HEALTH WEALTH CAREER

EVALUATING THE SKILLS AND ASSESSMENT METHODS USED BY EMPLOYERS IN THE ENTRY-LEVEL HIRING PROCESS

SUMMARY OF RESEARCH CONDUCTED FOR THE JOYCE FOUNDATION

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INTRODUCTION

Mercer conducted this research study for the Joyce Foundation with the objective of better understanding the general employability skills — especially non-cognitive skills — that are most important to employers in entry-level job hiring. For purposes of this study, entry-level jobs were defined as those that do not require a significant amount of previous experience or advanced education (for example, a college degree), and that are typically classified as non-exempt.

Additional objectives of the research included understanding the methods employers use to assess these skills, the confidence employers have in these assessment methods, insights from empirical research studies regarding the usefulness of different method/skill combinations, and employers' knowledge of emerging assessment methods. To address these research questions, Mercer conducted a qualitative review of existing research and publications (for example, research articles, white papers, press publications) and collaborated with the Society for Human Resource Management (SHRM) to design and administer a customized survey of HR professionals who were closely involved with their companies' entry-level hiring processes. A summary of the research results is provided in this report along with potential implications for policymakers, educators and employers.

The SHRM/Mercer *Entry-Level Job Applicant Skills Survey* ("the skills survey") focused on 15 skills employers commonly look for in entry-level applicants. In determining the list of skills to be rated, we leveraged the inter- and intrapersonal skills contained in the National Network of Business and Industry Associations' *Common Employability Skills* report.[1] For the purposes of this study, the term "skill" encompassed skills, abilities, competencies and attributes. The full list of skills included in the survey is presented in Table 1 and full definitions of the skills can be found in Appendix A. We asked respondents to rate the importance of each skill in evaluating entry-level job applicants and to select the three most important skills. We then presented additional questions on the three most important skills, including the methods companies use to assess those skills and the confidence they have in the accuracy of those methods in assessing the skills. Finally, we asked respondents a series of questions about their familiarity with emerging assessment methods in the marketplace. We administered the survey to a sample of SHRM's membership who are directly involved in the hiring/selection of entry-level job candidates in their organizations. The study received responses from 521 HR professionals, representing a variety of industries and company sizes.

[1] National Network of Business and Industry Associations. *Common Employability Skills: A Foundation for Success in the Workplace*, 2014.

Table 1. List of Skills Included in the Skills Survey

ADAPTABILITY

ORAL COMMUNICATION

CREATIVITY/ INNOVATION

PLANNING AND ORGANIZATION

CRITICAL THINKING

PROFESSIONALISM

CUSTOMER FOCUS

READING COMPREHENSION

DEPENDABILITY AND RELIABILITY

RESPECT

INITIATIVE

TEAMWORK

INTEGRITY

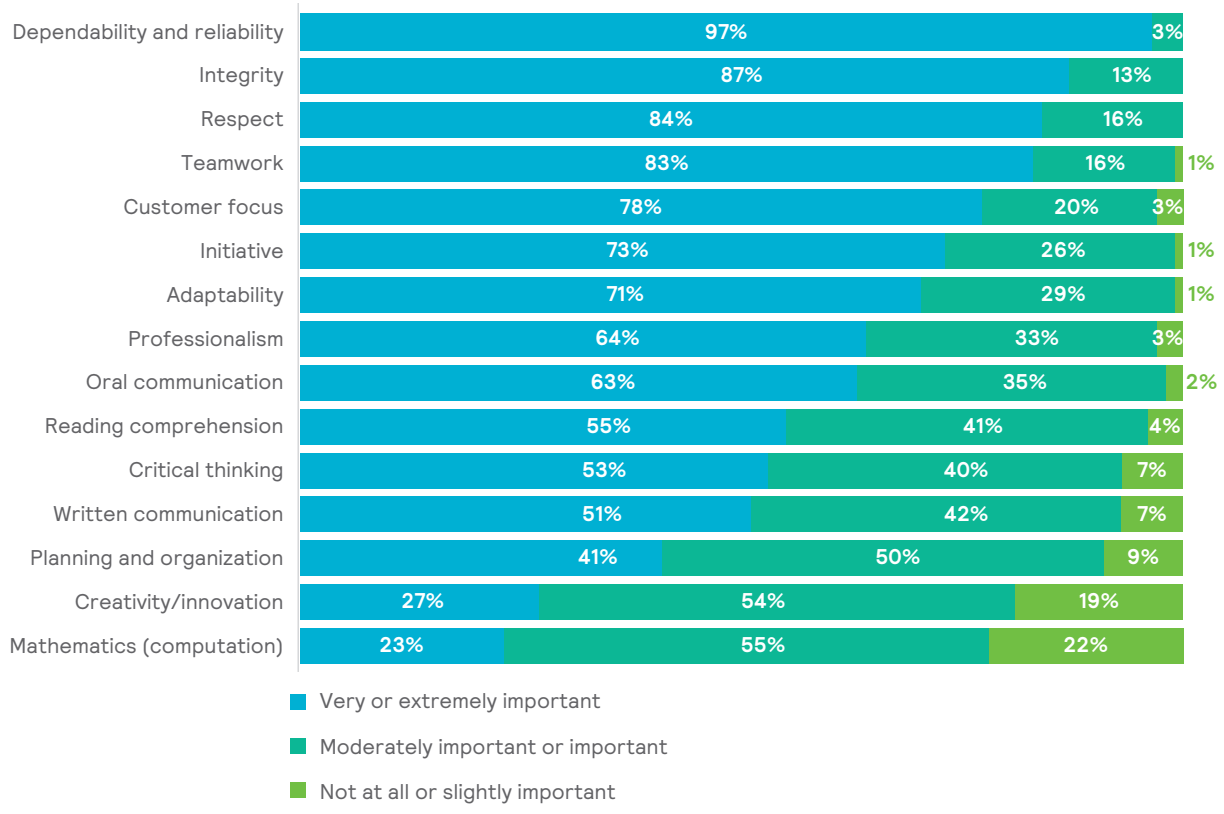
WRITTEN COMMUNICATION

MATHEMATICS (COMPUTATION)

WHAT SKILLS ARE MOST IMPORTANT TO EMPLOYERS IN HIRING FOR ENTRY-LEVEL JOBS?

Dependability and reliability, integrity, teamwork and respect emerged as the most important skills that employers consider in evaluating entry-level job applicants, demonstrated by both the importance ratings and the selection of the three most important skills (see Figure 1 for importance rating results). Dependability and reliability was clearly the most important skill. Planning and organizing, creativity/innovation and mathematics (computation) were rated as the least important skills, although even they were rated as at least moderately important by the vast majority (around 78%) of survey respondents. Adaptability was the only skill that the majority of respondents (62%) thought would increase in importance over the next 3–5 years, although nearly half (49%) believed that both initiative and critical thinking would increase in importance — results that were consistent across organizations of all sizes and all industries. These findings validate the skills included in *Common Employability Skills* report, in that they all appear to be at least moderately important in entry-level hiring.

Figure 1. Entry-Level Skill Importance Ratings



This skill set is a mix of both cognitive skills (for example, critical thinking, mathematics, reading comprehension) and non-cognitive skills, or what are commonly referred to as "soft skills" (for example, dependability and reliability, integrity, respect). It is worth noting that employers considered the non-cognitive skills more important than the cognitive skills, which may be surprising considering the current emphasis on STEM[2] in both education and industry. However, the focus of the skills survey was entry-level job hiring, and although cognitive skills may not be a critical requirement for certain entry-level jobs, they will likely become more important for employees to move into higher-level positions for which job activities are more complex, and to advance their careers. A recent SHRM publication reported that 73% of organizations required data-analysis skills for non-entry-level individual contributor roles, whereas only 27% of organizations required these skills for entry-level positions.[3] A study published by the Economic Policy Institute on the skill requirements for core manufacturing production jobs reported that the majority of surveyed companies required basic reading, writing and math skills, although the level of the required skills generally aligned to that of a high school education.[4] This study also reported that the majority of companies rated cooperation with other employees and the ability to work in a team — both non-cognitive skills — as "very important."

It is worth noting that employers considered the non-cognitive skills more important than the cognitive skills

Furthermore, as a greater number of less analytical, lower-level jobs are replaced due to automation and process efficiencies, proficiency in more cognitively advanced skills may become even more important for entry-level positions. The McKinsey Global Research

Institute recently published a report on the growth of data and analytics capabilities in organizations, which stated that data and analytics are changing the basis of competition and that leading companies are using their capabilities not only to improve their core operations but to launch entirely new business models.[5] Mercer recently released a report on trends related to the changing nature of jobs and job requirements, for which both HR leaders and employees were surveyed on which skills will be in highest demand in the next 12 months.[6] Both groups agreed that innovation/design thinking and data analytics will be among the most important.

Data and technology are clearly changing the nature and requirements of jobs at all levels; less clear is whether employers will invest in training entry-level employees in more advanced skills, such as data analytics, that will likely be required for higher-level positions and career growth, or if they will expect applicants to possess these skills upon entry into these positions.

[2] STEM = science, technology, engineering and math

[3] Society for Human Resource Management. *Jobs of the Future: Data Analysis Skills,* 2016.

[4] Osterman P., Weaver A. *Why Claims of Skills Shortages in Manufacturing Are Overblown,* Economic Policy Institute Issue Brief 376, 2014.

[5] McKinsey Global Research Institute. *The Age of Analytics: Competing in a Data-Driven World,* 2016.

[6] Mercer. *Global Talent Trends*, 2017.

Some of the most important skills from the survey closely align with the components of the five-factor model of personality, or the "Big 5", which is comprised of five non-cognitive skills (conscientiousness, agreeableness, extraversion, openness to experience, and emotional stability).[7] From the skills survey, dependability and reliability closely aligns with conscientiousness, which is generally defined as being dependable and achievement-oriented; and respect closely aligns with agreeableness, which is defined as the tendency to be kind, gentle, trusting and trustworthy. Teamwork is a construct that entails multiple personality traits and skills, including agreeableness and extraversion.[8] Many research studies have shown that the Big 5 personality factors are valid predictors of job performance, although the effect sizes have generally been small to moderate, especially in comparison to measures of cognitive ability.[9] However, research studies have generally found conscientious to have the most robust relationship with performance of the Big 5, which is fortunate given the importance HR professionals place on this skill in entry-level hiring. At a higher level, the results of the skills survey have implications for the discussion on the impending skills gap in the US, at least for entry-level jobs.

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According to the Bureau of Labor Statistics (BLS), January 2017 saw 5.5 million job openings in the US, while the unemployment rate was 4.8%. However, 5.4 million people were hired during that same time period, and these figures have been consistent over the past two years. Although much has been written about the skills gap, the true existence of a gap — especially for lower level jobs — has been challenged in publications including the *Wall Street Journal,*[10] and the BLS figures do not suggest that, in general, filling jobs is becoming more difficult. To address this issue, we asked respondents to the skills survey to identify the proportion of entry-level job applicants that they believed possess the desired level of the most important skills. The results indicated that the majority of job applicants possess the desired level of the most important skills (all non-cognitive), although only about half of job applicants possess the desired level of critical thinking (a cognitive skill). Overall, this suggests that employers, at least those in this sample, should not be having difficulty filling entry-level jobs, assuming they are getting a sufficient number of total applicants and that applicants are accepting job offers at a sufficient rate.

[7] Judge TA, Bono JE. "Five-Factor Model of Personality and Transformational Leadership," *Journal of Applied Psychology,* 85: 5 (2000), pp. 751–765.

[8] Morgeson FP, Reider MH, Campion MA. "Selecting Individuals in Team Settings: The Importance of Social Skills, Personality Characteristics, and Teamwork Knowledge," *Personnel Psychology*, 58:3 (2005), pp. 583–611.

[9] Schmidt FL, Oh IS, Shaffer JA. "The Validity and Utility of Selection Methods in Personnel Psychology: Practical and Theoretical Implications of 100 Years of Research Findings," 2016, available at www.researchgate.net/publication/309203898.
Tett RP, Christiansen ND. "Personality Tests at the Crossroads: A Response to Morgeson, Campion, Dipboye, Hollenbeck, Murphy, and Schmitt," *Personnel Psychology,* 60:4 (2007), pp. 967–993.
Barrick MR, Mount MK. "The Big Five Personality Dimensions and Job Performance: A Meta-Analysis," *Personnel Psychology,* 44:1 (1991), pp. 1–26.

[10] House J. "Is the Skill Gap Real?" *Wall Street Journal*, 9 January 2015, available at https://blogs.wsj.com/economics/2015/01/09/is-the-skills-gap-real.

The existence of a skills and labor shortage is also challenged by Osterman and Weaver in their study of entry-level manufacturing jobs.[11] The study concluded that the large majority of manufacturing establishments simply do not have a problem recruiting the employees they need, and this should be no surprise given the current state of the job market and wage trends. In this study, 76% reported they have no long-term vacancies and nearly 65% of organizations reported they have no vacancies overall. Although Osterman and Weaver focused only on the manufacturing industry, our study included survey respondents from a wide range of industries, including manufacturing, and suggests that the same situation could exist across multiple industries for entry-level jobs. To the extent that there is no skill shortage for entry-level jobs, it is all the more important that applicants possess a core set of cognitive and non-cognitive skills to be competitive in the labor market. A skills shortage is more likely a reality for more advanced, technical jobs, for which fewer individuals possess the desired skills. For example, the McKinsey Global Institute report noted that half of executives they surveyed across geographies and industries reported greater difficulty recruiting analytical talent than filling any other kind of role.[12]

[11] Osterman and Weaver, 2014.

[12] McKinsey Global Research Institute, 2016.

HOW DO EMPLOYERS ASSESS ENTRY-LEVEL SKILLS AND WHAT CONFIDENCE DO THEY HAVE IN THOSE METHODS?

Our skills survey also gathered information on the methods employers use in their assessment of skills of entry-level job applicants, and the levels of confidence they have in those assessment methods.

Forty-two percent of companies use some type of selection test in their entry-level hiring, which means that 58% of companies do not use selection tests.

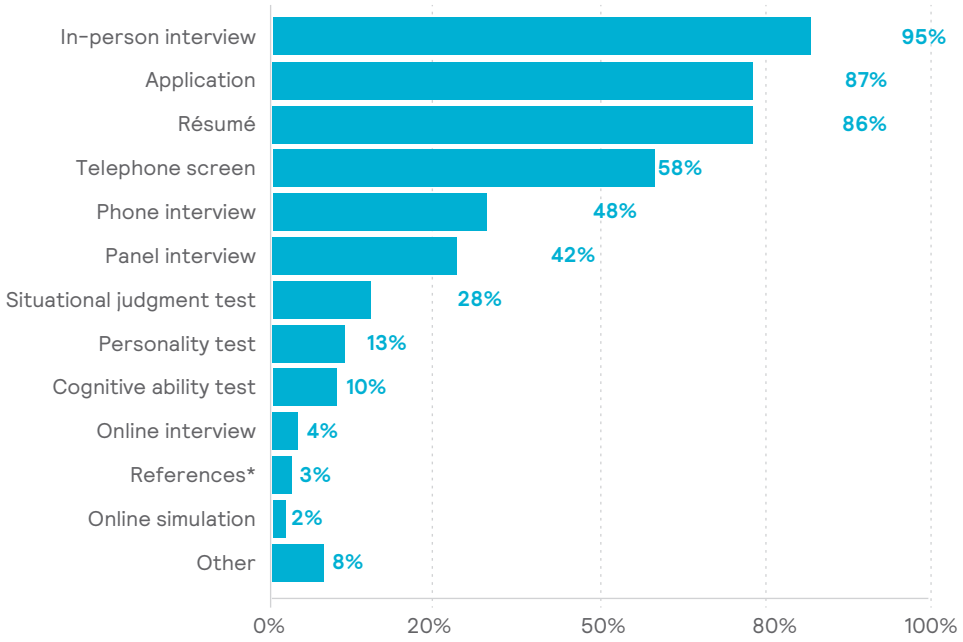
See Appendix B for a definition of the different assessment methods included in the survey. It is important to distinguish between the skills that are deemed most important and the methods used to assess the skills; different methods can be used to assess the same skills, but not all methods are equally effective. The HR professionals who responded to the skills survey identified in-person interviews and application and résumé reviews as the most common methods used to assess entry-level job applicants (see Figure 2), with 95% of companies using in-person interviews. This was true for all industries, sectors and company sizes. Panel interviews, which involve two or more interviewers and typically employ a prescribed set of questions, are used by 42% of companies. Through a separate question, we learned that 42% of companies use some type of selection test, such as a cognitive ability test, personality test, situational judgment test (SJT), simulation or other type of test in their entry-level hiring, which means that 58% of companies do not use selection tests. Individually, 28% of the surveyed companies use SJTs, 13% use personality tests, 10% use cognitive ability tests and 2% use online simulations. We surmise, then, that most employers are relying solely on in-person (individual) interviews and application and résumé reviews to select their entry-level job candidates. These results may come as no surprise to company recruiters and hiring managers involved in entry-level hiring, but the results do challenge recent proclamations in the popular press that that the majority of companies are using "selection tests" as part of their hiring processes.[13] In trying to understand this discrepancy, we note that the skills survey focused on hiring for entry-level jobs — it is likely that other publications considered the use of selection tests at any level of the organization, and for either selection or development purposes.

Most employers are relying solely on in-person (individual) interviews and application and résumé reviews to select their entry-level job candidates

It is also possible that other publications and press communications focused mainly on larger organizations, whereas respondents to our skills survey represented a wide range of small to large organizations, essentially a representative sample of SHRM's membership. Still, respondents from the larger companies reported infrequent use of selection tests.

[13] Weber L. "Today's Personality Tests Raise the Bar for Job Seekers." *Wall Street Journal*, 14 April 2015, available at https://www.wsj.com/articles/a-personality-test-could-stand-in-the-way-of-your-next-job-1429065001.

Figure 2. Methods Used in the Entry-Level Hiring Process (Percentage of Companies Using Each Method)*



*Because respondents were allowed to select all that apply, percentages do not total 100%.

When asked how confident they are in the accuracy of their assessment methods, overall 69% of HR professionals were confident or moderately confident, 20% very or extremely confident, and 11% were slightly or not at all confident. For the most important skills, HR professionals reported the highest levels of confidence in the accuracy of individual interviews, panel interviews, SJTs and personality tests. An insufficient number of respondents reported using cognitive ability tests, limiting our ability to measure the perceived accuracy of this method. HR professionals reported much lower confidence in the accuracy of application and résumé reviews across the skills (see Figures 3, 4, 5 and 6) with nearly one-half, and in some cases the majority, reporting that they are slightly or not at all confident in those methods. This is troubling, since applicant and résumé reviews are among the most common assessment methods used by organizations and are usually the first step in screening job applicants. Many, if not most, entry-level job applicants never get to the interview due to being screened out by their application and/or résumé. Interestingly, some of the least frequently used methods were among those with the highest confidence ratings from HR professionals who did use them. And, these high-rated methods also employ more objective and systematic measurements of skills. For example, panel interviews, an assessment method earning highest confidence for many skills, incorporate the input of multiple individuals and typically use a structured set of interview questions and evaluation criteria, which addresses the individual bias that can weave its way into individual interviews. SJTs and personality tests, also high-confidence assessment methods, are typically developed through a rigorous statistical process and include structured, objective scoring criteria, addressing the potential for bias that is inherent in individual interviews and résumé and application reviews. The fact that most organizations do not appear to be using these more objective methods suggests that employers may have opportunities to significantly enhance the accuracy and effectiveness of their entry-level hiring practices.

The in-person interview was highly rated and also one of the more frequently used methods. However, different companies, and even different hiring managers within companies, all conduct interviews differently. Some organizations use "structured interviews," which typically include a set of defined competencies, defined questions and a structured rating procedure, with the objective of instilling more objectivity and consistency into the interview process. Structured interviews were not rated separately in the skills survey, so we do not know what percentage of respondents uses this approach as opposed to a less structured interview.

Figure 3. Confidence in Methods to Accurately Assess Dependability and Reliability in Entry-Level Job Applicants

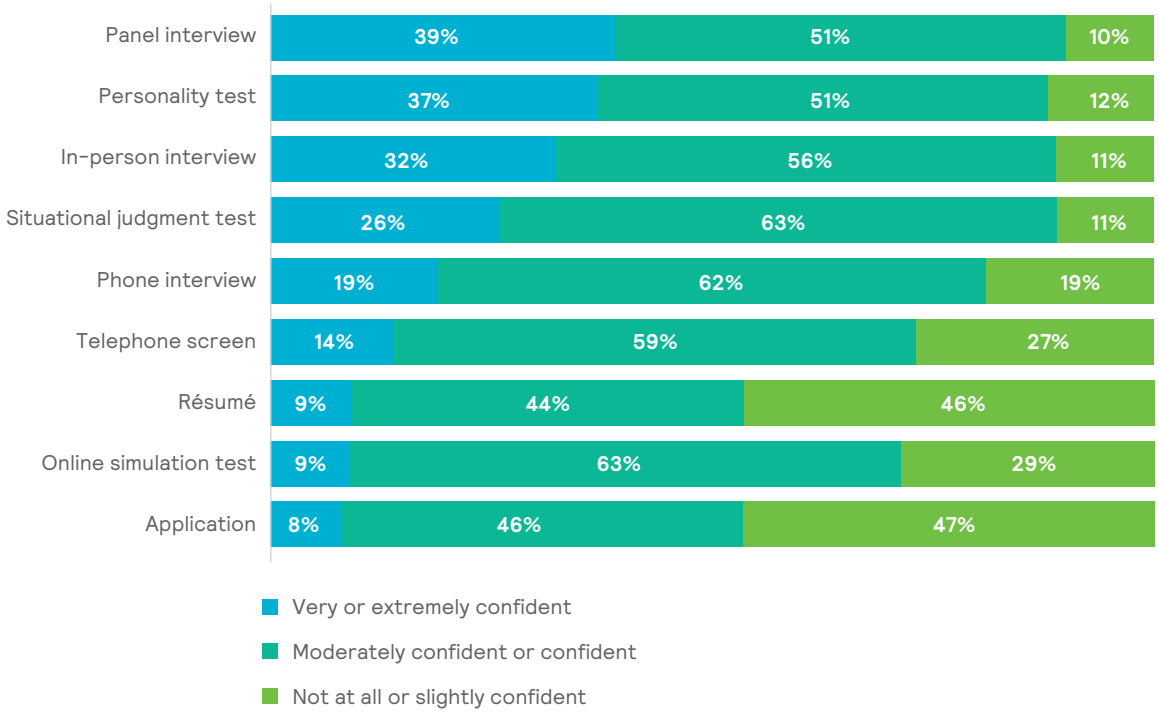


Figure 4. Confidence in Methods to Accurately Assess Integrity in Entry-Level Job Applicants

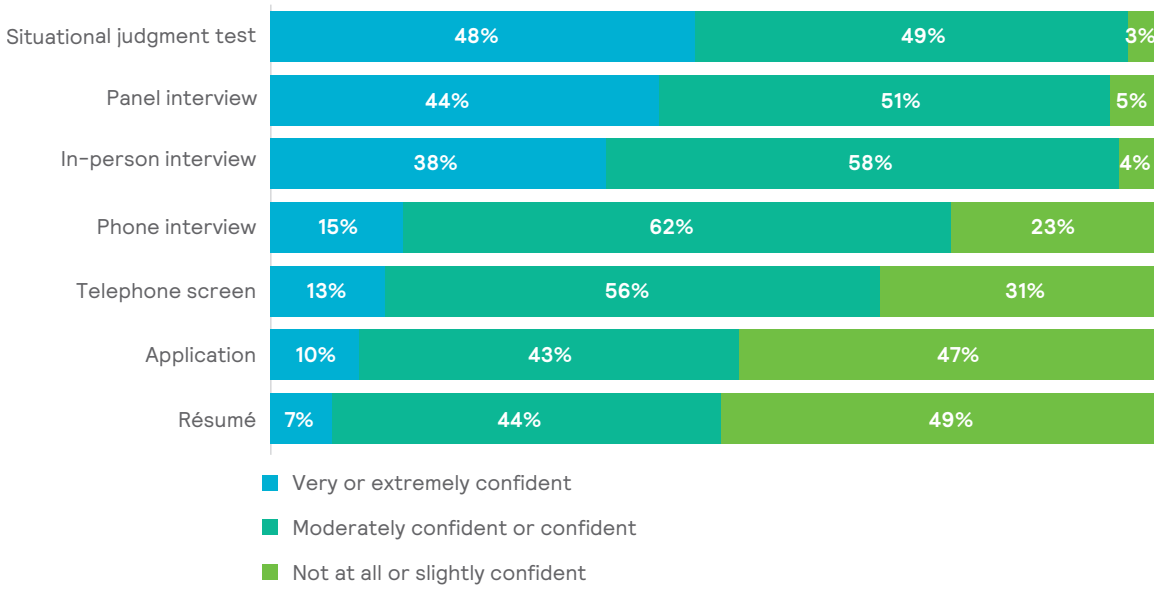


Figure 5. Confidence in Methods to Accurately Assess Respect in Entry-Level Job Applicants

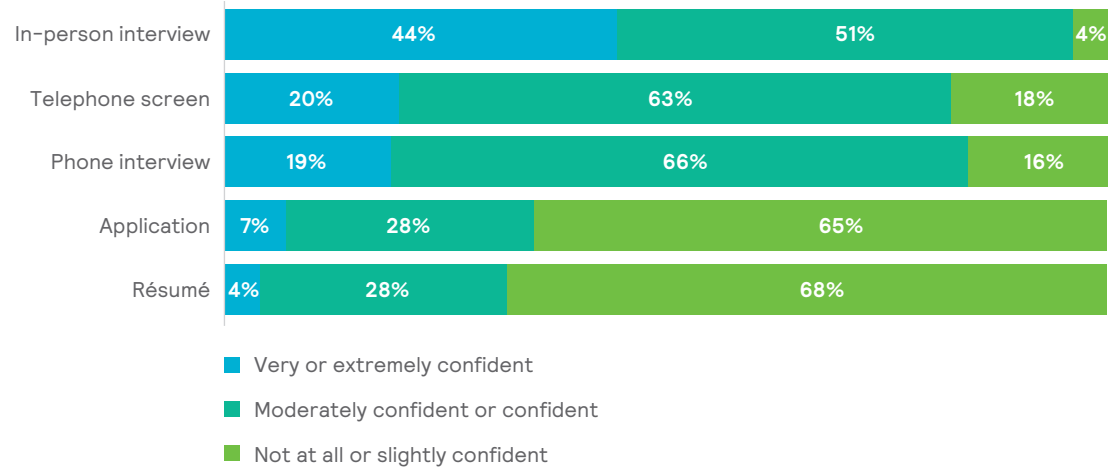
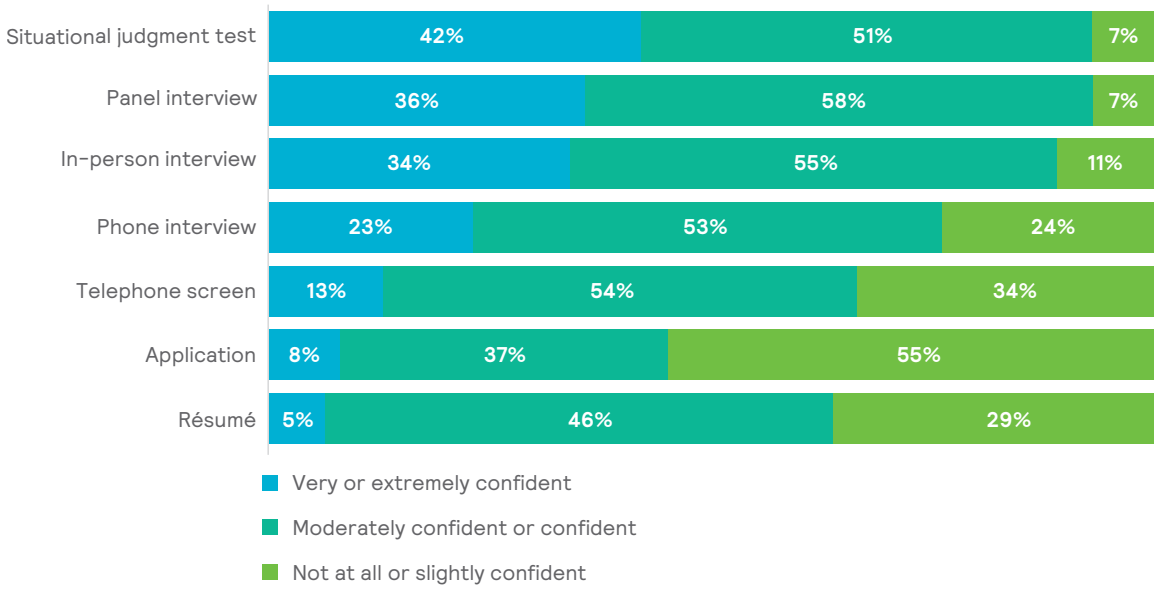


Figure 6. Confidence in Methods to Accurately Assess Teamwork in Entry-Level Job Applicants



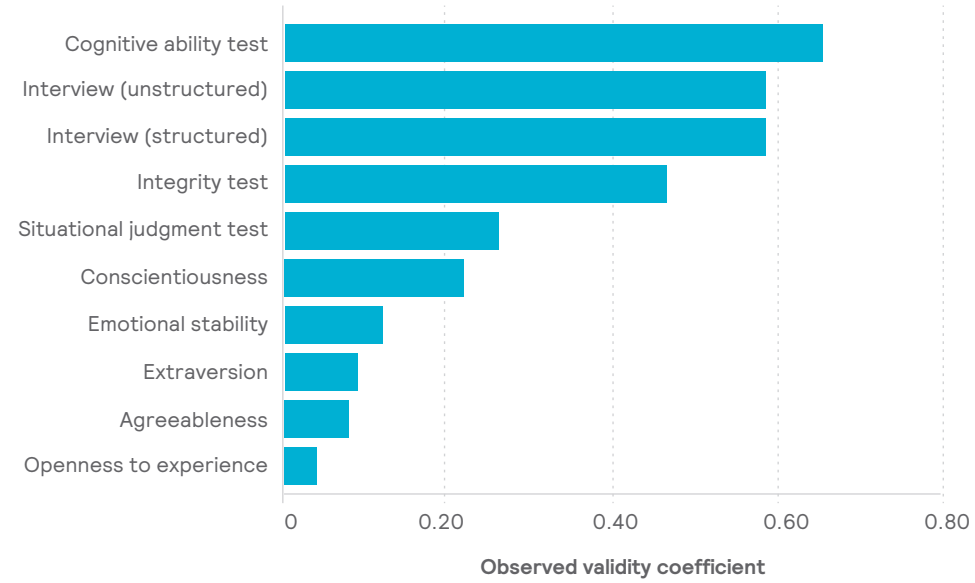
If HR professionals who use selection tests feel more confident using these over other methods, why are so many organizations not incorporating selection tests into their hiring processes? In the skills survey, HR professionals identified "not knowing enough about the applicant" as their biggest concern in assessing entry-level applicant skills, suggesting that current methods do not provide sufficient information about applicants for recruiters to make fully informed decisions. Some assessment methods not commonly used by organizations — such as SJTs, personality tests and cognitive ability tests — are empirically proven to predict applicants' future job performance above and beyond what can be gleaned from an interview alone, and certainly offer insight beyond what can be garnered from a résumé or application review. A seminal 1998 research study, updated with newer statistical techniques in 2016, used meta-analysis techniques to summarize 20 years of research on the predictive validity of different selection methods on future job performance (see Figure 7).[14] Cognitive ability tests, otherwise known as general mental ability tests, demonstrated the highest validity among the various methods. However, tests of integrity and conscientiousness also had reasonably strong validities. Interestingly, interviews (structured and unstructured) had the highest validities next to cognitive ability tests — a result that is counter to recent proclamations about the inaccuracy of interviews.[15] Multi-method approaches — such as combining a cognitive ability test with an integrity test and/or an Interview, or combining multiple methods — tend to produce the highest levels of validity. In the 2016 update, Schmidt et al. reported that the highest levels of validity achieved from combining two methods can be obtained by combining a cognitive ability test with either an integrity test (0.78 combined validity), structured interview (0.76 combined validity), unstructured interview (0.73 combined validity) or conscientiousness test (0.70 combined validity).

[14] Schmidt FL, Hunter JE. "The Validity and Utility of Selection Methods in Personnel Psychology: Practical and Theoretical Implications of 85 Years of Research Findings," *Psychological Bulletin*, 124:2 (1998), pp. 262–274.
Schmidt FL, Oh IS, Shaffer JA. "The Validity and Utility of Selection Methods in Personnel Psychology: Practical and Theoretical Implications of 100 Years of Research Findings," 2016, available at https://www.researchgate.net/publication/309203898.

[15] Sunstein C. "Job Interviews Are Useless," *Bloomberg.com,* 2016, available at https://www.bloomberg.com/view/articles/2016-11-04/job-interviews-are-useless.

A great deal of conflicting evidence abounds on the accuracy of interviews. Using the original meta-analysis data from the 1998 Schmidt and Hunter study, later publications reported different and typically higher validities for the same selection methods, which were entirely the result of different statistical methods.[16] However, in all cases, the interview was shown to have strong validity. Although additional research studies have reported strong predictive validity for interviews, and in particular for structured interviews,[17] others have found interviews, especially unstructured interviews, to be less accurate than selection tests.[18] What we do know about interviews is that they rely on human judgment, and though they may be useful and effective as a selection method, they are also prone to individual biases. Structured interviews attempt to reduce bias by incorporating a standard set of questions and evaluation criteria, but evaluations are still made by individuals and determining if and how biases may be influencing the evaluations is difficult. As such, establishing whether a company's interview process has an adverse impact on protected classes is also difficult. Adverse impact can be directly measured with selection tests but is challenging to measure with interviews since most interviews do not produce quantitative output. With that being said, interviews will most likely always be part of selection processes because HR professionals have confidence in them and research generally supports their validity. However, relying solely on the interview for selection decisions is not supported by research — nonetheless, this seems to be the approach many if not most organizations use.

Figure 7. Meta-Analysis: Selection Methods and Relationship with Job Performance



Adapted from Schmidt, Oh and Shaffer (2016)

[16] Schmidt, Oh, Shaffer, 2016.
Schmidt FL, Shaffer JA, Oh IS. "Increased Accuracy for Range Restriction Corrections: Implications for the Role of Personality and General Mental Ability in Job and Training Performance," *Personnel Psychology*, 61:4 (2008), pp. 827–868.

[17] Huffcutt AI, Arthur W. "Interview Validity for Entry-Level Jobs," *Journal of Applied Psychology*, 79 (1994), pp. 184–190 (Hunter and Hunter, 1984, revisited).
McDaniel MA, Whetzel DL, Schmidt FL, Maurer SD. "The Validity of Employment Interviews: A Comprehensive Review and Meta-Analysis," *Journal of Applied Psychology,* 79:4 (1994), pp. 599–616.

[18] Highhouse S. "Stubborn Reliance on Intuition and Subjectivity in Employee Selection," *Industrial and Organizational Psychology,* 1:3 (2008), pp. 333–342.

Companies likely have different reasons for not employing selection tests, including lack of knowledge of research on selection methods, organizational history, culture and cost considerations. Rynes, Colbert and Brown conducted a survey of 959 HR professionals on the extent to which they agreed with various HR research findings and found large discrepancies between research findings and HR practitioners' beliefs, especially regarding assessment and selection.[19] In particular, they reported that HR practitioners place less faith in cognitive ability and personality tests as predictors of performance than research would recommend. In order to keep HR professionals up-to-date on relevant research findings, the study authors recommended that more research content be put into practitioner journals and other formats commonly used by HR practitioners, such as the SHRM website.

The risk of litigation is one of the more commonly cited reasons for not using selection tests. The use of selection tests dates back several decades, but during the 1960s and early 1970s — a time when the enactment of Title VII laws prohibited discrimination against members of protected classes, including racial/ethnic minorities — some widely used selection tests were challenged on the basis of adversely impacting protected classes. That is, certain protected-class applicants were failing the tests at disproportional rates compared to majority-class applicants (namely Caucasians). The tests in question tended to be cognitive ability tests, although even some personality tests were challenged. As a result, many organizations dispensed with the use of selection tests for fear of litigation.

The perceived risk of being sued or audited by a government agency, such as the Equal Employment Opportunity Commission or Federal Office of Contract Compliance Programs, continues to drive some organizations away from selection tests, especially cognitive ability tests. Despite a history of adverse impact against some members of protected classes, great strides have been made in the quality of selection tests and the statistical methods used to evaluate both the validity and adverse impact of these tests — progress that is supported by the meta-analysis research previously cited in this paper. Nevertheless, variations in quality continue to exist across the range of commercially available tests, especially as more companies enter the assessment marketplace.

The risk of litigation is one of the more commonly cited reasons for not using selection tests.

Although legal risks associated with the use of selection tests continue, organizations should realize that interviews and application and résumé reviews are also considered selection tests from a legal perspective and are subject to the same risks.[20] Given the confidence HR professionals have in the accuracy of selection tests, and the empirical research supporting their validity, employers would benefit from evaluating potential ways to improve their current hiring methods, considering both the risk of incorporating and of not incorporating the use of more objective methods, such as selection tests.

[19] Rynes SL, Colbert AE, Brown KG. "HR Professionals' Beliefs About Effective Human Resource Practices: Correspondence Between Research and Practice," *Human Resource Management,* 41:2 (2002), pp. 149–174.

[20] Equal Employment Opportunity Commission, Civil Service Commission, Department of Labor, Department of Justice. "Uniform Guidelines on Employee Selection Procedures," *Federal Register*, 43:166 (1978), pp. 38290–38315.

WHAT NEW ASSESSMENT APPROACHES AND TECHNOLOGIES ARE EMERGING IN THE MARKETPLACE?

The objectives of the current research study are to shed light on potential enhancements that employers can incorporate into their assessment and selection processes, and to provide guidance for preparing entry-level job applicants to effectively engage with these assessment methods and successfully enter the workforce. Considering the research results previously discussed in this paper, the methods used today by employers to assess the skills of entry-level job applicants show some room for improvement. In SHRM's published findings from the skills survey, it concluded that "innovative" HR professionals are seeking more reliable, less biased methods of assessing entry-level job applicants and that HR's dissatisfaction with current assessment methods opens the door to new, effective approaches.[21] Fortunately, recent advances in statistical methods and the ability to harness large databases for analysis offer hope that more effective assessment methods will be developed in the near future — methods that are effective in both predicting future job performance and eliminating the potential for bias; that is, they will have no adverse impact on protected classes. For example, the limitations of traditional (linear) models are known in terms of uncovering the complex relationship between applicant traits and job success. However, advances in machine-learning algorithms, data science and artificial intelligence show promise in improving the predictive power of statistical models. These techniques, already employed by other disciplines, such as marketing/consumer research, are now being brought to the HR function.

Advances in machine-learning algorithms, data science and artificial intelligence show promise in improving the predictive power of statistical models.

[21] Society for Human Resource Management. *SHRM/Mercer Entry-Level Applicant Job Skills,* 2016, available at https://www.shrm.org/hr-today/trends-and-forecasting/research-and-surveys/Pages/Entry-Level-Applicant-Job-Skills-Survey-.aspx.

With respect to future trends in assessment approaches, the current research study sought to understand HR practitioners' knowledge of two emerging, commercially available selection methods and to what extent these methods were used or being considered for use in their hiring processes. One method incorporates company and applicant "big data" (that is, any information that can be collected) and machine-learning algorithms to statistically determine "best fit"/best-qualified job applicants.

Given that some companies are now reporting applicant drop-off rates of up to 60%–70% in their online application process, engaging applicants in the selection process is becoming an important issue.

The second method uses "gamification," whereby selection tests are delivered in the form of games with the objective of providing an enhanced applicant experience while also generating objective applicant data (versus self-report data). Given that some companies are now reporting applicant drop-off rates of up to 60%–70% in their online application process, engaging applicants in the selection process is becoming an important issue. The majority of surveyed HR professionals were unaware of these two emerging methods (55% and 65%, respectively), and the vast majority (around 80%) were not using or considering using these methods. These results are not necessarily surprising given that only a minority of organizations use even the more traditional, well-known statistically based selection methods. Providers of game-based assessments report positive feedback from millennials, the generation that now represents the largest share of the US workforce, and from generation Z, the group now entering the workforce, on the engagement aspects of the games. Furthermore, employers such as the National Science Foundation, the US Army Research Institute and the US intelligence community have been supporting projects that assess human behavior using video game platforms. Although some of these new approaches have shown promising results, more empirical evidence supporting their validity and utility versus more traditional methods is needed before an informed determination can be made on their added value to personnel selection.

Online simulations are another assessment method to benefit from technological advances, even though this method has been around for several years. Online simulations incorporate exercises that require job applicants to engage in real-life job activities so employers can better understand how they will react and perform on the job. Advances in video technology and animation have made online simulations more realistic in recent years, and the continuous reduction in cost associated with their development has made them accessible for most organizations. Although online simulations are not unlike "games" in that they require the applicant to makes choices or decisions in response to scenarios presented on a computer, they are designed to closely replicate what one might experience on the job, whereas games are not typically job-contextual. Only 2% of surveyed HR professionals indicated that their companies use online simulations, and those were mostly large organizations with 25,000 or more employees. As the technology costs related to online simulation development continue to decline, we will likely see more companies — even midsize and smaller companies — adopting this method.

Rather than shy away from new approaches, HR professionals should seek to harness the power of new technologies to advance candidate selection and provide a more objective and engaging hiring process.

Assessment and selection processes are sure to eventually benefit from technological advancements. As SHRM points out in its report on the findings of the skills survey, the growing use of data analysis across business functions is likely to generate an expectation among C-suite leaders that HR can and should also harness data to improve decision-making, including hiring decisions. Rather than shy away from new approaches, HR professionals should seek to harness the power of new technologies to advance candidate selection and provide a more objective and engaging hiring process.

IMPLICATIONS OF THIS STUDY FOR EMPLOYERS, EMPLOYEES AND EDUCATORS

Our study offers insights for multiple stakeholders, including employers, job seekers and educators. Identifying the most important skills employers consider when making entry-level hiring decisions can guide job seekers and educators on where to focus when preparing for the entry-level hiring process. Job applicants must possess a core set of non-cognitive and cognitive skills, with dependability and reliability, integrity, respect and teamwork heading up the list. Job applicants must be able to demonstrate to employers, via the interview and their résumés and applications, that they do in fact possess these important core skills. Applicants' skill sets are likely best demonstrated to employers through specific experiences that demonstrate dependability, reliability, integrity and the ability to work well with others. The insights offered by this research study regarding multiple valid assessment methods will hopefully guide employers relying solely on interviews and résumé and application reviews to make entry-level hiring decisions to consider additional assessment methods to enhance their selection processes.

Given that non-cognitive skills seem to be especially critical in obtaining an entry-level job, important questions emerge as to how job seekers can build these skills and how educators can provide the right training and development. To what extent are these skills hardwired at birth and to what extent can they be learned and developed? Proponents of a more formalized approach to developing non-cognitive skills within the educational system stress that cognitive and non-cognitive skills are intimately connected and can be developed. Mutual relationships exist between cognitive and non-cognitive skills such that focusing on both can dramatically improve student academic achievement.[22] This type of mutual relationship goes beyond student academic achievement as both cognitive and non-cognitive skills are highly predictive of workforce-related outcomes such as job performance. This further emphasizes the importance of focusing on a core set of both cognitive and non-cognitive skills in job preparation.

[22] Cunha F, Heckman JJ. "Formulating, Identifying and Estimating the Technology of Cognitive and Noncognitive Skill Formation," *Journal of Human Resources*, 43:4 (2008), pp. 738–782.
Alexander KL, Entwisle DR, Olson LS. "Summer Learning and Its Implications: Insights From the Beginning School Study," *New Directions for Youth Development*, 2007:114 (2007), pp. 11–32.
Shriver TP, Weissberg RP. "No Emotion Left Behind," *New York Times*, 16 August 2005, available at http://www.nytimes.com/2005/08/16/opinion/no-emotion-left-behind.html.

Perhaps one of the biggest misconceptions in training and development is that non-cognitive skills cannot be developed later in life. In fact, researchers point to ways that life experiences can continue to develop key non-cognitive skills in individuals well beyond the school years. For example, common experiences associated with age, such as previous employment, can improve self-motivation, self-determination and emotional stability, which, in turn, positively affect job performance.[23] Adult educators and employers can provide targeted interventions in the form of professional development and training that can help fill any skill deficiencies in adults. Similar to developing a foreign language later in life, researchers point out that developing key non-cognitive skills in older workers is perhaps more difficult than developing such skills in young students — though this is not to suggest that developing or improving such skills is impossible.[24] What is needed is a distinct approach to developing non-cognitive skills that takes into account the different learning styles of adults. For instance, the effectiveness of professional development training aimed at advancing interpersonal skills — including communication, leadership and professionalism — depend in large part on the delivery of such training.[25] Honing non-cognitive skills requires a great amount of practical application; in order to develop these skills, educators and organizations need to embrace more experiential approaches to skill development, rather than traditional classroom or online training methods alone.

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The skills survey also asked HR professionals about the value of experience and academic or extracurricular activities in demonstrating the strength of an entry-level job applicant. The top three experiences/activities were completing a career-related internship, holding a job outside of school and holding a leadership role in student government. HR professionals likely view these types of experiences as indicators of proficiency in important skill areas, especially dependability and reliability, further suggesting that certain experiences are important to building important non-cognitive skills and preparing individuals for the entry-level job market.

[23] Gottschalk M. "Training to Become a Better Manager? Here's Why It Might Fail You," *Government Executive,* 14 January 2016, available at http://www.govexec.com/excellence/promising-practices/2016/01/training-become-better-manager-heres-why-it-might-fail-you/125106.
Heckman JJ, Kautz T. "Hard Evidence on Soft Skills," *Labour Economics,* 19:4 (2012), pp. 451–464.
Roberts BW, Walton KE, Viechtbauer W. "Personality Traits Change in Adulthood: Reply to Costa and McCrae (2006)," *Psychological Bulletin,* 132:1 (2006), pp. 29–32.
Roberts BW, Mroczek D. "Personality Trait Change in Adulthood," *Current Directions in Psychological Science*, 17:1 (2008), pp. 31–35.

[24] Elmuti D. "Can Management Be Taught? If so, What Should Management Education Curricula Include and How Should the Process Be Approached?" *Management Decision,* 42:3/4 (2004), pp. 439–453.
Elmuti D, Khoury G, Omran O. "Does Entrepreneurship Education Have a Role in Developing Entrepreneurial Skills and Ventures' Effectiveness?" *Journal of Entrepreneurship Education,* 15 (2012), pp. 83–98.
Hunt JW, Baruch Y. "Developing Top Managers: the Impact of Interpersonal Skills Training," *Journal of Management Development*, 22:8 (2003), pp. 729–752.

[25] Tadimeti V. "E-Soft Skills Training: Challenges and Opportunities," *IUP Journal of Soft Skills*, 8:1 (2014), pp. 34–44.
Jain S, Anjuman ASS. "Facilitating the Acquisition of Soft Skills Through Training," *IUP Journal of Soft Skills,* 7:2 (2013), pp. 32–39.
Merz S. "Teaching the Soft Skills: Three Students Break It Down," *Educational Horizons,* 93:2 (2015), pp. 18–20.
Crosbie R. "Learning the Soft Skills of Leadership," *Industrial and Commercial Training,* 37:1 (2005), pp. 45–51.

Finally, as we look forward, the rapid transformation of jobs and their required skills will challenge employers to be more forward-thinking about the skills they seek in entry-level candidates and also challenge educators to focus on training that truly helps students be successful both today and in the future. For example, will dependability and reliability continue to be seen as the most important skill even five years from now as automation and robotics replace lower-skilled workers in certain industries? A forward-looking mindset will become even more important as we embark on what the World Economic Forum calls the Fourth Industrial Revolution in its 2016 *Future of Jobs* report.[26] The report sheds light on the current and potential future impacts of key disruptions on employment levels, skill sets and recruitment patterns. The report also predicts that many of the major drivers of business transformation currently affecting global industries will have a significant impact on jobs, ranging from significant job creation to job displacement, and from heightened labor productivity to widening skills gaps. But what exactly do the authors mean by the Fourth Industrial Revolution? The report suggests that the rapid pace of technological change and business model disruptions are affecting the skill sets required for both current and emerging jobs across industries. Even jobs that are predicted to shrink in number require a changing set of skills. Across nearly all industries, the impact of technological and business model changes are shortening the shelf-life of employees' existing skill sets, which make adaptability, continuous learning and skill development essential for every employee. Some specific findings and recommendations from the report that are relevant to the current study include:

- There is a growing consensus that forward-looking curricula must focus on the linguistic, mathematical and technological literacies all job roles will require in the future, and that curricula must be updated and adapted continuously, based on insights and forecasting regarding the evolution of local and global labor markets and trends in skill demands.

- Broad, balanced curricula should also feature exposure to the workplace, with an eye toward professionalizing the future workforce; for example, internships, mentoring, access to employer networks and site visits can all contribute to the work-readiness of young people, helping them envision a variety of career paths and equipping them with the relevant competencies.

- Many education systems were built around educating children, not adults. Adult learning systems, where they exist, are usually niche and aimed at individuals, not at systemic collective training, reskilling and upskilling of whole workforces on an ongoing basis. Significantly improved adult training and learning opportunities are vital to ensuring people already in the workforce — and their employers — can navigate the disruptions of the Fourth Industrial Revolution.

These new necessities challenge educators to critically evaluate their curricula and learning methods and employers to provide the appropriate resources and opportunities for their employees to continually and rapidly develop new skills, far beyond what is being provided today.

[26] World Economic Forum. *The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution,* 2016.

APPENDIX A:
SKILLS SURVEY DEFINITIONS

INTEGRITY

Treating others with honesty, fairness and respect

- Demonstrate respect for the organization's time and property
- Accept responsibility for one's decisions and actions

INITIATIVE

Demonstrating a willingness to work and seek out new work challenges

- Take initiative in seeking out new responsibilities and work challenges, increasing the variety and scope of one's job
- Pursue work with energy, drive and effort to accomplish tasks
- Establish and maintain personally challenging but realistic work goals
- Strive to exceed standards and expectations

DEPENDABILITY AND RELIABILITY

Displaying responsible behaviors at work

- Behave consistently, predictably and reliably
- Fulfill obligations, complete assignments and meet deadlines
- Follow written and verbal directions
- Comply with rules, policies and procedures
- Demonstrate regular and punctual attendance

ADAPTABILITY

Displaying the capability to adapt to new, different or changing requirements

- Be open to learning and considering new ways of doing things
- Actively seek out and carefully consider the merits of new approaches to work
- Embrace new approaches when appropriate and discard approaches that are no longer working
- Effectively change plans, goals, actions or priorities to deal with changing situations

PROFESSIONALISM

Maintaining a professional appearance and demeanor at work

- Demonstrate self-control by maintaining composure and keeping emotions in check even in difficult situations
- Maintain professional appearance by dressing appropriately for the job and maintaining personal hygiene
- Use professional language when speaking with supervisors, co-workers and customers
- Maintain a positive attitude
- Take ownership of one's work

CUSTOMER FOCUS

Understanding and anticipating customer needs; being willing to go above and beyond the call of duty to help customers and resolve their problems

- Actively look for ways to identify market demands and meet customer or client needs
- Provide personalized service with prompt and efficient responses to meet the requirements, requests and concern of customers or clients
- Be pleasant, courteous and professional when dealing with internal and external customers or clients
- Evaluate customer or client satisfaction

TEAMWORK

Demonstrating the ability to work effectively with others

- Establish a high degree of trust and credibility with others
- Interact professionally and respectfully with supervisors and co-workers
- Develop constructive working relationships and maintain them over time
- Use appropriate strategies and solutions for dealing with conflicts and differences to maintain a smooth workflow

ORAL COMMUNICATION

Clearly communicating thoughts, ideas and information orally

- Speak in a logical, organized and coherent manner
- Provide appropriate level of detail for the situation and audience
- Listen to and consider others' viewpoints

WRITTEN COMMUNICATION

Clearly communicating thoughts, ideas and information in written form

- Prepare written materials that are easy to understand using correct wording
- Use correct grammar, spelling, punctuation and capitalization
- Communicate thoughts, ideas, information, messages and other written information in a logical, organized and coherent manner
- Provide appropriate level of detail for the situation and audience

READING COMPREHENSION

Understanding the meaning and core ideas in written sentences and paragraphs

- Read and comprehend work-related instructions and policies, memos, bulletins, notices, letters, policy manuals and governmental regulations
- Read and comprehend documents ranging from simple and straightforward, to more complex and detailed
- Attain meaning and comprehend core ideas from written materials
- Integrate what is learned from written materials with prior knowledge
- Apply what is learned from written material to work situations

RESPECT

Working effectively with those who have diverse backgrounds and/or opinions

- Demonstrate sensitivity and respect for the opinions, perspectives, customs and individual differences of others
- Be flexible and open-minded when dealing with a wide range of people
- Value diversity of approaches and ideas

CRITICAL THINKING

Using logical thought processes to analyze and draw conclusions

- Identify inconsistent or missing information
- Critically review, analyze, synthesize, compare and interpret information
- Draw conclusions from relevant and/or missing information
- Test possible hypotheses to ensure the problem is correctly diagnosed and the best solution is found

MATHEMATICS (COMPUTATION)

Using mathematics to solve problems

- Add, subtract, multiply and divide whole numbers, fractions, decimals and percentages
- Convert decimals to fractions; convert fractions to percentages
- Calculate averages, ratios, proportions and rates
- Take measurement of time, temperature, distance, length, width, height and weight; convert one measurement to another
- Translate practical problems into useful mathematical expressions

PLANNING AND ORGANIZATION

Planning and prioritizing work to manage time effectively and accomplish assigned tasks

- Be able to plan and schedule tasks so that work is completed on time
- Be able to prioritize various competing tasks
- Demonstrate the effective allocation of time and resources efficiently
- Take necessary corrective action when projects go off track

CREATIVITY/INNOVATION

Demonstrating the ability to generate and implement new ideas and concepts

- Look for different and better ways to get things done
- Approach problems with curiosity and open-mindedness
- Generate new ideas about a given topic or situation

APPENDIX B: ASSESSMENT METHOD DEFINITIONS

APPLICATION: Form that indicates interest in a particular place of employment or position within a company; typically requests personal identification information, such as name, address and phone number, as well as job experience

COGNITIVE ABILITY TEST: Assessments that measure a variety of mental abilities, such as verbal and mathematical ability, reasoning ability and reading comprehension

IN-PERSON INTERVIEW: A face-to-face conversation between a job applicant and a representative of an employer that is conducted to assess whether the applicant should be hired

ONLINE INTERVIEW: An online conversation between a job applicant and a representative of an employer, conducted using computer-mediated communication, such as video, to assess whether the applicant should be hired

ONLINE SIMULATION: An online exercise that requires job applicants to engage in real-life job activities so employers can better understand how they will react and perform on the job

PANEL INTERVIEW: A type of interview involving the participation of a group of two or more people from the employer and often including a prescribed set of questions and evaluation criteria; used by hiring managers to gain perspective from other people in the organization

PERSONALITY TEST: Tests that assess traits relevant to job performance; personality factors assessed most frequently in work situations include conscientiousness, extraversion, agreeableness, openness to experience and emotional stability

PHONE INTERVIEW: A phone conversation between a job applicant and a representative of an employer that is conducted to assess whether the applicant should be hired

REFERENCES: Statements through phone calls or letters that are provided by previous employers or educators to prospective employers about a job applicant's qualifications, character and dependability

RÉSUMÉ: A document used by a job applicant to present her or his background and skills to prospective employers

SITUATIONAL JUDGMENT TEST: Tests that provide job candidates with situations they would encounter on the job and viable options for handling the presented situations; depending on how the test is designed, candidates are asked to select the most effective or most and least effective ways of handling the situation from the response options provided

TELEPHONE SCREEN: A phone conversation between a job applicant and a representative of an employer that is typically conducted to determine whether to move the applicant to the next stage of the selection process

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