The Development and Validation of the TALENTx7® Assessment:

A Psychological Measure of Learning Agility

2023 Edition

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Kenneth P. De Meuse, Ph.D.

De Meuse Leadership Group, LLC

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Leader's Gene Consulting

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Executive Summary

During the past two decades, a new psychological construct has emerged to help organizations identify and develop leaders. It is called "learning agility." Learning agility can be defined generally as the ability to learn from experience, and then the willingness to apply those lessons to perform successfully in current and new leadership situations. Today, many organizations in the Global 500 use learning agility when making high potential talent decisions. Several scientific studies have demonstrated that learning agility is strongly related to a leader's success (e.g., Allen, 2016; Dai, De Meuse, & Tang, 2013; De Meuse, 2019; Dries, Vantilborge, & Pepermans, 2012). The recently published book titled, *The Age of Agility: Building Learning Agile Leaders and Organizations*, summarizes the work from more than 50 academicians and practitioners (Harvey & De Meuse, 2021).

The *TALENTx7® Assessment* has been designed specifically to measure the learning agility construct. Unlike most other self-assessments in the marketplace that assess only 2-5 characteristics of learning agility, it measures the following seven different facets: (a) cognitive perspective, (b) interpersonal acumen, (c) change alacrity, (d) drive to excel, (e) self-insight, (f) environmental mindfulness, and (g) feedback responsiveness. The advantage of using a psychological instrument to assess leadership talent is that high potential decisions become more scientific, strategic, and planful. Rather than basing such decisions solely on past performance on lower-level jobs, limited interactions and observations, and innuendo, assessment scores provide concrete, objective, and quantifiable data on an employee's ability and willingness to succeed at higher-level positions.

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The *TALENTx7® Assessment* was launched eight years ago. Originally, it was developed and validated using pilot study data from 294 employees (see De Meuse & Feng, 2015). During 2016 and early 2017, an additional 1,654 participants completed the assessment, and the data were reanalyzed to confirm the initial validation (see De Meuse & Feng, 2017). Two years later, another 3,550 employees had completed the assessment and the data again were analyzed to verify evidence of validation (see De Meuse, Lim, & Rao, 2019). The purpose of this technical manual is to present the analyses from more than 10,000 additional employees who have completed the assessment during the past three years. This sample was collected from a variety of organizations located around the globe, including Africa, Asia, Australia, Europe, the Middle East, and North and South America. Nearly all industry sectors are represented, including manufacturing,

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mining, pharmaceutical, retail, hospitality, communications, professional services, and technology. Twenty-seven percent (27%) of the respondents are at the director or executive level. Approximately one-third (33%) of the respondents are female. Ages range from under 30 years old to over 60, with the majority of the sample being between ages 31-50 (78%).

The findings from a series of factor and item analyses show this self-assessment measures the seven facets of learning agility validly and reliably. The 7-factor structure of the instrument was confirmed; factor scales were internally consistent. The coefficient alpha – a statistic used to calculate internal consistency – for the Overall Learning Agility scale was particularly strong (r = 0.93). In addition, a test-retest analysis demonstrated the *TALENTx7® Assessment* has high stability over time. An investigation of subgroup differences found no evidence of adverse impact due to gender, race, or age. In a separate analysis, the scores for a group of respondents who also had taken the *viaEDGE*™ learning agility self-assessment were compared to the ones obtained by the *TALENTx7® Assessment*. Overall Learning Agility scores for the two assessments were highly correlated (r = 0.78, p < .001).

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Two additional criterion-related validation studies were conducted. One study examined the relationship between scores on the *TALENTx7® Assessment* and performance ratings for a pool of high potential managers in a large retail corporation. As expected, most of the managers obtained high learning agility scores across all seven facets; the relationship between performance ratings and Overall Learning Agility was significant (r = 0.31, p < .10). In another study, the linkage between a composite of 12 leadership competency ratings and learning agility as measured by the *TALENTx7® Assessment* was explored. Statistically significant relationships were found between the seven facet scores and competency ratings; the correlation between Overall Learning Agility and leadership competency also was very high (r = 0.62; p < .001).

In addition, a study was conducted to investigate the relationship between learning agility and general cognitive ability. Some researchers have argued learning agility is highly dependent upon how fast individuals process information and quickly learn new behaviors (e.g., DeRue, Ashford, & Myers, 2012). Three different intelligence tests (the *Wonderlic*, *Watson Glaser*, and a numerical ability test by SHL) along with the *TALENTx7® Assessment* were administered to more than 200 senior-level leaders in several companies. The results showed virtually no correlation between the two psychological constructs. Thus, the "added value" that learning agility (as measured by the *TALENTx7® Assessment*)

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Given that individuals who are asked to take the learning agility assessment likely realize their responses will affect their placement into an emerging leaders program, promotion, or employment in general, it is prudent to ascertain the usability of an individual's scores. Consequently, four psychometric scales are designed into the *TALENTx7® Assessment* to gauge the level of confidence we can place in the accuracy of the learning agility scores. The analyses here support the reliability and integrity of these scales.

Overall, the analyses presented in this technical manual strongly indicate that the *TALENTx7® Assessment* is a valid, reliable measure of learning agility. In many ways, it has distinct advantages over other self-assessments currently in the marketplace. First, it appears to be a more comprehensive indicator of learning agility, measuring additional facets of the construct other instruments do not. Second, the 148-item assessment takes only about 20-30 minutes to complete. This compares to about 40-60 minutes for some of the other self-assessments. And finally, the *TALENTx7® Assessment* has psychometric scales embedded into it that identify whether the scores truly represent a respondent's actual learning agility. Nevertheless, as mentioned in the Conclusion, future research should continue to demonstrate that learning agility has clear linkages to performance criteria and long-term leadership success.

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Why Learning Agility is Important for Leaders

Leadership and learning are indispensable to each other.

– John F. Kennedy (1917-1963)
35th President of the United States

Standard Oil, Polaroid, Arthur Andersen, Enron, General Foods, Northwest Airlines, TWA, Compaq, MCI WorldCom, Woolworths, Blockbuster, Radio Shack, Toys R Us, The Pullman Company, and on and on. Once mighty companies that dominated our landscape no longer exist today. Whether their demise was due to corporate scandal, changing technology, a merger or acquisition, financial mismanagement, or simply the survival of the fittest, these companies are gone. Clearly, "people don't listen" anymore when E.F. Hutton speaks since it is no longer talking, because of its financial collapse in 1987 and merger with Shearson Lehman and American Express the following year.

It will be interesting to discover whether the corporate behemoths of today, such as Google, Amazon, Apple, Royal Dutch Shell, BP, Toyota, Volkswagen, Wal-Mart, and Samsung survive during the next 50 years. Perhaps, the key lesson history has taught us is that times change, and that size and dominance do not guarantee longevity. If so, dinosaurs still would be roaming the Earth.

If its leaders are not agile, other employees won't be agile and the organization won't be able to adapt, thrive, or survive!

Companies – as well as animals and humans – need to adapt to prosper, which translates into leaders of those companies must be flexible, environmentally mindful, reflective, and responsive to feedback! The construct of "learning agility" is at the core of those behaviors. After all, companies are social systems at their essence (Katz & Kahn, 1978). Organizations are composed of and managed by people. If its leaders are not agile, other employees won't be agile and the organization won't be able to adapt, thrive, or survive! As De Meuse and Harvey described it in the title of their book chapter, "Learning Agility: The DNA for Leaders and Organizations in the Twenty-First Century" (2021, pp. 3-30).

Talent management practitioners and academicians alike agree that the proper identification and development of leaders is vital to the future success of any organization. Numerous articles and books have been written on the topic of leadership. A recent Google search of the word "leadership" yielded more than six billion (yes billion, not million) entries. And yet, many organizations appear to be doing a poor job identifying its next generation of leaders (Bauer, 2011; Conaty & Charan, 2010; Kotlyar & Karakowsky, 2014; Martin & Schmidt, 2010).

Over the years, scholars have observed that about one-half of all managers fail (Hogan, Hogan, & Kaiser, 2011) and nearly one-third of all senior executives derail (Charan, 2005; Sessa, Kaiser, Taylor, & Campbell, 1998; Van Velsor & Leslie, 1995). Researchers have found leaders most often fail due to their inability to modify behaviors that were effective earlier in their careers but now cause problems. Behaviors that once were nurtured, valued, and rewarded. Behaviors that were shaped and molded over time and, ultimately, ingrained into their psyches. It would appear that leaders who understand the necessity of behavioral change and possess the ability, willingness, and flexibility to lead based on the demands of the current situation would be much more likely to be successful.

During the past two decades, a new concept has emerged to help organizations identify and

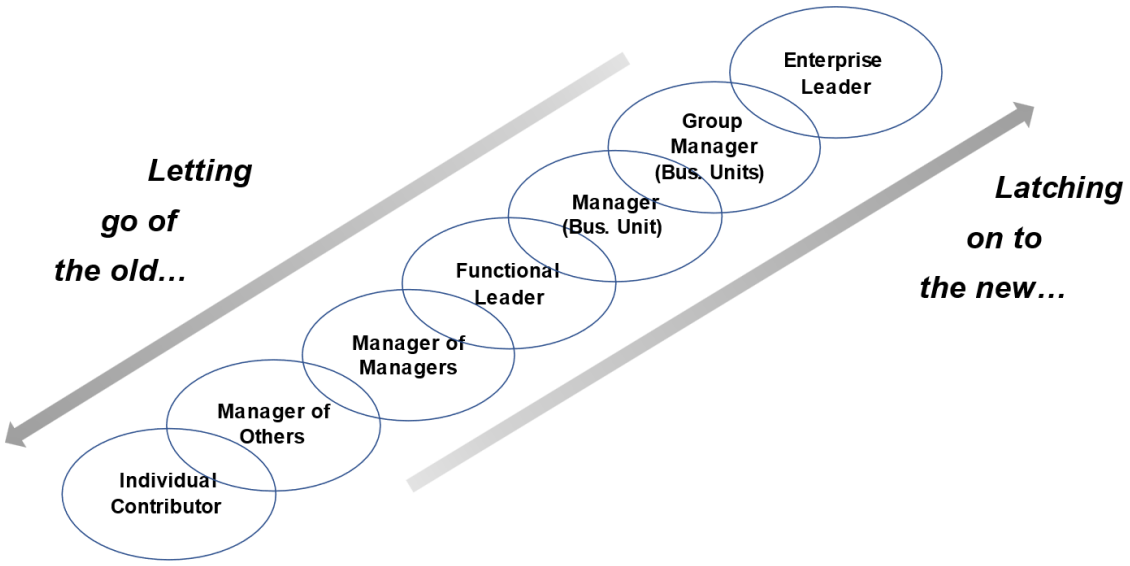
develop such individuals. It is called “learning agility.” Learning agility can be defined as the ability and willingness to learn from experience and the attitudinal, cognitive, and behavioral flexibility to apply those lessons to perform well in current and new leadership roles (De Meuse, 2022). An important aspect of learning agility is “learning through experience.” Individuals can learn through a variety of modalities, such as reading a book, watching a podcast, attending a class, or by observing others. Learning agility is experiential learning (i.e., learning by doing).

Learning agility is the ability and willingness to learn from experience and the attitudinal, cognitive, and behavioral flexibility to apply those lessons to perform well in current and new leadership roles (De Meuse, 2022).

Perhaps, the underlying premise of learning agility was captured best in Marshall Goldsmith’s advice to managers when he cautioned them to realize that “what got you here won’t get you there” (2007, p. 1). To continue down the path of success, leaders must change, adapt, grow, and develop. This capacity to learn from experience is what differentiates high potentials from other employees (Church & Seaton, 2022; De Meuse, Dai, & Hallenbeck, 2010; Lombardo & Eichinger, 2000). This process of personal change – abandoning leadership behaviors and competencies no longer needed and developing those now required – is captured in the following figure.

Figure 1

Ascending the Organizational Ladder (Adapted from Charan, Drotter, & Noel, 2001)



While this figure depicts the importance of developing new leadership skills and shedding others as one climbs the organizational ladder, there is a crucial caveat. Not everyone wants to be – or should be – a leader. Many employees are best suited to remain individual contributors their entire careers. They have unique technical skills and/or functional skills that enable them to perform their organizational roles exceedingly well. Numerous jobs require deep expertise (e.g.,

engineering, accounting, teaching, researching, writing, welding, painting, wiring, financial investing, policing, firefighting, nursing, shipbuilding, and on and on). In those cases, learning agility is not needed. In fact, it can detract from the detailed procedures and proscribed rules needed for successful performance. Consequently, learning agility per se is neither good or bad. There is no such thing as a "good" or "bad" score on the *TALENTx7® Assessment*. Rather it depends on what job the individual is performing and where he or she wants to take their career (see De Meuse, 2022).

Tracing the Evolution of Learning Agility

Many different researchers have contributed to the evolution of learning agility. For example, the longitudinal studies conducted at AT&T dating back to the 1970s and 1980s reported that leaders who had been classified low on potential frequently were more successful than expected when they had relevant developmental opportunities (see Bray, Campbell, & Grant, 1974; Howard & Bray, 1988). Several decades of research in nearly every discipline – music, art, sports, medicine, and leadership – have observed that gaining expertise is largely the result of deliberate practice (see Ericsson, Prietula, & Cokely, 2007). Not merely extensive practice, but mindful, intentional, and sustained effort. Noted author Malcolm Gladwell (2008) estimated that it takes 10,000 hours of such practice before one becomes an "expert" in an area.

Overall, the development of the concept of learning agility is rooted primarily in two streams of research. Both groups of studies originated at the Center for Creative Leadership (CCL). One series of studies is referred to as "the lessons of experience," and it examined what leadership competencies were most important in organizational promotions. The other series of studies investigated reasons why executives derail. See De Meuse (2022) for a historical overview of the evolution of learning agility.

The Lessons of Experience. During the early 1980s, researchers began to recognize that it was impossible to derive an identifiable list of predisposing characteristics of successful leaders. Rather, leadership appeared to be an interaction among a long list of individual traits, the environment, and gaining salient management experience. However, researchers continued to have limited knowledge of how experience actually developed managers. Not all job experiences seemed to be equal. The fundamental question was "What experiences had the most developmental impact?" And secondly, "Who benefits the most from those experiences?" Without an understanding of how people learn and grow from job experiences, organizations cannot fully leverage such experiences as developmental tools.

The scientists at CCL performed a series of studies to understand how executives learn from their work experiences. CCL researchers interviewed approximately 200 executives, asking them to identify pivotal events during their careers. Subsequently, they asked: (a) what specifically happened and (b) what did they learn from those events. Their findings are summarized in a book aptly titled, *The Lessons of Experience* (McCall, Lombardo, & Morrison, 1988). Two findings have had a lasting impact on the practice of leadership development and talent management. First, the rule of 70-20-10. It was estimated that 70% of leadership development occurs from job assignments, 20% from interacting with people, and only a small portion (10%) from classroom education. This general rule of development has been supported by other studies as well (see McCall & Hollenbeck, 2002; Tannenbaum, 1997).

The second important finding – and the one that is the most relevant here – is that individuals differ greatly as learners from experience. Some learn more quickly and learn more content than others. Learning and development requires that people move away from their comfort zone, their

habits, and their routines. The most meaningful developmental experiences are challenging, stretching, difficult – and uncomfortable! They are emotional, require people to take risks, and tend to have real life consequences (Lombardo & Eichinger, 2011). The journey often is unpleasant (Snell, 1992). Learners have to be resilient and non-defensive. Individuals have to possess a strong drive for growth. Overall, research reveals that the willingness and ability to learn from experience separates high potential talent from others. The importance of learning from experience for successful managers and executives has been observed by many other leadership researchers (e.g., Bennis & Thomas, 2002; Day, 2000).

Executive Derailment. The second stream of research that framed the development of learning agility also was conducted at CCL more than two decades ago (cf. Lombardo & Eichinger, 1989; Lombardo, Ruderman, & McCauley, 1988; McCall, 1997; McCall & Lombardo, 1983; Morrison, White, & Van Velsor, 1987; Van Velsor & Leslie, 1995). These studies contrasted successful executives with ones who derailed, using both qualitative and quantitative methods. The research produced consistent findings across time, hierarchical levels, national cultures, gender, and organizations.

In general, the authors observed that *both* successful and derailed executives: (a) were bright and ambitious, (b) had been identified as high potentials early in their careers, (c) had noteworthy records of achievement, and (d) readily made personal and family sacrifices to advance their careers. In addition, both groups possessed very few personal flaws. One derailment factor was identified repeatedly, however. The researchers discovered that derailed executives were unable or unwilling to change and adapt. These executives relied very heavily on a narrow set of skills developed early in their careers. They noted these executives had a number of prior successes but usually in very similar organizational situations. The researchers reported that for the majority of leaders who had derailed, their technical superiority – which was a source of success at lower levels of leadership – became a weakness as they ascended to higher levels, leading to overconfidence and arrogance. In contrast, successful executives usually had diverse experiences in a variety of work settings.

Successful and derailed executives also differed in the way they dealt with mistakes. Those executives who were successful overwhelmingly handled failure with poise and grace. They admitted mistakes, accepted responsibility, and then attempted to correct the problems. These executives *learned* from their mistakes. On the other hand, leaders who derailed tended to be defensive about their failure, attempting to keep it undercover while they tried to fix it, or they tended to blame others for their predicament. Their ***un***willingness and ***in***ability to learn from experience appeared to be the major reason why these executives eventually derailed.

Their unwillingness and inability to learn from experience appeared to be the major reason why these executives eventually derailed.

Scientific Support for the Importance of Learning Agility

During the past few years, several scholarly journal articles have been published investigating the theoretical and empirical support of learning agility as an important determinant for high potential talent (cf. De Meuse et al., 2010; Silzer & Church, 2009). More recently, the focal article in an issue of the *Journal of Industrial and Organizational Psychology* was entitled, “Learning Agility: In Search of Conceptual Clarity and Theoretical Grounding” (DeRue, Ashford, & Myers, 2012). Following this article, there were nine Commentaries reviewing learning agility and its impact on high potential talent (e.g., Arun, Coyle, & Hauenstein, 2012; De Meuse, Dai, Swisher, Eichinger, & Lombardo, 2012; Mitchinson, Gerard, Roloff, & Burke, 2012). Although learning agility has

played a role in the practitioner world for many years, the academic community now has become interested in researching it.

> ***… being high in learning agility increased an employee's likelihood of being identified as a high potential by a factor of 18.***
>
> ***Dries, Vantilborge, and Pepermans***

Two recently published empirical studies have directly investigated learning agility, high potential talent, and leadership success. Dries et al. (2012) measured job performance and learning agility in seven different organizations located in Europe. The researchers found that both performance and learning agility were statistically related to being identified as a high potential. They discovered high performing employees were three times more likely to be identified as a high potential than employees with low performance. However, they found that being high in learning agility increased an employee's likelihood of being identified as a high potential by a factor of 18. They concluded that "learning agility is an overriding criterion for separating high potentials from non-high potentials" (Dries et al., 2012, p. 351).

Dai et al. (2013) conducted two separate field studies – one cross-sectional and one longitudinal – to investigate the empirical linkage between learning agility and leadership success. In Study 1, the authors found learning agility was significantly correlated with the following two *objective* career outcomes: (a) CEO proximity and (b) total compensation. This study also observed a positive relationship between learning agility and ratings of leadership competence. In Study 2, the authors observed that learning agility was significantly related to career growth trajectory. Highly learning agile individuals were promoted more often and received higher salary increases than their lower learning agile counterparts during a 10-year period.

Most recently, De Meuse (2019) performed a meta-analysis of all available studies that had investigated the relationship between learning agility and leader success. In total, 20 field studies were identified. The 4,897 participants in those studies were employed in a variety of industries, ranging from financial services, consumer products, pharmaceutical, telecom, electronics, health care, and technology. The vast majority of participants were managers and executives. The studies employed a variety of self-assessments and multi-rater instruments to measure learning agility. In total, 41 correlation coefficients were reported in the 20 field studies, ranging from r = 0.08 to 0.91. Of the 41 coefficients, 34 were statistically significant at the $p < .05$ level or higher. The mean correlation coefficient between learning agility and *leader performance* was $\bar{r} = 0.47$ ($p < .001$) and between learning agility and *leader potential* was $\bar{r} = 0.48$ ($p < .001$).

As part of the meta-analysis, De Meuse corrected for statistical problems due to sampling error, the unreliability of instruments used to measure leader performance and potential, as well as restriction of range in all the measures. These statistical corrections are commonly applied in the computation of meta-analytic results following the procedures presented by Schmidt and Hunter (1977). Such corrections provide a more accurate estimate of the actual relationship between two variables in the population as a whole. The Greek symbol ρ or rho is the statistic used to depict these relationships. Thus, the "actual or true relationship" between learning agility and leader performance was ρ = 0.74, and between learning agility and leader potential it was ρ = 0.75 (ps < .001).

> ***Thus, the "actual or true relationship" between learning agility and leader performance was ρ = 0.74, and between learning agility and leader potential it was ρ = 0.75 (ps < .001).***
>
> ***De Meuse (2019)***

In summary, the importance of accurately forecasting an organization's high potential talent cannot be overemphasized. Traditional approaches for identifying and developing future leaders

need to improve. The careful and strategic measurement of learning agility offers the heads of talent management and human resource professionals an effective way of doing it. In the dynamic business world of today and tomorrow, a leader's success is dependent upon the ability and willingness to learn, grow, and respond flexibly in the increasingly complex global marketplace. As De Meuse concluded at the end of his meta-analytic study, "the relevance and significance of this construct to the discipline of talent management and leadership appears undeniable" (2019, p. 32).

Development of the *TALENTx7® Assessment*

Initially, a comprehensive review of the learning agility and high potential leadership literature was conducted. More than 200 scholarly articles and 25 books on leadership assessment, identification, and development were examined. Although different authors tended to define learning agility slightly differently, most conceptualized it in terms of learning from work and life experiences and then applying that learning to future leadership situations. Likewise, most authors viewed learning agility as a multi-dimensional psychological construct. Many scholars referred to it as a "meta-competency" of leadership.

The authors who coined the term learning agility – Lombardo and Eichinger (2000) – formulated a theoretical framework of learning agility consisting of the following four interrelated factors: (a) mental agility, (b) people agility, (c) results agility, and (d) change agility. A fifth factor – self-awareness – was added later (see De Meuse, Dai, Zewdie, Page, Clark, & Eichinger, 2011). There is substantial scientific evidence supporting the underlying relevance of those five factors in the measurement of learning agility (e.g., see Dai et al., 2013; De Meuse et al., 2011, 2012; Dries et al., 2012; Page, De Meuse, Orr, Marshall, & Campbell, 2012).

Whether one calls the factor "people agility," "interpersonal skills," or "emotional intelligence," a good leader must interact effectively with a diversity of people and understand their strengths and weaknesses when assigning work (see Goleman, 1995; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). Likewise, whether one uses the factor title "self-awareness" or "self-insight," the importance of knowing oneself and his or her capabilities and limitations for leadership success is well established (Anseel, Lievens, & Schollaert, 2009; Bennis & Thomas, 2002; Day & Harrison, 2007). Indeed, Flaum (2010) found that self-awareness was the #1 predictor of overall executive success.

> ***Leaders who give others their full, open, and nonjudgmental attention to the present situation and can effectively monitor their emotions are likely much more effective than their counterparts.***
>
> ***Lee (2021)***

Recently, some researchers have suggested other areas of leadership that may play a role in an individual's learning agility. The concept of "mindfulness," for example, has received considerable attention for some time in clinical psychology and the personality literature. According to a recent article published in the *Journal of Applied Psychology*, mindfulness is "a state of nonjudgmental attentiveness to and awareness of moment-to-moment experiences" (Hulsheger, Alberts, Feinholdt, & Lang, 2013, p. 310). Further, emotional regulation has been proposed repeatedly as a central mechanism in the theoretical work on mindfulness (e.g., see Glomb, Duffy, Bono, & Yang, 2011; Van Den Assem & Passmore, 2022). Leaders who give others their full, open, and nonjudgmental attention to the present situation and can effectively monitor

their emotions are likely much more effective than their counterparts (Lee, 2021). Research findings suggest mindfulness is distinct from constructs such as openness to experience and emotional intelligence (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006). We define "environmental mindfulness" as the level to which individuals are fully observant of their external surroundings, attentive to the changing job duties and requirements of new organizational roles, approach environmental changes in a nonjudgmental manner, and regulate their emotions effectively.

Thus, environmental mindfulness focuses on *external* stimuli; whereas, self-awareness concentrates on *internal* stimuli. Although the facet of mindfulness may be related somewhat to other facets of learning agility (e.g., "people agility," "self-awareness"), it likely contributes additionally to an individual's overall level of learning agility. A measure of environmental mindfulness incorporated into an assessment can provide unique information that can be helpful ascertaining an individual's learning agility.

Another factor also likely plays an important role in one's level of learning agility. Sheldon, Dunning, and Ames (2014) found that high performers were much more likely to take corrective actions based on feedback than low performers. In other words, self-awareness is not sufficient. Many managers hold overly optimistic perceptions about their expertise and performance, particularly prevalent among those *least* skilled (Church, 1997). When given feedback, Sheldon et al. found low performers tended to disparage either the accuracy or the relevance of the feedback. Those individuals expressed much more reluctance than top performers to pursue various paths to self-improvement. Indeed, the importance of seeking and responding constructively to feedback has been discussed by some researchers within the context of learning agility (cf. Carette & Anseel, 2012; Mitchinson et al., 2012). "Feedback responsiveness" is defined as the extent to which individuals solicit, listen to, and accept personal feedback from others, carefully consider its merits, and subsequently take corrective action for performance improvement. Consequently, this additional element of learning agility focuses on taking the initiative to enhance skills and alter behaviors once self-awareness occurs. Also, see De Meuse (2017, 2022) for reviews on the importance of environmental mindfulness and feedback responsiveness.

When given feedback, Sheldon et al. found low performers tended to disparage either the accuracy or the relevance of the feedback.

Sheldon, Dunning, and Ames (2014)

Seven Facets of Learning Agility

Thus, the *TALENTx7® Assessment* measures the following seven different facets of learning agility:

1. **Cognitive Perspective**. The degree to which individuals think critically and strategically to solve complex problems, embrace difficult, multifaceted organizational issues, approach situations from a broad high-level perspective, and focus on multiple inputs rather than from only one or two functional/technical perspectives.

2. **Interpersonal Acumen**. The extent to which individuals interact effectively with a diversity of people, understand others' unique motives, values, and goals as well as their strengths and limitations, instill confidence in them, and leverage them to perform successfully on their jobs.

3. **Change Alacrity**. The level to which individuals are curious and eager to learn new ideas

and ways of behaving, open-minded to new situations, relish change, and continuously seek innovative (and at times risky) approaches to perform their jobs.

4. **Drive to Excel**. The extent to which individuals are motivated by difficult assignments, set challenging personal and organizational goals, are resourceful, and can be counted onto deliver results in new and untested situations.

5. **Self-Insight**. The degree to which individuals accurately understand themselves, their capabilities, weaknesses, beliefs, values, feelings, and personal goals as it relates to the workplace.

6. **Environmental Mindfulness**. The level to which individuals are fully observant of their external surroundings, attentive to the changing job duties and requirements of new organizational roles, approach environmental changes in a nonjudgmental manner, and regulate their emotions effectively.

7. **Feedback Responsiveness**. The extent to which individuals solicit, listen to, and accept personal feedback from others, carefully consider its merits, and subsequently take corrective action for performance improvement.

Scores on each of these seven factors are used to clarify specific facets of learning agility, providing diagnostic guidance on which areas that need development. **Overall Learning Agility** is the composite of the seven factors and provides information on the individual's overall leadership potential.

Creation of Assessment Items

In total, eight subject matter experts (SMEs) were involved in the development of items for the *TALENTx7® Assessment*. Two of them were industrial/organizational psychologists with a background in leadership assessment and development, three were senior executives with more than 70 years of combined corporate experience, and three were talent management professionals. Four of the SMEs were from the United States and four were from Asian countries.

The assessment included two different types of items. As expected, one type focused on the measurement of a respondent's learning agility. The second type of item was designed to ascertain whether an individual's responses were accurate. Psychological instruments such at the *TALENTx7® Assessment* frequently are administered to identify whom to hire, promote, or place into an emerging leaders' pool or high potential program. Consequently, respondents are motivated to score well. In order to ascertain whether their responses are usable, we have embedded psychometric scales designed to examine the accuracy of the individual's responses. These so-called "Accuracy Scales" are described in detail in a following section.

Measurement of Learning Agility. The seven facets of learning agility presented above served as the theoretical framework for developing the assessment items. Initially, 50 unique items were written to measure the various nuances for each of the facets – 35 of the items were positively worded and 15 were negatively worded (i.e., disagreeing with the item indicates a favorable orientation). This list of 350 items then was given to the panel of SMEs, who were asked to

independently identify the 10 best positively worded and 5 best negatively worded items for each facet. A discussion ensued and the 17 best items (12 positively worded and 5 negatively worded) were selected to be used in a series of pilot studies.

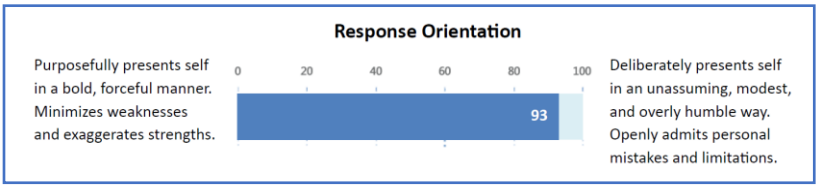
The items were written in the form of behavioral statements describing the respondent. For example, “When there is conflict on the team, others frequently seek me out to help resolve it.” And “I am constantly trying new and unique approaches to solving old problems.” A 5-point rating scale was used to express the degree to which respondents agreed with each item, ranging from *strongly disagree* (1), *disagree* (2), *neither disagree or agree – neutral* (3), *agree* (4), to *strongly agree* (5).

The Accuracy Scales. Research findings suggest that some individuals tend to deliberately inflate or deflate their scores when they perceive such scores might affect future decisions regarding their employment (Dunning, Health, & Suls, 2004; Tett & Simonet, 2021). Therefore, it is advantageous to incorporate a methodology to ensure respondents answer honestly, accurately, and consistently with any form of “self” assessment. Indeed, many long-established self-assessments possess such mechanisms (e.g., *California Psychological Inventory*™).

The *TALENTx7® Assessment* incorporates four such psychometric scales, which are designed specifically to enable administrators and executive coaches to determine whether the scores on the self-assessment are accurate (i.e., truly reflect the respondent’s actual learning agility). Items for each of these scales were developed following a similar approach as the one used for creating the items measuring learning agility. Initially, a large pool of items for each scale was drafted. Subsequently, the panel of SMEs reviewed them independently and identified the ones perceived as most effective. Each of the four accuracy scales are described below.

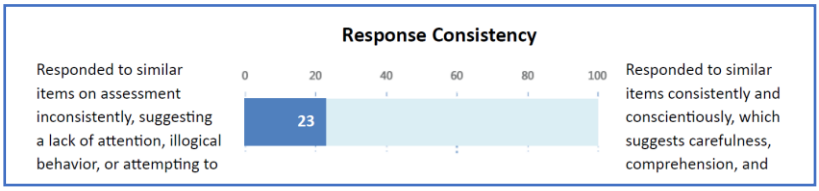
The TALENTx7® Assessment incorporates four psychometric scales designed specifically to enable administrators and executive coaches to determine whether the scores on the self-assessment are accurate…

- **Response Orientation Scale** – This scale examines a personality characteristic often referred to as “social desirability.” On the one hand, the scale measures the extent to which a respondent attempts to present himself or herself in an overly positive manner (i.e., an orientation *high* in social desirability). Such an attempt to “fake good” may be purposeful (e.g., due to an individual possessing a very bold, forceful personality). On the other hand, the scale also identifies when individuals respond in a very unassuming, overly modest manner that tends to diminish their strengths (i.e., an orientation *low* in social desirability).



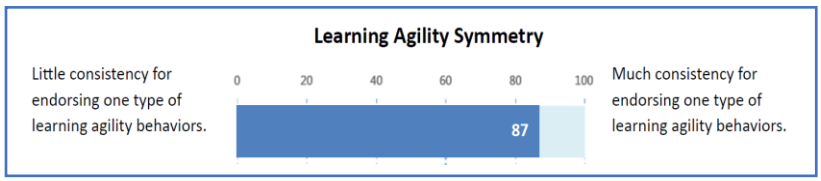
Whether the respondent scores high (or low) on the Response Orientation Scale, there is a good probability this individual has scored high (or low) on the other learning agility scales as well. Consequently, the *TALENTx7® Assessment* adjusts for this systematic distortion bias for each respondent’s scores accordingly. This approach is a common methodology for addressing the social desirability aspect of self-assessments (see Anderson, Warner, & Spencer, 1984).

- **Response Consistency Scale** – This scale identifies the degree of consistency among assessment item responses. In some instances, the *TALENTx7® Assessment* includes several similarly worded "item pairs" that describe nearly identical personal characteristics. Other times, one item in a pair is worded positively and the other item is worded negatively (then reverse scored). In both cases, it is expected that an individual's responses should be quite similar. This design enables the assessment to ascertain the level of consistency in responses made by an individual. If an individual responds to the designated item pairs inconsistently, there is a high probability the individual likewise responded to the other assessment items in a similar fashion. Such inconsistency can be caused when an individual is distracted by a telephone call or someone coming into the office unexpectedly, multi-tasking, or simply not reading the items fully while completing the assessment. Or, perhaps, the individual had tried to deliberately distort his or her answers. Whatever the reason, unless there is an acceptable level of consistency, the assessment scores may not be an accurate indicator of the individual's learning agility.



- **Learning Agility Symmetry Scale** – This scale also measures the degree of consistency in responses. However, it does so very differently. In this case, two separate sets of rating items are used: (a) a series of 10 items containing statements that "higher-learning agile individuals" likely would endorse and (b) a series of 10 items containing statements that "lower-learning agile individuals" likely would endorse. Research indicates that individuals who possess a *high* degree of learning agility tend to demonstrate an identifiable workstyle and specific behaviors (De Meuse et al., 2010: Lombardo & Eichinger, 2000). For example, such individuals typically think strategically and creatively, focus on the big picture when analyzing issues, often take calculated risks when making decisions, and frequently "color outside the lines." Moreover, individuals tend to value newness and variety in their jobs, become easily bored with repetitive tasks and routines, and view themselves as broad generalists.

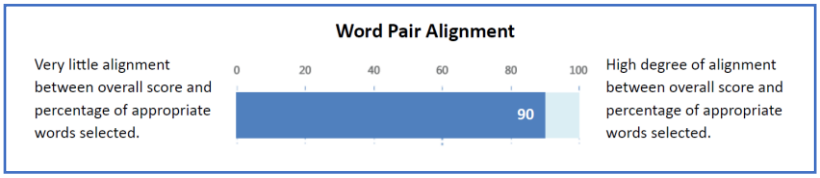
  In contrast, individuals who possess a *low* level of learning agility tend to be highly structured thinkers, are detail-oriented, conventional, and follow the rules by "coloring inside the lines." They very much value quality and consistency in their jobs, prefer work environments that are predictable, stable, and certain, and generally view themselves as technical or functional experts. Obviously, those behaviors and values are needed in organizations and are viewed very positively by many individuals. However, research indicates these behaviors and values are characteristics associated primarily with *lower* learning agile individuals. Therefore, respondents who



desire to look more favorable (and more learning agile) than they really are likely will agree with those assessment items.

The *TALENTx7® Assessment* embeds this unique set of 20 items to measure a respondent's high- and low-learning agility propensity. The items are randomly distributed throughout the assessment, and a separate score is calculated for each set. The Learning Agility Symmetry Scale reports the degree of relationship or symmetry between them. The higher the symmetry the more consistent are the participant's responses.

- **Word Pair Alignment Scale** – This 4th scale likewise measures the degree of consistency in responses. Again, it uses yet a different approach to do this. In a separate section of the *TALENTx7® Assessment*, 30 different word pairs are presented. Each word in the pair was carefully selected to be equally attractive (e.g., thorough verses decisive, resourceful verses dependable). However, one of the words largely represents a *high* learning agility orientation; whereas, the other word in the pair represents a *low* learning agility orientation. Based upon the pattern of words selected by a respondent, an overall score is computed.



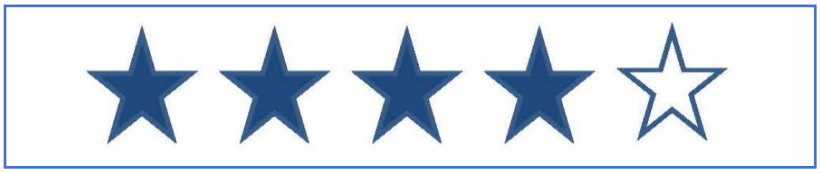
We then compare this score with the respondent's Overall Learning Agility score to derive the degree of relationship or alignment. The greater the relationship the more consistent are the participant's responses on the assessment. In many ways, the Word Pair Alignment Scale is similar to what we do with the Learning Agility Symmetry Scale. In this instance, however, a different methodology is used.

Overall Accuracy Index

Based on these four Accuracy Scales, an overall score is calculated to indicate the degree of confidence we can place in the accuracy of the assessment results. The "Overall Accuracy Index" is patterned after an evaluation metric applied to rank the quality of hotels and restaurants. In the case of the *TALENTx7® Assessment*, the more stars showing the more confident we are that a respondent's learning agility scores are accurate. When 4 or 5 stars are shown, it denotes the respondent's scores are consistent and aligned as expected. Thus, the scores are accurate and we can confidently use the assessment's results. A 4- or 5-star outcome occurs in approximately 80% of the cases.

When 2 or 3 stars are reported, it denotes that some caution should be used when interpreting the individual's scores. Although the learning agility scores generally appear to be accurate, it is recommended that one should obtain corroborating evidence to support the scores. This evidence can be obtained by comparing scores with another self-assessment, the results of a 360-degree assessment, or the behavioral tendency inferences gleaned from a personal interview. Additional insight can be garnered during the feedback and coaching session by asking the learner to review his or her background, job likes and dislikes, and career goals. A 2- or 3-star outcome occurs in about 15-20% of the cases.

Finally, if only 1 star is depicted, it suggests that the respondent's scores from this assessment should be discarded. There are several problems identified by the accuracy scales that reveal the manner in which the respondent completed the assessment makes interpretation inappropriate. This outcome occurs less than 5% of the time. When it does, we strongly advise that the respondent should be asked to retake the assessment. Specific instructions are given to the individual to increase the likelihood of obtaining usable results during the next administration (e.g., read each of the items carefully and fully, take the assessment in a quiet setting, avoid multi-tasking, complete it in one sitting).



Psychometric Support for the *TALENTx7® Assessment:*

Several Analyses Over the Years

During the summer and fall of 2014, a series of pilot studies was conducted to identify those assessment items that measured learning agility most effectively. In total, 294 individuals from several different organizations completed the 204-item pilot version of the *TALENTx7® Assessment*. Demographically, the respondents were quite diverse in terms of gender, age, and position. For example, approximately one-half (46%) were female, ranging in age from under 30 years old to over 60. Respondents occupied a variety of organizational positions, with 51% at the director or executive level. In addition, several industry sectors were represented, including communications, professional services, retail, hospitality, industrial, and pharmaceutical. However, the majority of the respondents were employed in nine companies located in China. Thirty-eight percent (38%) were employed at multinational corporations, 34% were employed at privately owned enterprises, and 28% worked at state owned enterprises. The statistical analyses and psychometric support for the assessment were summarized in a report by De Meuse and Feng (2015). For a complimentary copy of this original technical manual, please contact the first author.

Subsequently, we reanalyzed the data collected from participants who took the assessment during the initial 18 months since it was launched. This dataset was much larger and respondents were employed in private and public – large and small – organizations from around the world. In total, the reanalysis in 2017 included *N* = 1,654 respondents (see Feng & De Meuse, 2017). Although this sample worked in a variety of industry sectors, a significant number of the respondents were located in Asia (79%). Therefore, the dataset was reanalyzed again during early 2019 to include a better representation of employees from around the globe. These analyses incorporated a sample of *N* = 3,550 participants; less than one-half of them were from Asia. For a copy of these results (De Meuse, Lim, & Rao, 2019), contact the first author.

Finally, the most comprehensive and largest sample of assessment data were collected from 2020 through mid-2022. This dataset included more than 10,000 respondents from public and private organizations from across the world. The current technical manual presents the psychometric findings from this most recent sample. In addition, the findings of a test-retest reliability study are included, as well as the results of three criterion-related validation studies are reported. The relationship between *TALENTx7® Assessment* scores and three intelligent tests also are reviewed. Overall, the analyses in this technical manual are much more robust, both in

terms of the size of the sample and global representation of participants as well as in terms of the depth of internal psychometric support and external validation.

Sample Size and Demographics of the Current Sample

Overall, a total of 10,637 participants are analyzed in this report. It should be noted that all participants who had received a 1-star accuracy index were deleted from those analyses – as well as the analyses performed in the other technical manuals – due to concerns about the accuracy of their responses. It likewise should be noted that approximately 20% of the respondents elected to not complete the "optional" demographic questions on the assessment. Consequently, the numbers depicted below and in the following two tables are based on the respondents who provided their gender, age, position level, region of birth, etc.

The percentage of respondents who identified themselves as male was 52% (*n* = 5,487); whereas, 32% (*n* = 3,374) identified themselves as female. Their ages ranged from under 30 years old to over 60 years old, with the majority in the 31-40 (40%) and 41-50 (23%) age groups. They occupied a variety of organizational positions as the table below reveals. For example, more than one-quarter of those participants were at the senior management level (i.e., directors or executives).

Table 1. Organizational Positions of the Participants

Geographical Region	Number	Percentage
Individual contributor	1,074	10.1%
Senior individual contributor	1,627	15.3%
First-level supervisor/manager	3,405	32.0%
Director	1,691	15.9%
Executive	1,085	11.2%

Note. N = 10,637. A total of 1,755 (16.5%) of the participants did not identify position level.

The participants worked in organizations from several different industry sectors, including manufacturing, mining, communications, professional services, retail, hospitality, pharmaceutical, and technology. Those organizations were located in countries around the globe, ranging from Australia to Brazil, Canada to China, England to India, and the United Arab Emirates to the United States.

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Table 2 on the next page provides the number of participants born in various regions of the world. Although a large number of participants were born in Asian countries (approximately 46%), all geographical regions from around the globe are represented in the data. It should be noted that less than 15% of the participants were born in the United States.

Table 2. Geographical Regions of Participants' Birth

Geographical Region	Number	Percentage
Africa / Middle East	1,340	12.6%
Asia	4,882	45.9%
Australia / New Zealand	585	5.5%
Europe	362	3.4%
North America	1,585	14.9%
South America	64	0.6%

Note. N = 10,637. A total of 1,819 (17.1%) of the participants did not identify region of birth.

In the following sections of this technical manual, we report the statistical analyses supporting the internal validity of the *TALENTx7® Assessment*:

- Factor analyses examining the factor structure of the assessment;
- Correlational analyses of the seven learning agility factors (facets);
- Analysis of the internal reliabilities of the learning agility and accuracy scales;
- Test-retest analysis exploring the stability of participant scores; and
- Subgroup analyses investigating possible systematic differences in learning agility among the respondents in terms of gender, race, and age.

In addition, we report the findings of studies examining the external validity of the *TALENTx7® Assessment* as well as the relationship between learning agility and various measures of intelligence.

To protect the proprietary nature of the TALENTx7® Assessment, the content of the items is not provided in the following table reporting the factor analysis.

Factor Analyses

The *TALENTx7® Assessment* was designed to measure the following seven different factors (i.e., facets) of learning agility: (a) Cognitive Perspective, (b) Interpersonal Acumen, (c) Change Alacrity, (d) Drive to Excel, (e) Self-Insight, (f) Environmental Mindfulness, and (g) Feedback Responsiveness. Both exploratory and confirmatory factor analyses were conducted.

Initially, an "exploratory factor analysis" was performed on one-half of the sample (n = 5,319). Seven robust factors emerged coinciding with the proposed seven facets of the *TALENTx7® Assessment*. Subsequently, a "confirmatory factor analysis" was performed using the other one-half of the sample. This analysis generated an acceptable fit of the data to the seven-factor model, X^2 = *33041.40, df* = 1,356, p < .001. RMSEA (Root Mean Square Error of Approximation) = 0.046, 90% confidence interval of RMSEA is between 0.045 and 0.046; CFI (Confirmatory Fit Index) = 0.90.

Given the confirmatory factor analysis using one-half the sample supported the 7-factor solution, another factor analysis was performed on the entire dataset of N = 10,637 Table 3 presents the factor loadings for each of the seven factors of learning agility across the assessment items. Note that as expected all loadings are greater than 0.30 for all of the designated factors. The 0.30 threshold is viewed as a general standard for item inclusion in the psychometric literature (see Guilford & Fruchter, 1978). In addition, note that the *mean* factor loadings on all the designated facets were significantly higher than the 0.30 threshold. For example, for Cognitive Perspective, it was M = 0.55. For Interpersonal Acumen, it was M = 0.45. For Change Alacrity, it was M = 0.60. For Drive to Excel, it was M = 0.51. For Self-Insight, it was M = 0.53. For Environmental Mindfulness, it was M = 0.53. And for Feedback Responsiveness, it was M = 0.51. Most importantly, the *individual item* factor loadings and the *mean* factor loadings of the items used to measure the respective factors are substantially higher than on the other factors. In total, the findings of the factor analyses of the 54 items suggests an acceptable fit of the data to the model and a high level of psychometric integrity.

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Table 3. Factor Loadings of the Seven Facets of Learning Agility *(N* = 10,637)

Assessment Item	Facet						
	Cognitive Perspective	Inter. Acumen	Change Alacrity	Drive to Excel	Self-Insight	Env. Mindful.	Feedback Response.
1	0.65	0.12	0.13	0.09	0.04	0.08	-0.01
2	0.48	0.31	-0.09	0.14	0.14	0.16	0.02
3	0.47	0.19	0.14	0.35	0.12	-0.06	0.15
4	0.58	0.11	0.08	0.18	0.13	0.04	0.16
5	0.50	0.09	0.06	0.36	0.10	0.06	0.03
6	0.50	0.09	0.04	0.18	0.25	0.26	0.11
7	0.53	0.02	0.23	0.09	0.21	-0.04	0.20

Assessment Item	Facet						
	Cognitive Perspective	Inter. Acumen	Change Alacrity	Drive to Excel	Self-Insight	Env. Mindful.	Feedback Response.
8	0.71	0.10	0.13	0.12	0.10	0.10	0.08
Mean	***0.55***	***0.13***	***0.09***	***0.19***	***0.14***	***0.08***	***0.09***
9	0.18	0.39	0.01	0.16	0.26	0.18	0.19
10	0.10	0.69	0.07	0.13	0.18	0.11	0.09
11	0.30	0.39	-0.04	0.09	0.16	0.20	0.23
12	0.14	0.55	0.01	0.17	0.10	0.15	0.29
13	0.36	0.37	0.19	-0.22	0.05	0.09	0.19
14	0.30	0.38	-0.04	0.12	0.06	-0.01	0.35
15	0.26	0.44	0.06	0.01	0.14	0.11	0.16
16	0.19	0.41	-0.08	0.11	-0.13	0.44	0.18
Mean	***0.23***	***0.45***	***0.02***	***0.07***	***0.10***	***0.16***	***0.21***
17	-0.06	-0.01	0.59	-0.10	-0.04	-0.03	-0.16
18	0.16	-0.02	0.69	0.23	0.00	0.13	0.08
19	0.00	-0.11	0.54	0.02	-0.04	-0.06	-0.04
20	0.11	0.01	0.64	0.10	-0.01	0.12	-0.06
21	0.33	0.00	0.45	0.31	0.02	0.00	0.20
22	0.02	0.21	0.67	-0.03	-0.06	0.05	-0.11
23	0.33	0.07	0.53	0.19	-0.02	-0.05	0.15
24	0.12	0.04	0.69	0.08	0.00	0.14	-0.02
Mean	***0.13***	***0.02***	***0.60***	***0.10***	***-0.02***	***0.04***	***0.01***
25	0.17	0.13	0.06	0.59	0.08	-0.02	0.15
26	0.27	0.14	0.13	0.64	0.15	0.02	0.12
27	0.26	0.24	0.01	0.40	0.29	-0.03	0.01
28	0.07	-0.16	0.29	0.50	0.00	0.22	0.19
29	0.16	0.24	0.01	0.61	0.22	-0.01	0.10
30	0.33	0.19	0.12	0.41	0.21	-0.01	0.22
31	0.24	0.04	0.00	0.35	0.23	0.28	0.19
32	0.09	-0.07	0.14	0.56	0.15	0.20	0.10
Mean	***0.20***	***0.09***	***0.10***	***0.51***	***0.17***	***0.08***	***0.14***
33	0.09	-0.08	-0.06	-0.02	0.36	0.35	0.19
34	0.21	0.10	-0.01	0.18	0.55	0.21	0.21
35	0.22	0.05	-0.07	0.26	0.36	0.16	0.33
36	0.20	0.05	-0.02	0.30	0.42	0.11	0.39
37	0.15	0.05	-0.07	0.12	0.63	0.18	0.19
38	0.12	0.06	-0.07	0.03	0.65	0.17	0.09
39	0.12	0.23	0.02	0.20	0.65	0.11	0.12
40	0.06	0.26	-0.05	0.23	0.63	0.10	0.08
Mean	***0.15***	***0.09***	***-0.04***	***0.16***	***0.53***	***0.17***	***0.20***
41	0.18	0.08	0.02	-0.12	0.16	0.38	0.02

Assessment Item	Facet						
	Cognitive Perspective	Inter. Acumen	Change Alacrity	Drive to Excel	Self-Insight	Env. Mindful.	Feedback Response.
42	0.11	0.17	-0.20	0.21	-0.03	0.57	0.21
43	0.03	0.03	0.02	0.18	0.21	0.61	0.05
44	-0.01	-0.01	0.15	-0.01	0.07	0.54	-0.07
45	-0.05	0.18	0.14	0.07	0.17	0.58	0.02
46	0.12	0.18	0.16	-0.04	0.23	0.48	0.06
Mean	***0.06***	***0.11***	***0.05***	***0.05***	***0.14***	***0.53***	***0.05***
47	0.01	0.24	-0.18	0.20	0.03	0.13	0.43
48	0.04	0.23	0.00	0.14	0.06	0.16	0.48
49	0.06	0.12	-0.11	0.17	0.15	0.07	0.55
50	0.00	0.20	-0.01	0.21	0.11	0.22	0.38
51	0.05	0.26	0.00	-0.18	0.07	-0.05	0.45
52	0.19	0.04	0.06	0.00	0.17	-0.05	0.57
53	0.15	-0.11	-0.05	0.10	0.11	0.06	0.66
54	0.04	0.27	0.04	0.24	0.14	-0.06	0.52
Mean	***0.07***	***0.16***	***-0.03***	***0.11***	***0.11***	***0.06***	***0.51***

Note. N = 10,637.

Correlational Analysis among the Seven Facets of Learning Agility

The relationships among the seven factors or facets measuring learning agility are displayed in Table 4 on the following page. As can be observed, there is a relatively high level of common variance, in that all of the factors are statistically interrelated. This outcome is expected since most researchers conceptualize learning agility as a meta-competency construct (De Meuse, 2022; Dries et al., 2012; Lombardo & Eichinger, 2000). Moreover, the very large sample size enables small relationships to be statistically significant. The highest correlation is between Cognitive Perspective and Drive to Excel (r = 0.62); whereas, the lowest relationship is between Change Alacrity and Self-Insight (r = 0.05). It should be noted that although the relationship among the factors is high accounting for a fairly large share of common variance, there is much unique variance in learning agility explained by each factor. For example, even for the largest correlation coefficient (r = 0.62), less than 39% of the variance is shared by the two factors. Hence, obtaining separate scores on each of the seven facets provides a unique diagnostic snapshot of an individual's strengths and weaknesses regarding their learning agility.

Hence, obtaining separate scores on each of the seven facets provides a unique diagnostic snapshot of an individual's strengths and weaknesses regarding their learning agility.

Table 4. Inter-Facet Correlations

Facet	Facet						
	1.	2.	3.	4.	5.	6.	7.
1. Cognitive Perspective	—						
2. Interpersonal Acumen	0.57	—					
3. Change Alacrity	0.36	0.18	—				
4. Drive to Excel	0.62	0.47	0.33	—			
5. Self-Insight	0.51	0.51	0.05	0.55	—		
6. Environmental Mindfulness	0.32	0.44	0.15	0.34	0.47	—	
7. Feedback Responsiveness	0.41	0.54	0.02	0.46	0.52	0.28	—

Note. N = 10,637. All correlation coefficients are statistically significant ($p < .001$).

Internal Consistency Reliability Analysis

The "coefficient alpha" statistic is used to evaluate the internal consistency of a psychometric scale. If all the items within a scale measure the factor similarly (i.e., reliably), they should be highly interrelated. The professional standard for an acceptable level of reliability is a coefficient alpha equal to or greater than 0.70 (Nunnally & Bernstein, 1994).The *TALENTx7® Assessment* employs two different sets of psychometric scales. One set is employed for the measurement of an individual's scores on the seven facets of learning agility as well as on Overall Learning Agility. And a second set is used to evaluate the usability of these scores (i.e., the accuracy scales).

Table 5 provides the coefficient alpha statistic for each of the eight scales employed to assess learning agility – the seven facets and Overall Learning Agility. As can be observed, the reliability of all the scales substantially exceeds the professional standard with one exception. The 6-item scale measuring Environmental Mindfulness (r = 0.65) will continue to be fine-tuned as additional data are collected. Most importantly, the scale of Overall Learning Agility is extremely high (r = 0.93), strongly suggesting that the internal reliability of an individual's overall score is psychometrically sound. This finding reinforces the approach of using the *TALENTx7® Assessment* for selection purposes. See Table 5 on the next page.

…the scale of Overall Learning Agility is extremely high (r = 0.93), strongly suggesting that the internal reliability of an individual's overall score is psychometrically sound.

Table 5. Internal Consistency of Learning Agility Scales

Scale	Coefficient Alpha
Cognitive Perspective	0.81
Interpersonal Acumen	0.76
Change Alacrity	0.79
Drive to Excel	0.78
Self-Insight	0.80
Environmental Mindfulness	0.65
Feedback Responsiveness	0.72
Overall Learning Agility	***0.93***

Note. N = 10,637. All coefficient alpha reliabilities are statistically significant at $p < .001$.

The coefficient alpha statistics for the psychometric scales used to ascertain the accuracy of the *TALENTXx7® Assessment* are presented in Table 6. As can be observed, all of the scales have a high level of internal consistency that meet or exceed the professional standard.

Table 6. Internal Consistency of Accuracy Scales

Scale	Coefficient Alpha
Response Orientation (Social Desirability) Scale	0.73
Learning Agility Symmetry Scales	
Low Learning Agility Propensity	0.69
High Learning Agility Propensity	0.76
Word Pair Alignment Scale	0.84

Note. N = 10,637. All coefficient alpha reliabilities are statistically significant at $p < .001$.

Test-Retest Reliability Analysis

One of the important criteria to determine the psychometric integrity of a psychological instrument is to demonstrate its stability over time. Psychological assessments should yield similar scores between "Time 1" and "Time 2," providing there are no specific interventions to improve scores (e.g., performance feedback, training, or developmental programs). In general, 30-60 days should elapse between the two administrations. This timeframe is short enough to minimize the likelihood participants will have developed, but long enough to prevent participants from remembering how they responded previously (Anastasi, 1976).

During the spring of 2016, a sample of MBA students was recruited at two top-tier universities in Shanghai, China to perform a test-retest analysis of the *TALENTx7® Assessment*. In total, 41 students at Kedge Business School in Shanghai Jiao Tong University and 14 students at the School of Management in Fudan University completed the assessment during Time 1. Of those 55 students, 29 (53%) also completed the assessment approximately 40 days later (Time 2). Among this sample, 10 (34%) of the participants were female. All of the participants were between the ages of 31 and 50. The majority of the MBA students – 27 of the 29 (93%) – were Asian.

… as one would expect, there were no significant differences for the facets between Times 1 and 2.

The table on the following page depicts the mean scores and mean score differences for the two time periods (see Table 7). As can be seen, some of the facet learning agility mean scores increased slightly over time (e.g., Interpersonal Acumen, Environmental Mindfulness); whereas, others decreased slightly (e.g., Cognitive Perspective, Drive to Excel). Overall, as one would expect, there were no significant differences for the facets between Times 1 and 2. For Overall Learning Agility, there only was a 0.05-point difference on the 5-point scale between mean scores across time. Thus, overall, this analysis suggests high stability for the *TALENTx7® Assessment*.

In addition, Table 7 displays the correlation coefficient between Time 1 and Time 2 scores for each of the seven facets and Overall Learning Agility as measured by the assessment. As can be seen, all of the correlations are statistically significant at the $p < .01$ level. Many scholars view the professional standard for test-retest correlation coefficients should be $r = 0.70$ or higher (cf. Litwin, 2002). If one applies this standard, the following four facets exceed the threshold: (a) Cognitive Perspective ($r = 0.72$), (b) Drive to Excel ($r = 0.83$), (c) Self-Insight ($r = 0.71$), and (d) Change Alacrity ($r = 0.74$). In addition, the test-retest correlation for Overall Learning Agility is very high ($r = 0.82$). Overall, the results of this study and other research findings demonstrate that the *TALENTx7® Assessment* is a reliable, stable assessment of one's learning agility (also see De Meuse, 2017, 2019; Feng & De Meuse, 2016).

Overall, the results of this study and other research findings demonstrate that the TALENTx7® Assessment is a reliable, stable assessment of one's learning agility

Table 7. Test-Retest Correlation Coefficients

Learning Agility	Time 1 Mean Score	Time 2 Mean Score	Mean Score Difference	Correlation Coefficient
Cognitive Perspective	3.90	3.76	– 0.14	0.72**
Interpersonal Acumen	3.78	3.79	+ 0.01	0.66**
Change Alacrity	3.86	3.74	– 0.12	0.74**
Drive to Excel	3.95	3.80	– 0.15	0.83**
Self-Insight	3.81	3.73	– 0.08	0.71**
Environmental Mindfulness	3.51	3.63	+ 0.12	0.51**
Feedback Responsiveness	3.83	3.88	+ 0.05	0.51**
Overall Learning Agility	***3.81***	***3.76***	***– 0.05***	***0.82*** **

Note. $N = 29$. *$p < .05$. **$p < .01$.

Subgroup Analyses: An Examination for Evidence of Possible Adverse Impact

Several analyses were performed to ascertain whether the *TALENTx7® Assessment* had an adverse impact on various employee subgroups. Specifically, we investigated learning agility scores for statistically significant differences due to respondents' gender, race, and age.

Gender Differences. Table 8 displays the mean (*M*) and standard deviation (*Std*) for male and female respondents for each of the seven factor scales, as well as for the scale measuring Overall Learning Agility. In addition, the "effect size" (*d*) is depicted. Effect size is a standardized way of quantifying the statistical difference between two groups, independent of sample size. It is a much more accurate method of determining whether there are meaningful – and statistical – differences between subgroups than simply by examining whether the subgroup means are statistically different (which depends upon the size of the subgroup samples). When one has a very large sample size as is the case here ($N = 10{,}637$), effect size is a much more useful approach to ascertain the impact of subgroup differences.

According to Cohen (1977, p. 40), an effect size of 0.20 is considered "small," an effect size of 0.50 is considered "medium," and an effect size of 0.80 is considered "large." Thus, we will use the following ranges to describe the magnitude of effect sizes in this technical manual:

- $d = 0.00 – 0.19$ denotes very small,
- $d = 0.20 – 0.49$ denotes small,
- $d = 0.50 – 0.79$ denotes medium or moderate, and
- $d = 80$ and above denotes a large and substantial difference between subgroups.

As can be seen in the following table, the largest gender difference between males (*M* = 3.96, *Std* = 0.50) and females (*M* = 3.86, *Std* = 0.52) was for Cognitive Perspective. And even in this instance, the impact of the effect size is still classified as "small" (*d* = 0.20). If we compute the "average effect size" across all seven learning agility facet scales, the effect size or *d* = 0.08. This effect size is considered "very small" and within the typical range of gender differences observed on other self-assessments (see Ones & Anderson, 2002). Likewise, the gender difference for the Overall Learning Agility scale is "very small" (*d* = 0.07), indicating that males and females as a group tend to score very similarly on the *TALENTx7® Assessment*, in terms of both the seven facets as well as Overall Learning Agility.

….indicating that males and females as a group tend to score very similarly on the TALENTx7® Assessment, in terms of both the seven facets as well as Overall Learning Agility.

Table 8. Gender Analysis of Learning Agility Scores

Learning Agility Scale	Male (*n* = 5,487)		Female (*n* = 3,374)		*d*	*Impact*
	Mean	*Std*	*Mean*	*Std*		
Cognitive Perspective	3.96	0.50	3.86	0.52	0.20	*Small*
Interpersonal Acumen	3.81	0.51	3.79	0.51	0.05	*Very Small*
Change Alacrity	3.70	0.60	3.72	0.62	- 0.03	*Very Small*
Drive to Excel	4.04	0.51	3.98	0.52	0.13	*Very Small*
Self-Insight	4.27	0.41	4.27	0.42	0.01	*Very Small*
Environmental Mindfulness	3.68	0.55	3.73	0.53	- 0.08	*Very Small*
Feedback Responsiveness	3.96	0.45	3.97	0.43	- 0.04	*Very Small*
Overall Learning Agility	***3.81***	***0.34***	***3.78***	***0.35***	***0.07***	***Very Small***

Note. *d* denotes the "effect size" of the mean difference between gender groups. The "Impact" description is derived from Cohen (1977).

Racial Differences. The following seven racial subgroups were identified and analyzed on the data collected by the *TALENTx7® Assessment*:

- African American (Black – origins of Africa);
- Asian;
- Caucasian (White – origins of Europe);
- Hispanic/Latino (origins of Central or South America);
- Indian (origins of India Subcontinent);
- Middle Eastern (origins of Middle East and North Africa); and
- Biracial/Other.

A series of Oneway Analyses of Variance (ANOVAs) were performed to ascertain whether there were significant differences in mean learning agility scores across these seven subgroups. In this instance since there is more than two groups, a statistic called "eta-squared" (η^2) measures the "effect size" or the strength of association between an independent variable (i.e., race) and a dependent variable (i.e., learning agility). Eta-squared can range from zero (0.00), which denotes no association to one (1.00) that indicates a very strong association. In general, η^2 = 0.01 indicates a small effect size, η^2 = 0.06 indicates a medium effect size, and η^2 = 0.10 indicates a large effect size. An η^2 < 0.01 suggests a very small effect or as stated above no relationship at all. Please see Cohen (1988) and Pituch and Stevens (2016) for a more detailed description of eta-squared and effect sizes.

Overall, the findings demonstrate that the racial impact in all instances was "small" or "very small," suggesting that the race of the participant had no significant impact on their learning agility scores whatsoever.

The respective mean learning agility scores and effect sizes for each of the seven racial subgroups are depicted in Table 9. As can be observed, all the learning agility facet effect sizes would be considered "small" or "very small" according to Cohen (1977). The largest effect size was for the Interpersonal Acumen facet (η^2 = 0.05), which would be considered "small." The effect size for Overall Learning Agility also would be classified as "small" (η^2 = 0.03). Overall, the findings demonstrate that the racial impact in all instances was "small" or "very small," suggesting that the race of the participant had no meaningful impact on their learning agility scores whatsoever.

Table 9. Racial Analysis of Learning Agility Scores

Learning Agility Scale	Subgroup Mean							η^2	*Impact*
	African American	Asian	Caucasian	Hispanic	Indian	Middle Eastern	Biracial		
Cognitive Perspective	4.03	3.87	3.97	4.04	4.00	3.94	4.02	0.01	*Small*
Interpersonal Acumen	4.03	3.70	3.91	4.03	3.91	3.81	3.94	0.05	*Small*
Change Alacrity	3.66	3.63	3.85	3.85	3.78	3.64	3.78	0.03	*Small*

Learning Agility Scale	Subgroup Mean							η^2	*Impact*
	African American	Asian	Caucasian	Hispanic	Indian	Middle Eastern	Biracial		
Drive to Excel	4.25	3.98	3.99	4.15	4.17	4.02	4.17	0.02	*Small*
Self-Insight	4.40	4.26	4.24	4.33	4.30	4.27	4.33	0.00	*Very Small*
Environmental Mindfulness	3.62	3.69	3.76	3.82	3.63	3.60	3.62	0.00	*Very Small*
Feedback Responsiveness	4.10	3.94	3.95	4.08	4.08	4.03	4.06	0.01	*Small*
Overall Learning Agility	***3.92***	***3.75***	***3.84***	***3.92***	***3.88***	***3.80***	***3.89***	***0.03***	***Small***

Note. Subgroup *N* = 703 (African American), 4,903 (Asian), 2,466 (Caucasian), 128 (Hispanic), 186 Indian), 152 (Middle Eastern), and 293 (Biracial). *d* denotes the "effect size" of the mean difference among racial subgroups. The "Impact" description is derived from Cohen (1977).

Age Differences. Two different analyses were performed to examine the extent to which age might have played a role in participants' learning agility scores. Initially, a series of general linear univariate analyses (ANOVAs) were conducted to determine whether the seven facet scores or Overall Learning Agility significantly differed by the following age categories collected on the *TALENTx7® Assessment*:

- Age 30 or under
- 31-40 years old
- 41-50 years old
- 51-60 years old
- Age 60 or older

Table 10 on the next page presents the means and standard deviations for each of the seven learning agility facets and Overall Learning Agility by age category. The eta-squared (η^2) and effect size impact also are displayed. As can be seen, all the coefficients had an eta-squared of 0.01 or less, which denotes that age had virtually no impact on how participants scored on the *TALENTx7® Assessment*.

As can be seen, all the coefficients had an eta-squared of 0.01 or less, which denotes that age had virtually no impact on how participants scored on the TALENTx7® Assessment.

In the United States, the Age Discrimination in Employment Act (ADEA) was passed in 1967. This law forbids age discrimination against anyone who is age 40 years old or older. Consequently, a second statistical analysis was performed examining age differences for each of the seven facets and Overall Learning Agility. Table 11 on page 32 presents the means and standard deviations of learning agility scores for participants under 40 and age 40 and over. In addition, the effect size (*d*) for each of the seven facets as well as Overall Learning Agility is given.

Notice that in no instance is the standardized mean difference (i.e., the effect size) significant. All the *d*s can be described as having a "small" or "very small" impact.

Table 10. Age Analysis of Learning Agility Scores

Learning Agility Scale	Subgroup Mean					η^2	*Impact*
	Less than Age 30	Age 31-40	Age 41-50	Age 51-60	Over Age 60		
Cognitive Perspective	3.85	3.91	3.96	3.96	3.85	0.01	*Small*
Interpersonal Acumen	3.73	3.77	3.86	3.91	3.86	0.01	*Small*
Change Alacrity	3.64	3.67	3.74	3.82	3.85	0.01	*Small*
Drive to Excel	3.94	4.03	4.04	4.02	3.90	0.00	*Very Small*
Self-Insight	4.20	4.27	4.30	4.27	4.16	0.01	*Small*
Environmental Mindfulness	3.67	3.72	3.72	3.62	3.51	0.01	*Small*
Feedback Responsiveness	4.00	3.96	3.98	3.91	3.90	0.00	*Very Small*
Overall Learning Agility	***3.74***	***3.79***	***3.83***	***3.82***	***3.75***	***0.01***	***Small***

Note. Subgroup *N* = 1,108 (less than age 30), 4,239 (age 31-40), 2,465 (age 41-50), 947 (age 51-60), and 159 (over age 60). η^2 denotes the "effect size" of the mean difference among age subgroups. The "Impact" description is derived from Cohen (1977).

Taken as a whole, all of the subgroup analyses conducted in this technical manual strongly suggest that gender, race, and age play no role in how participants score on the *TALENTx7® Assessment*. Thus, no evidence of adverse impact was found by any of the statistical analyses.

Thus, no evidence of adverse impact was found by any of the statistical analyses.

Table 11. Age Analysis of Learning Agility Scores for Participants Under Age 40 and Age 40 and Over

Learning Agility Scale	Under 40 (*n* = 5,347)		40 and Over (*n* = 3,571)		*d*	*Impact*
	Mean	*Std*	*Mean*	*Std*		
Cognitive Perspective	3.90	0.51	3.96	0.50	- 0.11	*Very Small*
Interpersonal Acumen	3.76	0.51	3.87	0.51	- 0.21	*Small*
Change Alacrity	3.66	0.57	3.77	0.64	- 0.17	*Very Small*
Drive to Excel	4.01	0.53	4.03	0.49	- 0.04	*Very Small*
Self-Insight	4.26	0.42	4.26	0.40	- 0.06	*Very Small*
Environmental Mindfulness	3.71	0.54	3.69	0.54	0.04	*Very Small*
Feedback Responsiveness	3.97	0.44	3.96	0.45	0.03	*Very Small*
Overall Learning Agility	***3.78***	***0.35***	***3.82***	***0.34***	***- 0.13***	***Very Small***

Note. *d* denotes the "effect size" of the mean difference between age groups. An effect size less than 0.20 is considered "very small" according to Cohen (1977).

External Validity of the *TALENTx7® Assessment*

During the past 20 or so years, a number of organizations have developed various assessments of learning agility. For example, the Center for Creative Leadership created *Prospector®* during the early 2000s. Warner Burke and his colleagues began marketing the *Burke Learning Agility Inventory™* or *BLAI* in 2017. Heidrick and Struggles established the *Agile Leader Potential* instrument more recently. Perhaps, the most well-known assessment of learning agility was developed at Korn Ferry International. The *viaEDGE™* self-assessment of learning agility has been widely used since 2011. If the *TALENTx7® Assessment* is a valid measure of learning agility, it should yield similar scores to more established instruments of learning agility. Likewise, scores on the *TALENTx7® Assessment* should be dissimilar to other leadership assessments that do not measure learning agility (e.g., the *Hogan Personality Inventor*y and the *Hogan Development Survey* that measure personality and the *Wonderlic Contemporary Cognitive Ability Test* and *Watson Glaser Critical Thinking Appraisal* that are designed to measure intelligence).

In psychometrics, this approach of examining the degree to which a test or an assessment measures what it purports to measure is referred to as "construct validation" (Guion, 1965). There are two other types of construct validation: (a) content validity and (b) criterion-related validity. "Content validity" refers to the extent to which a test or assessment captures all the facets of a given psychological construct that it was designed to measure. Content validation requires the use of recognized subject matter experts (SMEs) to systematically evaluate whether the assessment items actually measure the defined content of the construct. In the case of the *TALENTx7® Assessment*, we content validated it by the careful process the SME panel employed to select the assessment items. The analyses presented in this technical report thus far examined factor structure, internal consistency, test-retest reliability, and subgroup similarity – all of which scientifically supported the "content validity" of the assessment.

"Criterion-related validity," in contrast, is the extent to which scores on a test or assessment demonstrably relate to concrete criteria in the external workplace (e.g., job performance, leadership competency ratings). Ultimately, the effectiveness of all assessments is judged by criterion-related validity.

Ultimately, the effectiveness of all assessments is judged by criterion-related validity.

Three criterion-related validation studies were conducted to ascertain the psychometric merits of the *TALENTx7® Assessment*. Study 1 investigated the relationship between scores on this instrument with scores on a well-established assessment of learning agility (*viaEDGE*™). Study 2 explored scores on the *TALENTx7® Assessment* for a pool of high potential managers in a large retail company's emerging leaders program. Performance ratings of these managers were obtained and contrasted to their scores on the assessment. Finally, Study 3 examined the relationship between *TALENTx7® Assessment* scores and leadership competencies for a group of supervisors and managers in a food processing plant. The findings of each study are reported in this section of the technical manual.

In addition, a study was conducted to examine the relationship between scores on the *TALENTx7® Assessment* and scores on different tests of intelligence (Study 4). If respondents' scores on those two different types of measures indeed are different, it supports the position that two separate constructs are being assessed. That is, the correlation coefficients should be low between the scores of learning agility and intelligence.

Study 1: Relationship to Scores on Other Self-Assessments

In an initial attempt to establish criterion-related validity, the learning agility scores for a sample of participants who took the *TALENTx7® Assessment* were compared to the scores respondents received on *viaEDGE*™. Although obtaining comparable scores at the factor level is important, it is vital that scores of Overall Learning Agility be similar. A correlational analysis was conducted to evaluate the degree of relationship between these two assessments (see Table 12 on the next page).

As can be seen, the correspondence between scores on the *TALENTx7® Assessment* and *viaEDGE*™ is very high overall. In general, the correlation coefficients between similar factors on the two assessments are in the upper-0.50s or 0.60s (see cells highlighted in yellow). The only facet of learning agility that did not reach statistical significance was Cognitive Perspective – labeled

Clearly, the TALENTx7® Assessment appears to measure an individual's learning agility similar to viaEDGE™, with the advantage of assessing two additional facets of the learning agility construct (see Table 12).

Mental Agility on *viaEDGE*™. And, in this instance, the correlation coefficient was quite high (r = 0.36, *ns*) but did not reach statistical significance due to the relatively small sample size (N = 18). Also note that *viaEDGE*™ only measures five facets of learning agility; therefore, the facets of Environmental Mindfulness and Feedback Responsiveness cannot be evaluated.

Most importantly, scores of Overall Learning Agility on the two different self-assessments were very highly correlated (r = 0.78, p < .001). Clearly, the *TALENTx7® Assessment* appears to measure an individual's learning agility similar to *viaEDGE*™, with the advantage of assessing two additional facets of the learning agility construct (see Table 12).

Table 12. Relationship between *TALENTx7® Assessment* and *viaEDGE™ Assessment*

Overall Learning Agility and Facet Scores

TALENTx7® Assessment	*viaEDGE™ Assessment*					
	Mental Agility	People Agility	Change Agility	Results Agility	Self-Aware	Overall Agility
Cognitive Perspective	0.36	0.59**	0.30	0.44	0.64**	0.71**
Interpersonal Acumen	0.27	0.58*	0.15	0.53*	0.30	0.58*
Change Alacrity	0.39	0.46	0.63**	0.82***	0.21	0.78***
Drive to Excel	0.25	0.39	0.30	0.64**	0.54*	0.69**
Self-Insight	0.24	0.49*	0.05	0.49*	0.62**	0.57*
Environmental Mindfulness	0.41	0.69**	0.29	0.51*	0.51*	0.70**
Feedback Responsiveness	0.29	0.41	0.13	0.55*	0.37	0.52*
Overall Learning Agility	***0.38***	***0.61****	***0.32***	***0.68****	***0.54****	***0.78*****

Note. N = 18. *p < .05; **p < .01; ***p < .001.

Study 2: Relationship to Performance Ratings

During the spring of 2016, the *TALENTx7® Assessment* was administered to 39 participants of a high potential leadership program at a national retail company with stores located throughout the United States. In total, 36 participants responded. However, four employees were deleted from this analysis due to concerns about the accuracy of their responses (i.e., they had a 1- or 2-star accuracy index). Thus, the final sample size was N = 32 high potential employees. Sixteen (50%) of the participants were female. Position titles ranged from general manager, district manager, regional manager, director, senior director, and vice-president (see De Meuse, 2016).

As part of its annual performance review, the company evaluates employees on the following two performance dimensions: (a) key deliverables and (b) value-based behaviors. The "key deliverables rating" measures the extent to which employees meet performance objectives. A 3-point rating scale is used, ranging from *exceeded expectations* (3), *met expectations* (2), to *improvement needed* (1). The second dimension assesses the extent to which individuals exhibit the company's values through their behaviors, and the scale ranges from *being a role model* (3), *consistently demonstrated it* (2), to *inconsistently demonstrated it* (1). As expected for this group of high potential employees, all of their performance ratings were high. Indeed, no one received a rating of 1 on either dimension. Since the two dimensions were virtually unrelated (r = 0.02), a composite performance rating was computed to capture each employee's evaluation with a single score. Thus, overall, 2 employees (6%) received a *relatively* low evaluation, 13 (41%) received a *relatively* moderate evaluation, and 17 (53%) received a very high evaluation.

Table 13 presents the mean percentile scores of the seven facets and Overall Learning Agility measured by the *TALENTx7® Assessment*. In addition, the number of employees with scores less than and greater than the 50th percentile is provided.

Table 13. Mean Learning Agility Scores and Number of Employees with Scores Less Than and Greater Than the 50th Percentile

Learning Agility Facet	Mean	1-50th Percentile	51-100th Percentile
Cognitive Perspective	72.94	5	27
Interpersonal Acumen	65.22	9	23
Change Alacrity	56.91	10	22
Drive to Excel	86.63	0	32
Self-Insight	49.41	15	17
Environmental Mindfulness	61.28	8	24
Feedback Responsiveness	49.94	16	16
Overall Learning Agility	***66.94***	***6***	***26***

Note. N = 32 managers in a high potential leadership program.

As expected, the mean Overall Learning Agility score for this group of high potential employees was very high (*M* = 66.94). Only six of the 32 employees had scores less than the 50th percentile. With regard to specific facets of learning agility, Drive to Excel (*M* = 86.63) and Cognitive Perspective (*M* = 72.94) were exceedingly high; whereas, Feedback Responsiveness (*M* = 49.94) and Self-Insight (*M* = 49.41) were relatively low. One might infer that an employee's drive (e.g., ambition, motivation, determination) and ability to think critically and strategically (i.e., Cognitive Perspective) were critical for being identified as a high potential in this company. In contrast, an employee's self-insight and responsiveness to feedback appeared to receive little consideration. An alternative hypothesis is that Drive to Excel and Cognitive Perspective are easier to observe than Self-Insight and Feedback Responsiveness. Therefore, these facets of learning agility received relatively more weight when selecting employees for the high potential pool.

As expected, the mean Overall Learning Agility score for this group of high potential employees was very high (M = 66.94). Only six of the 32 employees had scores less than the 50th percentile.

Overall, the majority of high potential managers had learning agility scores above the 50th percentile (see last column of Table 13). In addition, the relationship between performance and Overall Learning Agility was statistically significant at the $p < .10$ level ($r = 0.31$). Consequently, the two findings in this study support the criterion-related validity of the *TALENTx7® Assessment*.

Study 3: Relationship to Leadership Competency Ratings

During the autumn of 2016, the *TALENTx7® Assessment* was administered to a group of supervisors and managers at a large food processing plant located in the southeastern region of the United States. Learning agility scores were correlated with a composite rating of the following 12 leadership competencies: (a) collaboration, (b) adaptability to change, (c) business acumen, (d) communication, (e) customer focus, (f) decision making, (g) directing and developing others, (h) drive for results, (i) innovation, (j) integrity and moral courage, (k) problem resolution, and (l) strategic capability. The participants' competencies were rated by their immediate supervisor on a 5-point scale, ranging from *substantially below expectations* (1), *below expectations* (2), *meets expectations* (3), *above expectations* (4), to *consistently exceeds expectations* (5).

Table 14 presents the correlation coefficients between the participants' composite leadership competency ratings and learning agility scores on the seven facets and Overall Learning Agility. In an attempt to estimate the "true" relationship between the two sets of scores, coefficients were corrected for unreliability and restriction of range in the competency ratings (see Guilford & Fruchter, 1978). As can be seen, all seven facet correlations were statistically significant, ranging from a low of $r = 0.34$ (Cognitive Perspective) to a high of $r = 0.66$ (Environmental Mindfulness). Likewise, Overall Learning Agility had a very strong relationship with leadership competency ratings ($r = 0.62$, $p < .001$).

Taken in total, the results from these three studies provide strong evidence supporting the criterion-related validity of the TALENTx7® Assessment.

Taken in total, the results from these three studies provide strong evidence supporting the criterion-related validity of the *TALENTx7® Assessment*.

Table 14. Relationship between Overall Leadership Competence and Learning Agility

Learning Agility Scale	Leadership Competence	
	r	*p*
Cognitive Perspective	0.34	$p < .05$
Interpersonal Acumen	0.63	$p < .001$
Change Alacrity	0.30	$p < .05$
Drive to Excel	0.62	$p < .001$
Self-Insight	0.40	$p < .01$
Environmental Mindfulness	0.66	$p < .001$
Feedback Responsiveness	0.45	$p < .01$
Overall Learning Agility	***0.62***	***p < .001***

Note. N = 43.

Study 4: Relationship to Scores of General Cognitive Ability

In addition to performing the above analyses to determine the external validity of the *TALENTx7*® *Assessment*, a study was conducted to determine the relationship between learning agility scores and scores of general cognitive ability. Three different instruments were used to assess cognitive ability. The *Wonderlic Contemporary Cognitive Ability Test* is an assessment used to measure the cognitive ability and problem-solving aptitude of candidates for a wide range of occupations. The *Watson Glaser Critical Thinking Appraisal* is designed to measure an individual's logical inquiry, reasoning, and critical thinking skills. It is used by organizations for identifying high potentials and selecting leaders for a variety of mid- and senior-level managerial positions. The *Verify Numerical Ability Test* by SHL is employed by organizations to assess an individual's capability to work with numbers and apply appropriate mathematics in various situations. The test requires candidates to solve problems, perform numerical computations, and interpret data in graphs and tables.

In total, 205 job candidates applying for senior-level leadership roles (e.g., chief executive officer, president, vice-president, or director) at a large number of organizations were represented in the sample. Position titles included nearly every function within an organization, such as Vice-President of Marketing, Executive Vice-President of Operations, Chief Information Officer, Vice-President of Finance and Accounting, Director of Product Management, Senior Director of Human Resources, and so on. Although some of the candidates were internal employees seeking promotion, the vast majority of sample participants were searching for external managerial positions. All learning agility and cognitive ability data were collected during 2020 or 2021 as part of a recruiting process.

The correlation coefficients between learning agility and the three instruments used to measure general cognitive ability are displayed in Table 15. As can be seen, the highest correlations were obtained with the *Wonderlic*. The strongest relationship between the two constructs was for scores on the *Wonderlic* and Cognitive Perspective ($r = 0.28$, $p < 0.01$) and the *Wonderlic* and

Drive to Excel (r = 0.22, p < 0.01). Surprisingly, many of the correlation coefficients between learning agility and cognitive ability for the *Watson Glaser* and *Numerical Test* – albeit low – were negative. Further, the scores on Overall Learning Agility and cognitive ability as measured by the *Watson Glaser* and *Numerical Test* were negative, rs = - 0.14 (p < 0.05) and - 0.09 (*ns*), respectively.

When the *mean* correlation coefficients across the three cognitive ability measures were examined, the results were revealing. The only statistically significant correlation was between the facet Cognitive Perspective and cognitive ability ($\bar{r}$ = 0.153, p < 0.05). The relationships between five of the other six learning agility facets and cognitive ability were negative, ranging from a low $\bar{r}$ = - 0.017 (Change Alacrity) to a high $\bar{r}$ = - 0.103 (Environmental Mindfulness). In addition, the relationship between Overall Learning Agility and cognitive ability was negative ($\bar{r}$ = - 0.017, *ns*). In total, the results of the study indicated that the relationship between learning agility (as measured via the *TALENTx7*®) and cognitive ability (as measured by the *Wonderlic*, *Watson Glaser*, and *Numerical Test*) was quite low and generally negative. A more comprehensive investigation between the relationship between learning agility and general cognitive ability is scheduled to be published later this year (see De Meuse, in press).

…. the results of the study indicated that the relationship between learning agility (as measured via the TALENTx7®) and cognitive ability (as measured by the Wonderlic, Watson Glaser, and Numerical Test) was quite low and generally negative.

Table 15. Relationship between *TALENTx7*® Scores and Measures of Cognitive Ability

Learning Agility Facet	*Wonderlic*	*Watson Glaser*	*Numerical Test*	Mean Correlation
Cognitive Perspective	0.28**	0.08	0.10	0.153*
Interpersonal Acumen	0.05	- 0.14*	- 0.16*	- 0.083
Change Alacrity	0.09	- 0.10	- 0.04	- 0.017
Drive to Excel	0.22**	- 0.01	0.03	0.080
Self-Insight	0.02	- 0.09	- 0.15*	- 0.073
Environmental Mindfulness	0.13	- 0.27**	- 0.17*	- 0.103
Feedback Responsiveness	0.08	- 0.12	- 0.09	- 0.043
Overall Learning Agility	**0.18***	**- 0.14***	**- 0.09**	**- 0.017**

Note. N = 205. *p < .05. **p < .01.

Conclusion

The illiterate of the 21st Century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn

– Alvin Toffler
Future Shock (1970)

Perhaps, the attribute that captures the essence of learning agility the best is the thirst for learning, growing, and evolving as a professional. However, learning is not sufficient. The learning must manifest in our behaviors. We need to apply that learning to perform successfully in future endeavors. It requires "letting go" of former skills, behaviors, and even our personal identity at times and "latching onto" new ones (Day & Harrison, 2007). Learning agile individuals possess the cognitive, attitudinal, and behavioral flexibility to adapt – indeed embrace – what is required at the moment (De Meuse, 2022). Such individuals have the ability and willingness to forge ahead during uncharted waters, recognizing that the lessons learned from prior (sometimes unrelated) experiences will enable them to perform successfully in the current situation. As Bob Eichinger noted, "Learning agility is knowing what to do when you don't know what to do!" The *TALENTx7® Assessment* measures seven behaviors critical to learning agility.

One of the most important lessons business leaders and talent management professionals must learn is to understand that past performance does not guarantee future performance. In fact, it often can get in the way of success. Likewise, one of the most challenging lessons new managers must learn is that what got them there in the first place, will not keep them there – or enable them to be effective in their next position. Not only does early success not ensure future success, at times, it gets in the way (Goldsmith, 2007; McCall et al., 1988). The technical and functional skills that once were valued at lower levels must give way to engaging others, building teams, inspiring confidence, and focusing on long-term strategic goals. Successful managers and executives understand it and continually learn, bend, flex, and evolve as their work world changes. In other words, they are "learning agile."

For many years, scholars in industrial and organizational psychology have emphasized the need to identify and develop such learning agile and high potential employees early in their careers (De Meuse et al., 2010; Lombardo & Eichinger, 2000; McCall et al., 1988; Van Velsor & Leslie, 1995). The *TALENTx7® Assessment* is designed to do this. It enables organizations to apply science to the complex world of leadership identification and development. Rather than basing talent decisions solely on past performance at a lower-level job, limited interactions and observations, and innuendo, scores on the *TALENTx7® Assessment* provide concrete, objective, and quantifiable data on the employee's ability and willingness to succeed in higher-level positions. Further, it levels the playing field, giving all employees an equal opportunity for leadership development regardless of their gender, race, or whom they may know in the organization.

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The construction and validation of the *TALENTx7® Assessment* was rigorous. A panel of eight SMEs selected items carefully crafted to measure the following seven facets of learning agility:

- Cognitive Perspective;
- Interpersonal Acumen;
- Change Alacrity;
- Drive to Excel;
- Self-Insight;
- Environmental Mindfulness; and
- Feedback Responsiveness.

A series of pilot studies conducted in a variety of multinational corporations, state operated enterprises, and privately operated enterprises located in China (*N* = 294 respondents) provided initial psychometric support for the instrument when it was launched in 2015. Its factor structure was confirmed, the internal reliability of the scales used to measure learning agility was established, and its ability to measure learning agility without discriminating against women or the age of the respondent was demonstrated (see De Meuse & Feng, 2015). Two years later, we analyzed the responses from the 1,654 participants who completed the a*ssessment* since its launch. Those additional participants worked in a variety of private and public organizations from around the globe. Thus, a more rigorous examination of the *TALENTx7® Assessment* was performed. Similar analyses were performed to ensure the factor structure remained, the reliability of the scales continued, and no significant subgroup differences emerged to suggest adverse impact (see De Meuse & Feng, 2017).

Two years later, we analyzed the data from an even larger data base. The scores from a total of 3,550 participants throughout the world were collected. Less than one-half of the respondents were from Asia. All industry sectors and most professional occupations were represented. Consequently, a more expansive and rigorous investigation of the *TALENTx7® Assessment* was completed. Again, analyses were conducted to ensure the factor structure remained intact, the reliability of the scales was maintained, and no significant subgroup differences emerged to suggest adverse impact. In addition, various other studies were conducted to investigate the test-retest reliability and criterion-related validity of the assessment (De Meuse, Lim, & Rao, 2019).

The statistical analyses provided in the current technical manual continue to support the scientific merits of the *TALENTx7® Assessment*. With a data base exceeding 10,000 individuals who have taken the assessment during the past 2-3 years, the construct validity of the seven facets of learning agility was upheld. Reliabilities for the 12 psychological scales used by the assessment were strong; the mean coefficient alpha was 0.77 (well above the professional standard of 0.70). Further, no consistent subgroup differences surfaced with the larger dataset, reinforcing the finding of no adverse impact due to gender, race, or age. A study examining the test-retest reliability found stability of scores across time, with a mean $r = 0.69$ for the learning agility scales.

The three recent studies investigating the criterion-related validity of the assessment also found strong support. The relationship between Overall Learning Agility as measured by the *TALENTx7® Assessment* and Overall Learning Agility as measured by *viaEDGE™* was very high ($r = 0.78$, $p < .001$ – Study 1). The relationship between Overall Learning

With a data base exceeding 10,000 individuals who have taken the assessment during the past 2-3 years, the construct validity of the seven facets of learning agility was upheld.

Agility as measured by the *TALENTx7® Assessment* and leader performance was demonstrated (r = 0.31, p < .10 – Study 2). And the relationship between Overall Learning Agility as measured by the *TALENTx7® Assessment* and a composite of 12 leadership competency ratings was significant (r = 0.62, p < .001 – Study 3). Likewise, the relationships between facet scores and these performance ratings were statistically significant in the study. Overall, the findings of the three external validation studies demonstrate a robust linkage between *TALENTx7® Assessment* learning agility scores and leader success.

In a fourth study, the relationship between scores on the *TALENTx7® Assessment* and different tests of general cognitive ability was investigated. The analysis demonstrated that the linkage between participants' learning agility and their intellectual performance on those tests was very limited. The highest correlation was between the Cognitive Perspective facet and intelligence as measured by the *Wonderlic* (r = 0.28, p < .01). Most of the correlation coefficients were nonsignificant; many were negative. The *mean* correlation between Overall Learning Agility and the three measures of cognitive ability was less than $\bar{r}$= 0.02 (*ns*). Thus, those findings support the position that learning agility (as measured by the *TALENTx7® Assessment*) and cognitive ability (as measured by the three intelligence tests used in the study) are different constructs.

An implication of this finding is that organizational decisionmakers do not need to be fearful that learning agility will run counter to diversity, equity, and inclusion efforts. While IQ tests have a long history of adverse impact when used as selection tools (see Murphy, 2002), scores on the *TALENTx7® Assessment* show little relationship between learning agility and cognitive ability. Likewise, researchers have observed very little association between learning agility and gender, race, or age (De Meuse et al., 2011; 2019).

While IQ tests have a long history of adverse impact when used as selection tools (see Murphy, 2002), scores on the TALENTx7® Assessment show little relationship between learning agility and cognitive ability.

Naturally, we need to be cautious whenever collecting an individual's self-ratings when those ratings are used, in part, to make decisions regarding his or her future employment (Dunning et al., 2004; Tett & Simonet, 2021). Therefore, the *TALENTx7® Assessment* has embedded four accuracy scales into the instrument. Scores on those scales are combined to form the Overall Accuracy Index, which indicates the degree of confidence we can place in the veracity of the assessment's results for an individual. When the Overall Accuracy Index suggests that the respondent's scores are suspect, organizations are encouraged to ask the respondent to re-take the assessment.

Overall, the analyses presented in this technical manual support the psychometric soundness of the *TALENTx7® Assessment*. Previously, we recommended additional research should be conducted since a large percentage of the participants (79%) were located in Asia. Moreover, it was recommended that a more refined analysis of potential racial differences should be performed since there had been insufficient numbers to analyze scores by race. We are pleased that both recommendations were addressed in this report. The current data analyses include participants from Europe, Africa and the Middle East, Australia and New Zealand, North and South America, as well as Asia. Less than one-half of the participants were in Asia; less than 15% were from the

Overall, the analyses presented in this technical manual support the psychometric soundness of the TALENTx7® Assessment.

United States. New analyses also have shown no statistically significant or meaningful differences among the following seven racial subgroups (African American, Asian, Caucasian, Hispanic, Indian, Middle Eastern, and biracial). Consequently, no evidence of adverse impact was found.

Ultimately, the objective of any psychological assessment is to scientifically demonstrate a clear line of sight between its scores and behavior. Studies that investigate the capability of the *TALENTX7® Assessment* to identify and develop leaders who succeed *over time* will provide additional evidence of the importance of learning agility and the merits of the assessment.

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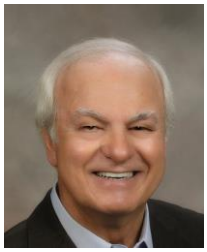
About the Authors



Dr. Kenneth P. De Meuse is founder and president of the De Meuse Leadership Group, a consulting firm specializing in leadership identification and development, executive coaching, and research on high potential talent. Dr. De Meuse is a global thought leader on the assessment and development of leadership, and has presented his research on learning agility and leadership competencies at numerous professional conferences, including the Academy of Management, American Psychological Association, Society for Human Resource Management, Conference Board, International Coach Federation, Society of Consulting Psychology, and the Society for Industrial and Organizational Psychology. His 2010 journal article on learning agility is considered the first scholarly publication on the construct of learning agility and lays the foundation for its scientific exploration.

Throughout his career, Dr. De Meuse has consulted on a variety of strategic and leadership issues at businesses such as Nestle USA, Siemens, Lucent Technologies, RMS McGladrey, Presto Industries, and Ayres Associates. Prior to establishing the De Meuse Leadership Group, he was executive vice president of Research and Product Development at Tercon Consulting, a global consulting firm headquartered in Washington, DC. He also was vice president of Global Research at Korn Ferry International for six years. In addition, he has been on the faculties of Iowa State University and the University of Wisconsin. He has published more than 50 peer-reviewed journal articles and authored eight books. His research findings have been featured in *The Wall Street Journal, Business Week, Fortune, U.S. News & World Report, The New York Times,* and *USA Today*.

He received his Ph.D. in Industrial/Organizational Psychology from the University of Tennessee and his Master's degree in Psychology from the University of Nebraska. In acknowledgement for his contributions to the science and practice of talent management, he was elected Fellow by the American Psychological Association, the Society for Industrial and Organizational Psychology, and the Society of Consulting Psychology.

Mr. Jack Lim is the co-founder and Managing Partner of Leader's Gene Consulting based in Shanghai, China. He has over 20 years of leadership consulting and talent management experience, focusing on executive-level talent in leading companies in China.

His rich coaching and consulting experiences cover top clients in their industries, such as Deloitte, McDonald's, Novartis, Boehringer Ingelheim, Sanofi, Bayer, Johnson & Johnson, Mondelez, Amway, Unilever, Dow, SONY, Alibaba Group, China Telecom, Baidu, Fosun Group, and Shimao Group.

Before founding Leader's Gene, Mr. Lim was Senior Partner and the first Managing Director for Korn Ferry International's Leadership and Talent Consulting business in Greater China. Earlier in his career, he was Managing Director for Mercer's human capital consulting business in Greater China. Before that, he was a senior consultant with Hay Group and a university lecturer. Mr. Lim is a frequent speaker at many high-profile leadership and talent management events in China. He also frequently publishes articles in leading business journals, such as the Chinese version of the

Harvard Business Review, *CEIBS Business Review*, *Tsinghua Management Review*, and *Leadership Excellence* in the US.

As one of the most influential KOLs in leadership and the OD arena in China, he has won many recognitions such as:

- *Top Ten Most Insightful and Inspiring Authors* by HBR China in 2010
- *15 People in 15 Years* by China Staff in 2012
- *Annual Talent in Innovation* by HREC in 2019
- *Top 10 Blogger* by UMU in 2020

Mr. Lim has completed the ICF accredited ACTP program. He holds a bachelor's and a master's degree in engineering from Shanghai Jiao Tong University and an MBA from Massey University, New Zealand. He is a New Zealand citizen, and speaks fluent Mandarin and English.

Mr. Russ Rao is the co-founder and Managing Partner of Leader's Gene Consulting in Shanghai, China. He has over 20 years of consulting experience in strategy and HR management for MNC and Chinese clients across the Greater China region.

With his unique consulting background, Mr. Rao helps clients align talent management, development, and leadership building with business strategy and digital transformation, which link leadership and talent practices to clients' business success. He is experienced in leadership assessment tools and methodologies, talent development strategy, operation design, coaching, and action-learning technology.

Mr. Rao has served clients in various industries, including pharmaceutical, manufacturing, FMCG, telecom, high technology, and financial services. His clients include Boehringer Ingelheim, AstraZeneca, Danone, Estee Lauder, Johnson & Johnson, Novartis, Moet Hennessey and Diageo, Allianz, Cisco, China Mobile, Yangzi Petrochemical, Shanghai Electric Corporation, Wyeth, Hynix, Richo, Tetra Pak and so on.

He was a Managing Principal of Korn Ferry International's Leadership and Talent Consulting business. Prior to joining Korn Ferry, Mr. Rao led the Deloitte Institute, which provided leadership development for 8,000 professionals and 300 partners in Greater China. Earlier, Mr. Rao ran Mercer's human capital consulting business in the East China locations of Shanghai, Taipei, and Nanjing. He also worked with PricewaterhouseCoopers' management consulting service and GE medical service earlier in his career.

Mr. Rao keeps an active presence in the talent and leadership community with memberships in organizations such as CEIBS HR club. Mr. Rao also lectures at major business schools about leadership topics, most notably lecturing for the international M.B.A. program of Tsinghua University. He holds an E.M.B.A. from China European International Business School and a Bachelor of Science degree from Tsinghua University.