas, or solutions that seem quite different from one's own views. Effective leaders are open to the perspectives and ideas of others. In contrast, being Closed makes it more difficult to respond to the need for change or to cultivate new ideas that can enhance performance of the leader or team and improve decision making. Rokeach (1960) described Closed-minded in his classic discussion of dogmatism. More recently, it has been discussed as the need for cognitive closure (Kruglanski & Webster, 1996) and closed-minded or dogmatic cognition (Price, Otatti, Wilson, & Kim, 2015). It also touches upon intellectual humility (Leary, Diebels, Davisson, Jongman-Sereno Isherwood, Raimi, Deffler, & Hoyle, 2017), the extent to which people recognize that their beliefs may be wrong and others may be right.

Closed has implications for information seeking and processing, teamwork and social norms, as well as confirmation bias. Persons high in scores on Closed characteristics have been found to limit careful consideration of issues and act with reduced information, sometimes jumping to conclusions (Kruglanski & Freund, 1983). In information processing, active open-minded thinkers appear to gather more information and are able to make more accurate forecasts in estimation tasks (Haran, Ritov, & Mellers, 2013). In problem solving, persons with a Closed style may consider fewer alternatives (Mayseless & Kruglanski, 1987). The construct is also related to attitudes toward diversity (Kruglansli, Shah, Pierro, & Mannetti, 2002), with high Closed status related to a preference for homogeneity in teams and clear norms. Ottati, Price, Wilson, and Sumaktoyo (2015) found that closed-minded cognitions may be a particular risk for those with high self-perceptions of expertise or in more expert roles, where a more closed-minded cognitive style supporting prior expectations is the social norm. In a work world that is increasingly diverse and dynamic, challenges faced by persons with a closed style are likely to increase.

Defensive. Defensive is the propensity to be sensitive and self-protective. This may negatively affect individuals' ability to manage relationships or handle criticism. Individuals with Defensive

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leanings often have an external locus of control, characterized by diminished personal agency and the belief that situations are controlled by external forces or people (Neal, Weeks, & DeBattista, 2014). When faced with what appears to be a lack of control or personal threat to their competence, autonomy, self-esteem, significance, or well-being (Felps, Mitchell, & Byington, 2006; In Touch..., 2006), Defensive individuals may lash out in a variety of ways. For example, they may have difficulty with mood regulation, express denial, become explosive, blame others, exact revenge, or they may withdraw or "implode" by turning inward (Felps et al., 2006; Gordon, 1988). These behaviors can negatively impact others, resulting in a lack of trust, and even inciting defensive or retaliatory responses (Felps et al., 2006).

Egotistic. Egotistic is the tendency to seem arrogant and entitled. Individuals with Egotistic leanings may be perceived as highly ambitious, grandiose, self-centered, and unempathetic in ways that can strain interpersonal relationships and cause blind spots. Individuals with these leanings tend to self-enhance, and may thus appear charming, engaging, and confident, at least in the short-term or under conditions of minimal acquaintance (Grijalva, Harms, Newman, Gaddis, & Fraley, 2015; Furnham et al., 2013; Spain et al., 2013). Over time, however, more negative characteristics emerge, such as hostility towards criticism, self-centeredness, arrogance, and lack of care—or even disdain—for others, ultimately leading to the erosion of interpersonal trust and relationships (Spain et al., 2013; Grijalva et al., 2015). Unsurprisingly, these leaders are often not open to feedback or developmental suggestions (Spain et al., 2013). Additionally, in a study of CEOs, Resick, Whitman, Weingarden, and Hiller (2009) found that leaders with Egotistic tendencies were less likely to use contingent reward leadership, which the authors attributed to a lack of concern for others or interest in developing equitable exchange relationships with employees. This suggests that Egotistic leaders are less likely to proactively recognize and reward employees when objectives are met (Bass & Avolio, 1993b). Over time, employees who are not recognized may become discouraged and disengaged. In another study of CEOs with these inclinations, Chatterjee and Hambrick (2007) found a greater likelihood of grandiose strategic planning, leading to variability in organizational performance.

Micro-managing. Micro-managing is the extent to which leaders stay involved in too many decisions and perform detailed work themselves, rather than delegating. Leaders who score high on micro-managing may have difficulty giving up control and feel compelled to be overly directive due to their lack of ability to trust others. Effective leaders allow their team members to succeed through their own efforts and skills.

Research has related strong scores on micro-managing to a number of negative outcomes. Leaders who micro-manage are often indifferent to the impact that this style can have, including negative outcomes for employees, such as cynicism, issues with self-esteem, lack of goal clarity, and diminished creativity (Alvesson & Sveningsson, 2003). Research suggests that those who tend to micro-manage may exploit rather than develop people, given their tendencies to lack confidence in others and control rather than inspire and motivate (White, 2010). This may be due to a lack of awareness of others' motives. Additionally, individuals with a propensity to micro-manage have a low tolerance for mistakes, and may even blame others for their own shortcomings or missteps (White, 2010).

Opportunistic. Opportunistic is the propensity to seek power and status while exhibiting an inconsistent work ethic and an inclination to cut corners. This risk factor has some degree of overlap with the "dark side" personality known as Machiavellianism, characterized by a willingness to exploit others and engage in impression management in pursuit of personal power and gains (Spurk, Keller, & Hirschi, 2016; Spain et al., 2013). Individuals with high scores on Opportunistic may quickly and unpredictably shift priorities to pursue rewards and advantages that are self-serving. Such leaders are frequently motivated by status, prestige, and the trappings of success; however, they often lack

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the drive and credibility to advance beyond a certain point, particularly when an inspirational or emotionally connected style is required (Wille, De Fruyt, & De Clercq, 2013).

Machiavellianism has been shown to negatively predict organizational citizenship behaviors and pro-social behaviors, likely due to the tendency for these leaders to be self-interested and unconcerned with the organization as a whole (Judge, Piccolo, & Kosalka, 2009; Spain et al., 2013). This type of leadership has also been associated with unethical decision making (Kish-Gephart, Harrison, & Trevino, 2010).

Restrained. Restrained is the degree to which a person is fearful of change and shuns risk. Leaders who are highly restrained may apply routine, staid solutions to new or complex problems, regardless of the situation. This may result in their not being bold, adventurous, or innovative when the situation demands it. Leaders who self-identified as cautious and reluctant to take risks experience slower time to promotion compared to those without these leanings (Furnham et al., 2013).

Restrained-like constructs are also negative predictors of additional workplace outcomes. For example, Moscoso and Salgado (2004) found that a timid, shy type style negatively correlated with both task and contextual performance. In a study involving senior managers and chief executives, Khoo and Burch (2008) found that a scale analogous with the Restrained construct was a negative predictor of transformational leadership. This finding was unsurprising, given that transformational leadership is characterized by behavior that inspires, motivates, and encourages reasoned risk-taking, which is counter to the behavior of Restrained leaders. Finally, Palaiou, Zarola, and Furnham (2016) found that a scale associated with cautious and Restrained-type behavior predicted negative organizational attitudes among employees in the study.

Social pleaser. A Social pleaser tends to focus solely on the rewarding, sensation-seeking aspects of social interactions. These leaders may be excessively gregarious and easygoing, and place more importance on pleasant exchanges than interpersonal effectiveness. Consequently, Social pleasers tend to avoid taking charge, asserting their views, and persuading others, which could lead others to perceive them as pushovers (McCord, Joseph, & Grijalva, 2014). Leaders with high sociability may not simply be sociable by nature, but rather highly sensitive to the rewards associated with pleasant interactions (Lucas, Diener, Grob, Suh, & Shao 2000). Therefore, Social pleasers tend to seek out social situations in pursuit of these rewards, although they may lack the interpersonal savvy to influence and build credibility. Further, highly social leaders who engage in brief and shallow conversations with many different people in an organization may not provide a clear enough strategic vision for their direct reports. This can result in a lack of clarity (Judge et al., 2009). Finally, in seeking social interactions without an instrumental purpose beyond the immediate reward, Social pleasers may have short-lived enthusiasm for ideas, people, and/or projects (Beauducel, Brocke, & Leue, 2006). This may cause them to make frequent or hasty changes in direction (Judge et al., 2009).

Solitary. Solitary is the tendency or need to be overly self-reliant and autonomous. Effective leaders and team members value the involvement of others, while those with Solitary inclinations prefer to work independently, without engaging others in their work, goal setting, and decision making. They are often not motivated by the need for interpersonal interaction (Hogan & Warrenfeltz, 2003) to the extent that others are, and have a clear preference for independence. Person-job fit conceptualizations suggest that success for a person with Solitary preferences may be particularly dependent on the context of the work, and the impact of Solitary may well be moderated by the nature of the role. Solitary people are less likely to adopt group values and norms as their own and may have difficulty cultivating trust among team members (Drescher, Korsgaard, Welpe, Picot, & Wigand, 2014). Hirschfeld, Thomas, and Bernerth (2011) present evidence that indicates differences

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between autonomous and team-oriented proactivity. Persons with Solitary preferences are likely particularly suited to success in more independent roles. Yet, it is also true that, increasingly, many work roles, particularly in leadership, require maintaining a team-oriented, collective view of goals and success. This could present challenges for someone tending towards Solitary.

Suspicious. The tendency to be overly skeptical, fearful, or mistrustful. Effective leaders are inclined to trust others and view their motives and behaviors in a positive light. Suspicious leaders may exhibit a lack of trust in others' intentions, leading them to assume the worst rather than giving others the benefit of the doubt. A review of the literature vis-à-vis constructs related to the Suspicious risk factor reveals consistently undesirable workplace relationships and/or outcomes. A study by Benson and Campbell (2007) involving a sample of mid-level leaders found significant negative correlations between a Suspicious-like disposition and all four composites (Business, People, Results, and Self-leadership) of a competency-based multi-rater measure of leadership performance. In a longitudinal study of military school cadets, Harms, Spain, and Hannah (2011) also found significant negative correlations between an analog of Suspicious and measures of cadet leader development over a four-year period. These same researchers (2011) posit that elevated levels of the Suspicious risk factor may have made the cadets skeptical of feedback, and perhaps unwilling to use it to improve and develop over time. As leaders with Suspicious leanings may externalize responsibilities by blaming others and hiding behind rules and regulations (De Fruyt et al., 2009), it is unsurprising that a study found a Suspicious-like scale negatively predicted positive organizational attitudes, and positively predicted negative organizational attitudes (Palaiou et al., 2016). Finally, a study by Furnham, Trickey, and Hyde (2012) explored relationships between risk factor scales and a measure of six occupational scales (service orientation, stress tolerance, reliability, clerical potential, sales potential, and managerial potential). Significant negative relationships were observed between the Suspicious-like scale and all six of the occupational scales, suggesting that leaders who tend to be cynical, distrustful, and skeptical may not be well-suited for a variety of professions, as they are likely difficult to work with and for (Furnham et al., 2012).

Volatile. Volatile reflects the extent to which individuals are likely to express emotions strongly and unpredictably, without apparent concern for the impact on others. Effective leaders tend to be steady, even-tempered, and composed. Leaders with high scores on Volatile may encounter difficulties building trust and confidence among the people with whom they work because they behave unpredictably. These individuals may be more vulnerable to the pressures of external events and internal reactions, leading to sudden displays of emotion.

Research involving similar measures of emotional volatility points to a range of undesirable outcomes stemming from the presence of this risk factor. A meta-analysis by Gaddis and Foster (2015) found that managers with volatile tendencies tend to lack the trust of others at work, fail to use sound judgment to make decisions, and are generally considered to be ineffective as leaders. These authors (Gaddis & Foster, 2015) also found that emotionally volatile managers tend to have more difficulty adapting to shifting circumstances and trying new approaches, and that they may also be viewed as socially inappropriate and interpersonally challenged. Furnham et al. (2012) conducted a study to explore correlations between trait-based risk factors and a range of occupational success factors and found that emotional volatility was significantly and negatively correlated with nearly every success factor, including managerial potential, service orientation, and reliability. Additionally, several studies have found correlations between emotional volatility and having a negative attitude at work (Gaddis & Foster, 2015; Palaiou et al., 2016). Finally, there are also potential impacts on followers. For example, according to Spain, Harms, and Wood (n.d.), followers must use more emotional resources to cope with the emotional volatility of leaders with this risk factor.

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Risk factors: Relationships with workplace outcomes

As discussed in the previous section, prior research has shown that constructs measured by the KF risk factors are related to important workplace outcomes. Scoring high on risk factor-like measures is linked to a variety of negative consequences for individuals, those who work with them, and their employers. In this section, we discuss our analyses specifically examining the relationships between our risk factors scales and key outcomes.

Our objective was to examine the extent to which risk factor constructs were associated with Work engagement (WE), Management level (ML), both, or the interaction between the two. As discussed in detail in the body of this manual, work engagement is a valuable and critical determinant and proxy for work performance. Near-zero or negative relationships between risk factors and management level indicate that a high score on risk factors is adversely related to achieving higher levels of leadership.

Data were analyzed using multiple regression. Each 10-point risk factor served as a dependent variable in a separate model. *Ideas* (I) and *People* (P) composites were standardized (as done previously) and included to reduce residual variance and to arrive at deeper characterizations of each management level, such that model-implied dependent variable values (in Figures RFAV through RFVO) for each management level (C-level, Mid-level leader, Entry level contributor) reflected not only the appropriate ML value but also typical I and P values for the ML as shown in Table WAIM. To review, we assert that roles can be described in terms of being ideas vs. data oriented. The former involves goal setting, vision, and ambiguity, while the latter involves driving execution and is more often unifocused. Second, roles can also be characterized as more people or things oriented. Roles that are more people oriented require skilled and adaptive social behavior as a common component and key to success.

Model selection was conducted using manual backward elimination as done and described previously with competencies, viz., the highest-order interactions were evaluated first and main effects were evaluated subsequently and last. Full models contained interaction terms including WE x I x ML, WE x P x ML, ML x I, ML x P, WE x I, WE x P, and WE x ML. The main effects of WE, ML, I, and P were also evaluated. ML was centered at Entry level contributors (ML = 0) and WE, I, and P *z*-scores were centered at the mean (= 0), such that intercepts reflected mean values for Entry level contributors who had sample average WE, I, and P. After extracting final equations, model-implied values are graphed and displayed to aid in interpretation.

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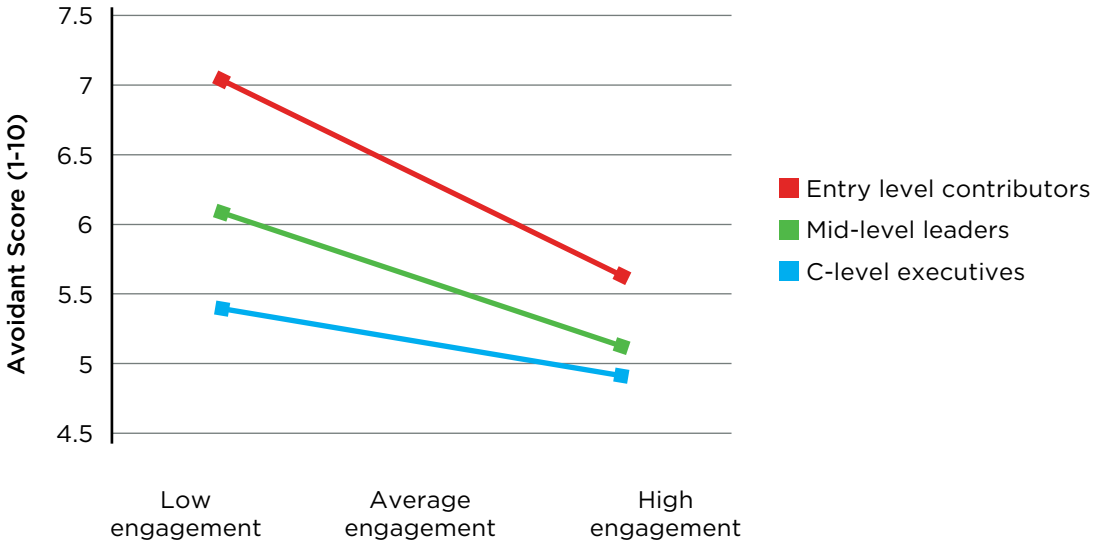
Avoidant. The final regression model accounted for 8.64% of the variance in Avoidant scores and yielded significant interaction effects including WE x P x ML (t [.003] = 5.10, $p \leq .0001$), ML x I (t [.005] = 3.50, $p \leq .001$), and WE x ML (t [.054] = 2.90, $p \leq .01$). The main effects of WE (t [.025] = -11.39, $p \leq .0001$), ML (t [.007] = -18.43, $p \leq .0001$), I (t [.020] = -9.67, $p \leq .0001$), and P (t [.014] = -18.95, $p \leq .0001$) were also significant. The pattern of effects suggests that for EICs, Avoidant typically increases as both ML and WE decrease. The negative effect of WE is attenuated at higher levels of ML, but remains negative throughout the range of available levels. Figure RFAV further elucidates findings. In general, across WE ranges, Avoidant decreases as ML increases. Avoidant is also negatively associated with WE for all MLs, although the effect is attenuated as MLs rise, such that the negative slope is a notable degree smaller for C-levels compared to EICs. In general, the notion of Avoidant as a risk factor is supported in light of its negative relationships with ML and WE, viz., results support that high scorers may be less likely to be promoted and more likely to have low WE across levels of the management pipeline.

Figure RFAV. The association between Avoidant and Engagement across management levels



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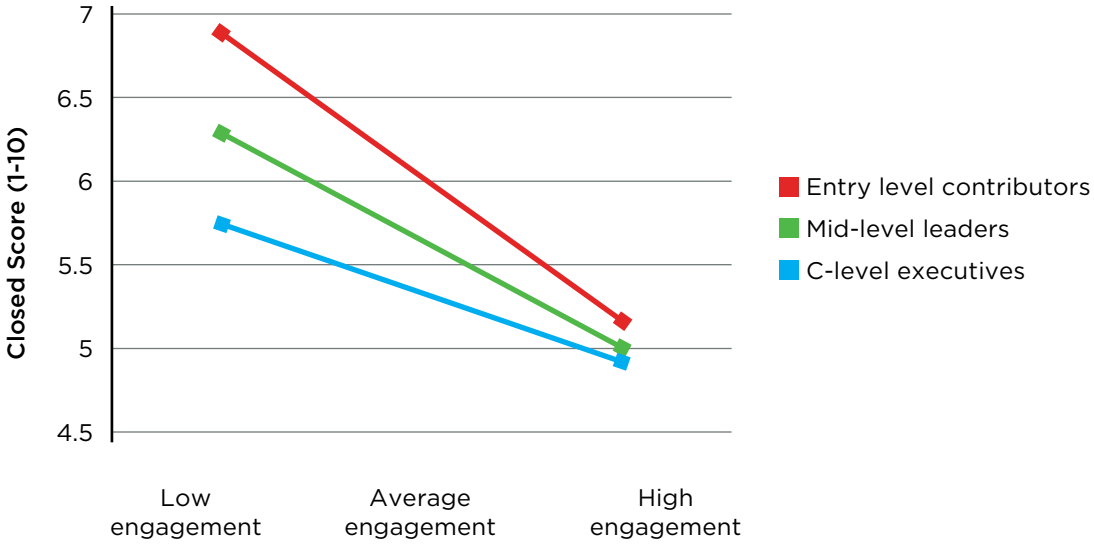
Closed. The final regression model accounted for 10.71% of the variance in Closed and yielded many significant interaction effects including WE x I x ML (t [.006] = 2.31, $p \leq .05$), WE x I (t [.007] = -4.15, $p \leq .0001$), ML x I (t [.025] = -2.83, $p \leq .01$), and WE x ML (t [.007] = 4.70, $p \leq .0001$). All main effects were also significant including WE (t [.028] = -13.49, $p \leq .0001$), ML (t [.008] = -3.81, $p \leq .0001$), I (t [.028] = -11.48, $p \leq .0001$), and P (t [.013] = -13.22, $p \leq .0001$). With respect to the primary variables of interest, both WE and ML are negatively associated with Closed, although the effect of the former is attenuated at higher levels of ML, while nonetheless remaining negative across the range of MLs. Closed is also generally negatively associated with ML and remains so across nearly all levels of WE. In general, the notion of Closed as a risk factor is supported in light of its negative relationships with ML and WE, viz., results support that high scorers are typically less likely to be promoted and more likely to have low WE across levels of the management pipeline. Results are further elucidated in Figure RFCL.

Figure RFCL. The association between Closed and Engagement across management levels



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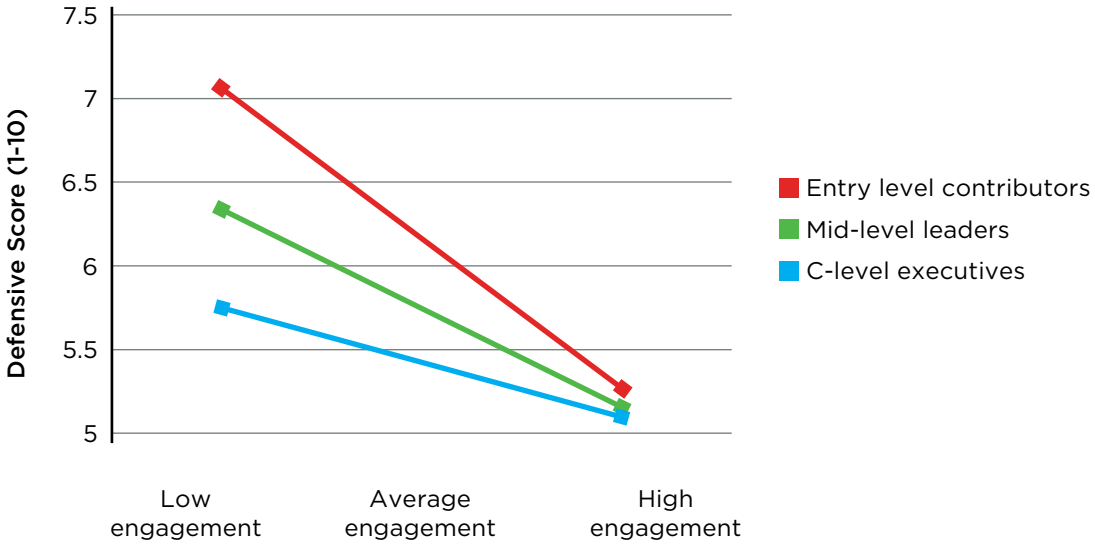
Defensive. The final regression model accounted for 3.24% of the variance in Defensive and yielded significant interactions including WE x ML (t [.006] = 5.28, $p \leq .0001$), ML x P (t [.005] = -2.71, $p \leq .01$), and WE x ML x P (t [.003] = 3.03, $p \leq .01$). Significant main effects included WE (t [.025] = -14.57, $p \leq .0001$), ML (t [.007] = -12.55, $p \leq .0001$), I (t [.012] = -3.66, $p \leq .001$), and P (t [.020] = -3.21, $p \leq .001$). The pattern of results can be examined in Figure RFDE and indicates that at all levels of WE, Defensive is notably or at least slightly negatively associated with ML. Also, at all levels of ML, WE decreases with elevated levels of Defensive. As such, Defensive is supported vis-à-vis its status as a risk factor across all levels of the management pipeline.

Figure RFDE. The association between Defensive and Engagement across management levels



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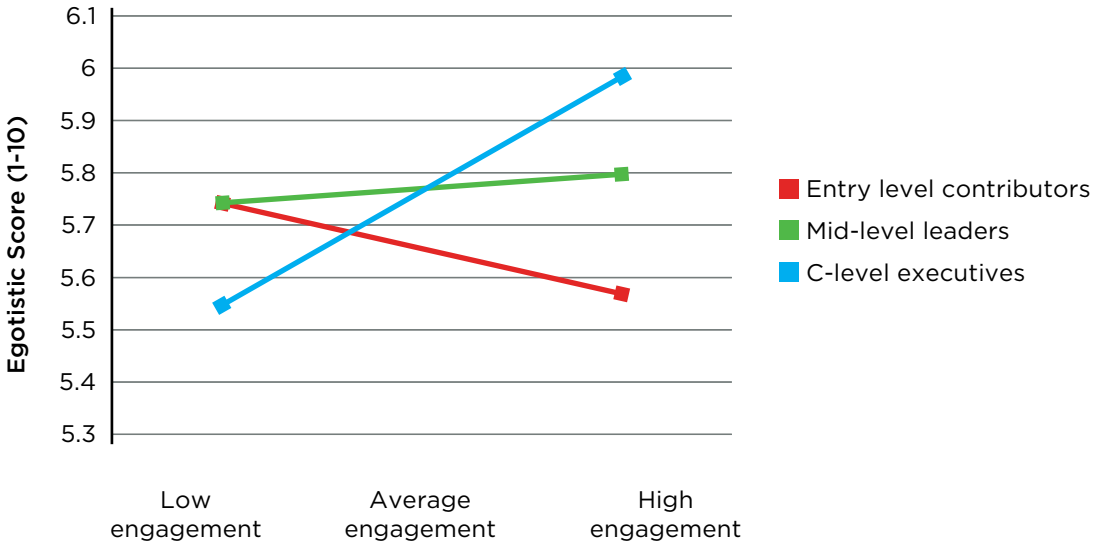
Egotistic. The final regression model accounted for 0.36% of the variance in Egotistic and yielded significant interactions including WE x ML x I (t [.006] = 2.98, $p \leq .01$), ML x I (t [.007] = -3.14, $p \leq .01$), ML x P (t [.006] = -3.45, $p \leq .0001$), WE x I (t [.024] = -3.03, $p \leq .001$), and WE x ML (t [.006] = 2.92, $p \leq .01$). Significant main effects included WE (t [.027] = -2.26, $p \leq .05$), ML (t [.007] = 2.09, $p \leq .05$), I (t [.028] = 2.50, $p \leq .05$), and P (t [.022] = 4.06, $p \leq .0001$). The pattern of results can be examined in Figure RFEG. Overall, support for Egotistic as a risk factor is perhaps best described as mixed. For entry-level roles, elevated levels of Egotistic are clearly undesirable, due to their negative relationship with WE. As one moves upward through the management pipeline, however, Egotistic becomes increasingly positively associated with WE. At the highest and average levels of engagement, Egotistic is clearly positively associated with ML.

From the literature, Egotistic would seem to have both favorable and unfavorable consequences for management professionals (Zhou, 2014). Our findings vis-à-vis Egotistic are not without considerable (at least indirect) corroboration in the literature. Chatterjee and Hambrick (2007), for example, find that CEOs with high scores on Egotistic-type measures are more strategic and tend to acquire more and larger companies. They are also more likely to initiate and complete related transactions and are faster negotiators (Aktas, de Bodt, Bollaert, & Roll, 2016). High scoring Egotistic CEOs invest more in innovation and are more likely to secure patents (Hirshleifer, Low, & Teoh, 2012). And they tend to be paid more (Ham, Seybert, & Wang, 2013). Nevertheless, Egotistic-type measures are also associated with undesirable outcomes for executives in many cases. High scores on Egotistic-type measures are associated with overinvestment, more volatile ROI, lower performance in general when they are not individually evaluated, and lower profit in many cases (Ham et al., 2013).

Figure RFEG. The association between Egotistic and Engagement across management levels



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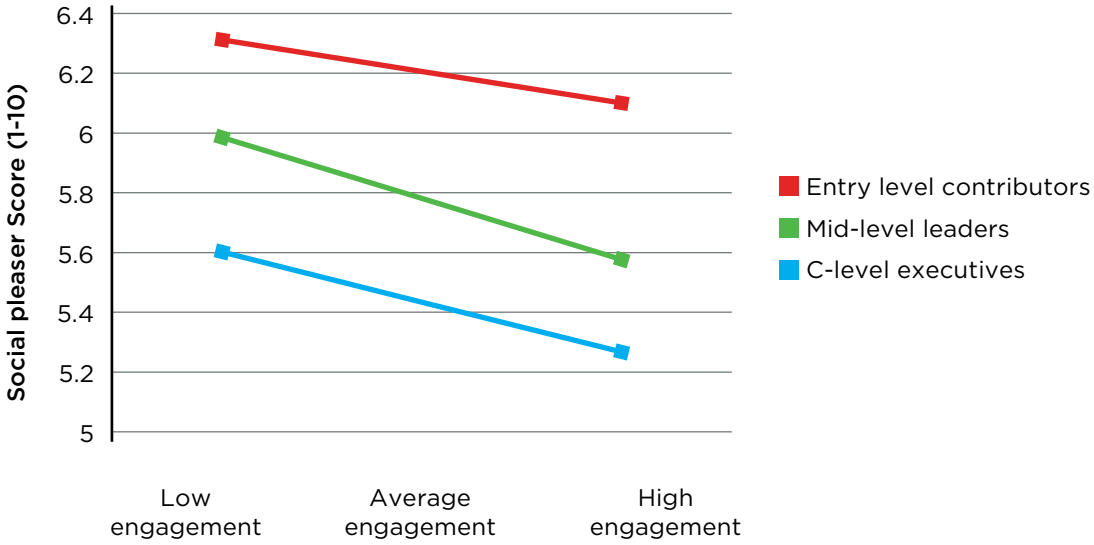
Social pleaser. The final regression model accounted for 4.43% of the variance in Social pleaser and yielded significant interactions including WE x P (*t* [.016] = -6.91, $p \leq .0001$), ML x P (*t* [.003] = -6.98, $p \leq .0001$), and WE x ML x P (*t* [.004] = 4.65, $p \leq .0001$). Significant main effects included WE (*t* [.011] = -7.24, $p \leq .0001$), ML (*t* [.004] = -21.43, $p \leq .0001$), and I (*t* [.010] = -9.85, $p \leq .0001$). The pattern of results can be examined in Figure RFSP and indicates that at all levels of WE, Social pleaser is negatively associated with ML. Also, at all levels of ML, WE decreases with elevated levels of Social pleaser. As such, Social pleaser is supported vis-à-vis its status as a risk factor across all levels of the management pipeline.

Figure RFSP. The association between Social pleaser and Engagement across management levels



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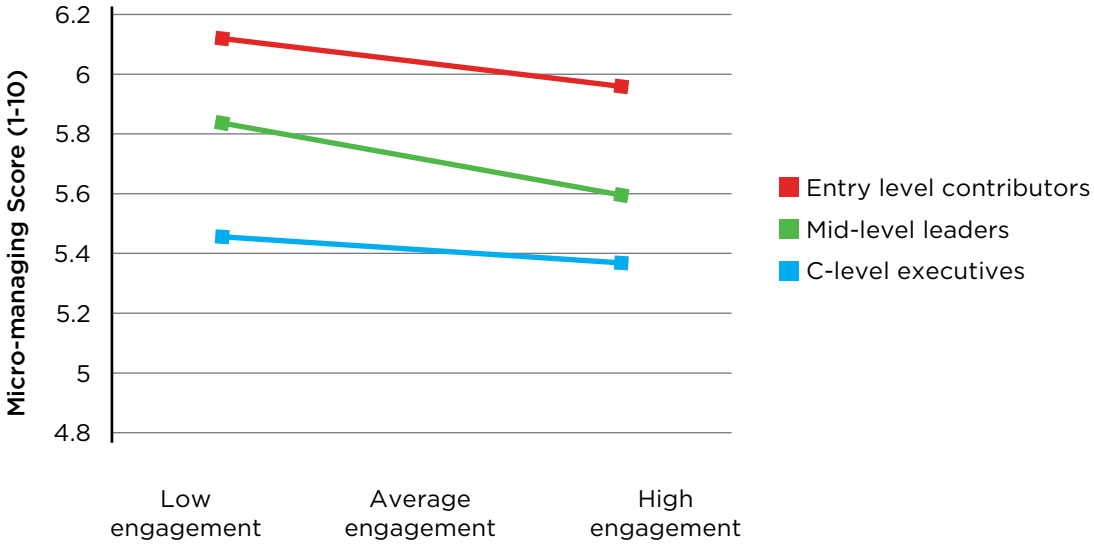
Micro-managing. The final regression model accounted for 5.63% of the variance in Micro-managing and yielded significant interactions including WE x ML (t [.006] = 2.24, $p \leq .05$), ML x I (t [.007] = -6.48, $p \leq .0001$), WE x I (t [.024] = -5.35, $p \leq .001$), and WE x ML x I (t [.006] = 2.70, $p \leq .01$). Significant main effects included WE (t [.026] = -3.20, $p \leq .001$), ML (t [.007] = -7.51, $p \leq .0001$), I (t [.026] = -4.23, $p \leq .0001$), and P (t [.012] = -7.37, $p \leq .0001$). The pattern of results can be examined in Figure RFMI and indicates that at all levels of WE, Micro-managing is negatively and notably associated with ML. Also, at all levels of ML, WE decreases with elevated levels of Micro-managing. As such, Micro-managing is supported vis-à-vis its status as a risk factor across all levels of the management pipeline.

Figure RFMI. The association between Micro-managing and Engagement across management levels



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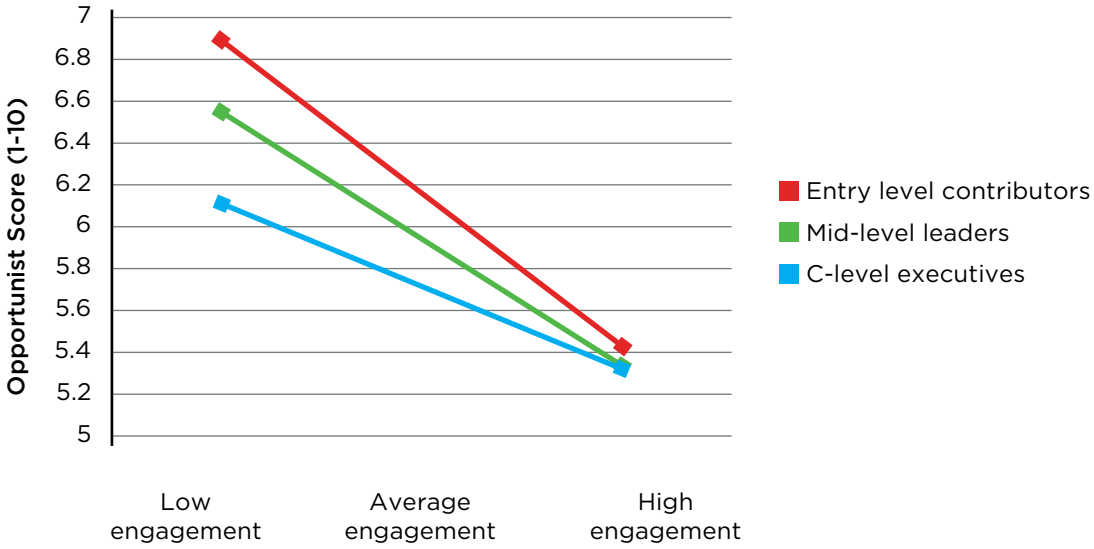
Opportunist. The final regression model accounted for 3.05% of the variance in Opportunist scores and yielded significant interaction effects including WE x I x ML (t [.004] = 4.39, $p \leq .0001$), ML x I (t [.003] = -8.29, $p \leq .0001$), WE x I (t [.016] = -4.97, $p \leq .0001$), and WE x ML (t [.006] = 2.88, $p \leq .01$). The main effects of WE (t [.023] = -14.11, $p \leq .0001$) and ML (t [.006] = -7.41, $p \leq .0001$) were also significant. The pattern of effects suggests that for EICs, Opportunist typically increases as both ML and WE decrease. In general, across WE ranges, Opportunist decreases as ML increases, although the effect is slight at the highest levels of WE. Opportunist is also negatively associated with WE for all MLs, although the effect is attenuated as MLs rise, such that the negative slope is a notable degree smaller for C-levels compared to EICs. In general, the notion of Opportunist as a risk factor is supported in light of its negative relationships with ML and WE, viz., results support that high scorers may be less likely to be promoted and more likely to have low WE across levels of the management pipeline. Results can be further examined in Figure RFOP.

Figure RFOP. The association between Opportunist and Engagement across management levels



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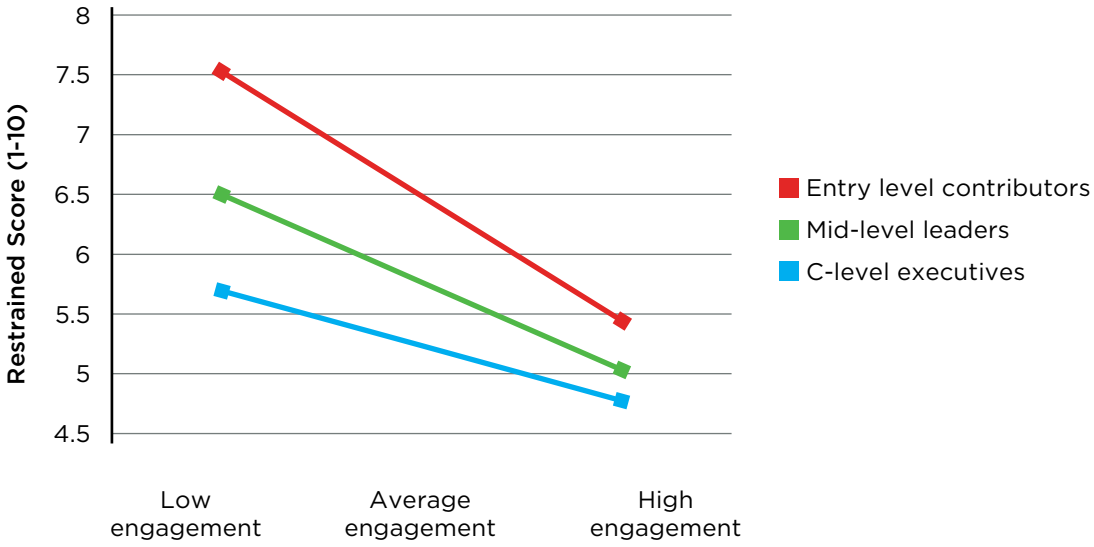
Restrained. The final regression model accounted for 8.34% of the variance in Restrained and yielded significant interactions including WE x ML (t [.006] = 4.60, $p \leq .0001$), ML x P (t [.006] = -2.90, $p \leq .01$), and WE x ML x P (t [.003] = 3.68, $p \leq .001$). Significant main effects included WE (t [.026] = -16.44, $p \leq .0001$), ML (t [.007] = -18.64, $p \leq .0001$), I (t [.012] = -16.11, $p \leq .0001$), and P (t [.021] = -4.69, $p \leq .0001$). The pattern of results can be examined in Figure RFRE and indicates that at all levels of WE, Restrained is negatively associated with ML. Also, at all levels of ML, WE decreases with elevated levels of Restrained. As such, Restrained is supported vis-à-vis its status as a risk factor across all levels of the management pipeline.

Figure RFRE. The association between Restrained and Engagement across management levels



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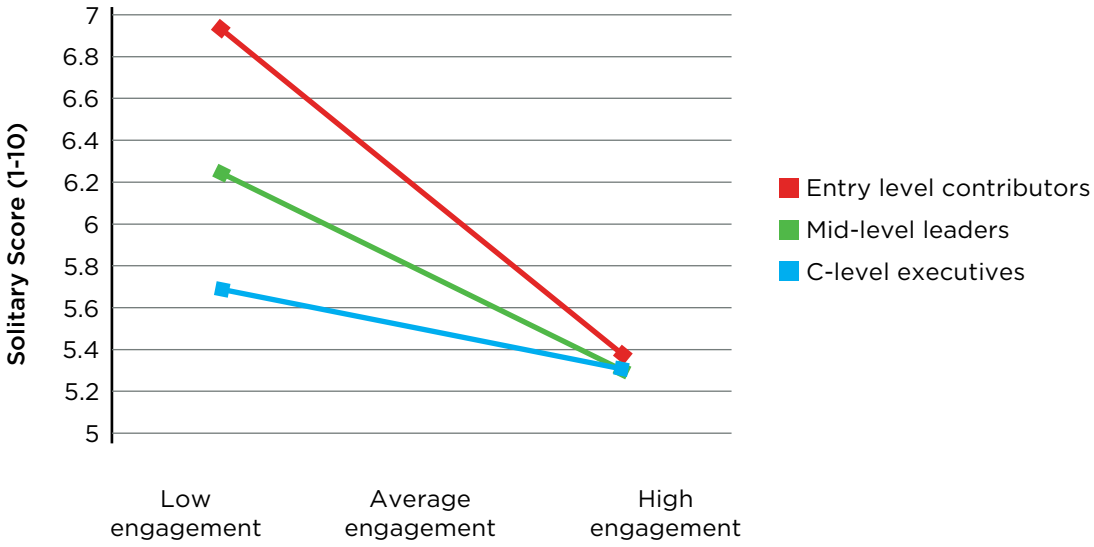
Solitary. The final regression model accounted for 1.89% of the variance in Solitary and yielded significant interaction effects including WE x I x ML (t [.003] = 4.86, $p \leq .0001$) and WE x ML (t [.007] = 5.30, $p \leq .0001$). All main effects were also significant including WE (t [.027] = -11.90, $p \leq .0001$), ML (t [.007] = -11.56, $p \leq .0001$), I (t [.015] = 3.76, $p \leq .001$), and P (t [.013] = -9.05, $p \leq .0001$). With respect to the primary variables of interest, WE is negatively associated with Solitary, although the effect is attenuated at higher levels of ML, while nonetheless remaining at least slightly negative across the range of MLs. Solitary is also generally negatively associated with ML and remains so across nearly all levels of WE. In general, the notion of Solitary as a risk factor is supported in light of its negative relationships with ML and WE, viz., results support that high scorers are typically less likely to be promoted and more likely to have low WE across levels of the management pipeline. Results are further elucidated in Figure RFSO.

Figure RFSO. The association between Solitary and Engagement across management levels



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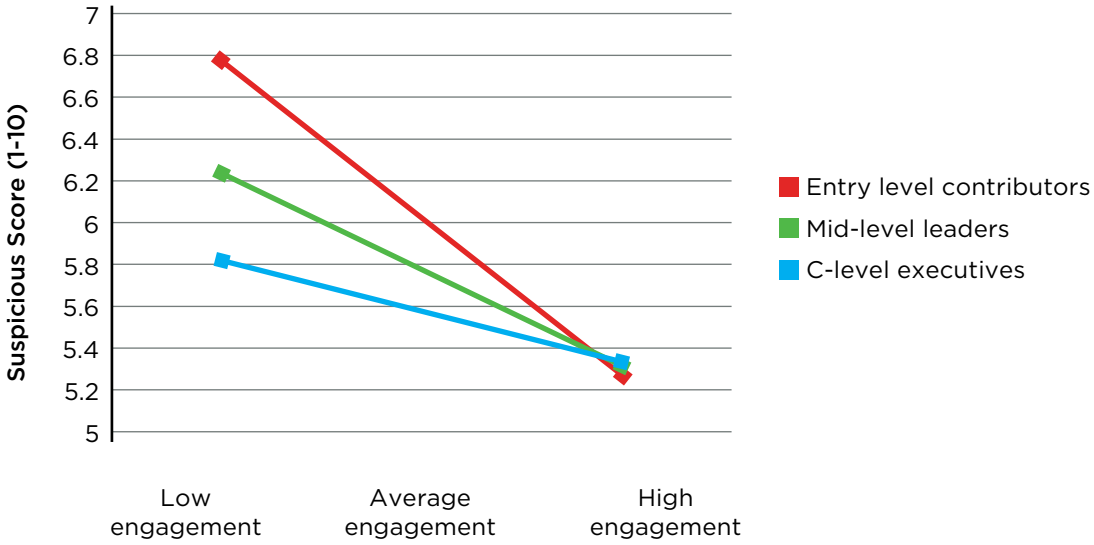
Suspicious. The final regression model accounted for 2.43% of the variance in Suspicious and yielded significant interactions including WE x ML (t [.006] = 4.36, $p \leq .0001$) and ML x P (t [.005] = -3.03, $p \leq .01$). Significant main effects were observed for WE (t [.026] = -11.71, $p \leq .0001$), ML (t [.007] = -5.49, $p \leq .0001$), I (t [.012] = -7.88, $p \leq .0001$), and P (t [.020] = -2.30, $p \leq .05$). The pattern of results can be examined in Figure RFSU and indicates that at all levels of WE, sans high WE, Suspicious is negatively associated with ML. At the highest level of WE, MLs have virtually equal model-implied scores. At all levels of ML, WE decreases with elevated levels of Suspicious. As such, Suspicious is supported vis-à-vis its status as a risk factor across all levels of the management pipeline.

Figure RFSU. The association between Suspicious and Engagement across management levels



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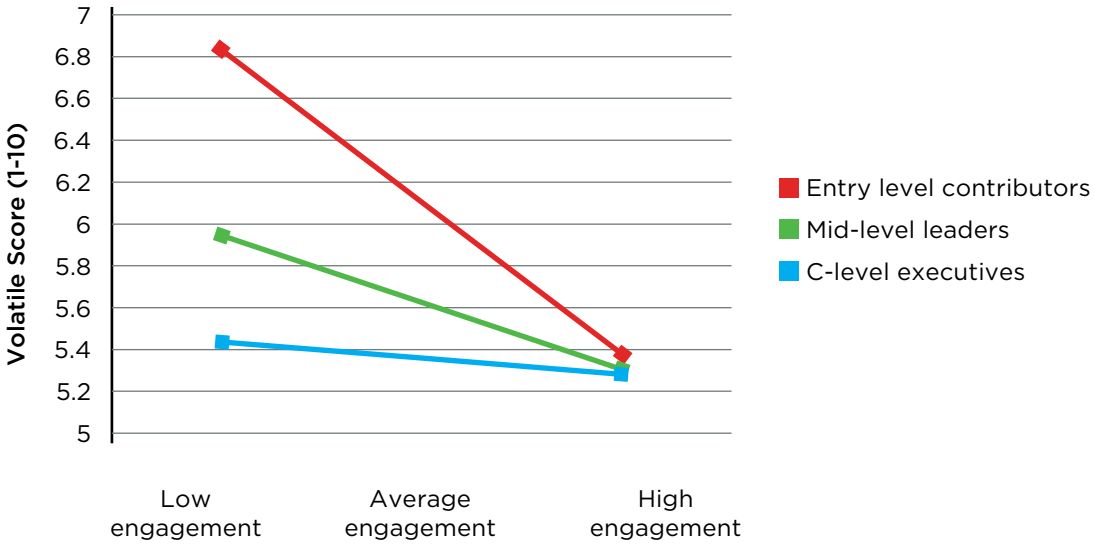
Volatile. The final regression model accounted for 2.96% of the variance in Volatile and yielded significant interactions including WE x ML (t [.007] = 6.04, $p \leq .0001$), ML x P (t [.006] = -2.62, $p \leq .01$), and WE x ML x P (t [.004] = 3.62, $p \leq .001$). Significant main effects included WE (t [.027] = -10.77, $p \leq .0001$), ML (t [.008] = -11.83, $p \leq .0001$), I (t [.013] = -7.38, $p \leq .0001$), and P (t [.022] = -5.67, $p \leq .0001$). The pattern of results can be examined in Figure RFVO and indicates that at all levels of WE, Volatile is negatively associated with ML at least slightly. Also, at all levels of ML, WE decreases with elevated levels of Volatile. As such, Volatile is supported vis-à-vis its status as a risk factor across all levels of the management pipeline.

Figure RFVO. The association between Volatile and Engagement across management levels



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Risk factors: Fairness and group differences

As previously mentioned, risk factors scores are intended for individual insight and development purposes. They are not intended to be used in employment decisions. We do recognize, however, that clients are interested in group differences that may be observed on these scales.

Fairness of assessments is a markedly important objective at Korn Ferry, and assessments are designed not to disadvantage any group in the intended use of the assessment. In selection contexts, adverse impact occurs when employee selection procedures used in making employment decisions have the effect of selecting persons belonging to a historically disadvantaged group at a rate that is substantially lower than that of the group with the higher selection rate. Adverse impact may occur due to the characteristics of an assessment tool or other components included in the selection process, or, due to characteristics of the labor pool, recruitment practices, or other process factors.

Korn Ferry has carefully evaluated the KF4D risk factors for group differences using the scoring thresholds presented in reports.

Data sources

All available data for which individuals reported ethnicity and gender were used in the analysis in order to maximize sample sizes of underrepresented groups. Gender and ethnicity were the primary variables of interest in this analysis. In each analysis, though sample sizes vary, the maximum available cases with complete data were used in order to maximize our ability to arrive at stable inferences. Sample sizes are limited as reporting of ethnicity is required only in the US and is optional for participants. Sample sizes are reported below in Table RFSAMPLE.

Table RFSAMPLE. Sample sizes for group differences analyses for ethnicity and gender

	RISK FACTORS
Total *N*	5713
White	4572
Hispanic or Latino	287
Black or African American	236
Asian	618
Total Gender *N*	5865
Male	3738
Female	2127

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Analytic strategy

In the Risk factors report, the threshold for greater concern is 8 or higher. We evaluated impact ratios using the actual counts of persons reaching this reporting threshold score of 8 or higher. We report the 4/5^{ths} rule-of-thumb "impact ratio" consistent with EEOC guidelines.

Risk factors results. Impact ratios for gender derived from the above described counts are shown in Table GENDER. No pairwise comparison exceeds the 4/5^{ths} conventional threshold beyond which differences are seen as practically problematic; impact ratios at the reporting threshold are > .96 for females (mean = 0.99, median = 0.99). All gender group differences are trivially small using this standard.

Table GENDER. Gender contrasts on KF4D variables

	FEMALES *n* = 2127
SCALE	**THRESHOLD IR**
Mean	.99
Median	.99

Note. Male participants served as the reference group (*n* = 3738). Threshold IR = impact ratio at area of greater concern in the Risk factors report.

We examine contrasts between Caucasians and all other ethnic groups on each scale in Table ETHNICITY. No pairwise contrast exceeds the 4/5^{ths} conventional threshold beyond which differences are seen as practically problematic. Impact ratios at the reporting threshold are > .98 for African Americans (mean = 1.00, median = 1.01), > .99 for Hispanic-Latinos (mean = 1.01, median = 1.01), and > .98 for Asians (mean = .99, median = .99). All ethnicity group differences are trivially small.

Table ETHNICITY. Ethnicity contrasts on KFALP Variables

	AFRICAN AMERICAN *n* = 236	HISPANIC-LATINO *n* = 287	ASIAN *n* = 618
Scale	**Threshold IR**	**Threshold IR**	**Threshold IR**
Mean	1.00	1.01	0.99
Median	1.01	1.01	0.99

Note. Caucasian participants served as the reference group (*n* = 4572). Threshold IR = impact ratio at area of greater concern in the Risk factors report.

Risk factors results have very low group differences and are unlikely to substantially disadvantage any group.

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Appendix C: Acronyms

ACO	Action oriented
AD	Adaptability
AEX	Plans and aligns*
AF	Affiliation
AG	Agility
AGR	Agreeableness
AIC	Akaike's Information Criterion
AS	Assertiveness
BALA	Balance
BET	Builds effective teams
BIC	Bayesian Information Criteria
BRE	Being resilient
BST	Balances stakeholders
CCL	Collaborative Culture
CF	Confidence
CFO	Customer focus
CHAL	Challenge
CIN	Cultivates innovation
CLEV	C-level
CMP	Competitive Culture
COL	Collaborates
COLL	Collaboration
COM	Communicates effectively
COU	Courage
CP	Composure
CR	Credibility
CT	Conscientiousness
CU	Curiosity
CVF	Competing values framework
DQU	Decision quality
DRE	Drives results
DTA	Develops talent
DWO	Directs work
EAC	Ensures accountability
EI	Emotional Intelligence
EIC	Entry level individual contributor
EIN	Drives engagement**
EM	Empathy
ES	Cohen's effect size
ETH	Ethnicity
FCIRT	Forced-Choice Item Response Theory
FO	Focus
FUN	Function
g	General intelligence
GEN	Gender
GPE	Global perspective
HU	Humility
I	Ideas
IN	Influence
INDY	Independence
INN	Innovative Culture
IPS	Interpersonal savvy
IRT	Item Response Theory
ITR	Instills trust
LCM	Latent change model
MAB	Manages ambiguity
MCO	Manages conflict
ML	Management level
MLL	Mid-level leader
MX	Management experience
NA	Need for achievement
NLE	Nimble learning
NNE	Builds networks***
OC	Organizational commitment
OD	Openness to differences
OP	Optimism
OWP	Optimizes work processes
P	People
PE	Persistence
P-E	Person-environment
PER	Persuades
PO	Positivity
POWR	Power
PR	Presence
REG	Regulatory Culture
RI	Risk-taking
RSF	Resourcefulness
SAD	Situational adaptability
SDV	Self-development
SME	Subject-matter expert
SO	Sociability
SS	Situational self-awareness
STRC	Structure
STV	Striving
SVD	Self-development
SVI	Strategic mindset****
TA	Tolerance of ambiguity
TR	Trust
VDI	Values differences
WE	Work engagement

* *In other KF4D solutions and applications, AEX is sometimes referred to as Aligns execution.*

** *In other KF4D solutions and applications, EIN is sometimes referred to as Engages and inspires.*

*** *In other KF4D solutions and applications, NNE is sometimes referred to as Navigates networks.*

**** *In other KF4D solutions and applications, SVI is sometimes referred to as Strategic vision.*

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