

A Rosetta Stone for Social and Emotional Skills:

Using the Big Five Personality Factors to Understand, Assess, and Enhance Social and Emotional Skills in Primary and Secondary Education Worldwide



November 2019

Jonathan E. Martin,
Alexis Menten,
Kate E. Walton,
Jeremy Burrus,
Cristina Anguiano-Carrasco,
Gabriel Olaru,
Richard D. Roberts



Asia Society

Asia Society is the leading educational organization dedicated to promoting mutual understanding and strengthening partnerships among peoples, leaders, and institutions of Asia and the United States in a global context. Founded in 1956 by John D. Rockefeller 3rd, Asia Society today is a global institution—with offices throughout the United States, Asia, and Europe—that fulfills its educational mandate through a wide range of cross-disciplinary programming. Across the fields of arts, business, culture, education, and policy, the Society provides insight, generates ideas, and promotes collaboration to address present challenges and create a shared future.

The Center for Global Education at Asia Society’s mission is to develop global competence in students and educators as the foundation for understanding between people in the Asia Pacific region and throughout the world. We partner with education leaders, schools, non-formal learning programs, and education systems around the world to tackle one of the most critical challenges in education today: how to educate all students for employability and citizenship in a global era. We accomplish this by working with educators, school districts, parents, and communities to ensure that they have the tools and support needed to globalize learning and prepare young people for our global future. Please visit us online at AsiaSociety.org/Education.



ACT, Inc.

ACT is a mission-driven, nonprofit organization dedicated to helping people achieve education and workplace success. Grounded in 60 years of research, ACT is a trusted leader in college and career readiness solutions. Each year, ACT serves millions of students, job seekers, schools, government agencies, and employers in the US and around the world with learning resources, assessments, research, and credentials designed to help them succeed from elementary school through career. To learn more, visit us at act.org.

About the Authors

Jonathan E. Martin has 15 years of experience as a school principal and is a consultant and writer on 21st century learning and assessment. He is currently the Director of K12 Professional Learning for ACT, Inc. Since 2012, he has worked on the development and/or advised on the implementation of multiple Social Emotional assessment systems in primary and secondary education, including the Enrollment Management Association's Character Skills Snapshot, the Mission Skills Assessment, the OECD Test for Schools Based on PISA, the High School Survey of Student Engagement, and ACT Tessaera. The author of the 2019 book, *Reinventing Crediting for Competency-Based Education*, Jonathan holds a BA from Harvard University and an MA in Educational Administration from the University of San Francisco.

Dr. Gabriel Olaru is currently working in the Department of Psychological Assessment at the University of Kassel in Germany. His main area of specialization is personality and assessment, with a main focus in research on the Big Five of personality and current methods in evaluating and improving psychological measurement instruments.

Alexis Menten is the Managing Director of the Center for Global Education at Asia Society, where she is responsible for strategic and program planning, fundraising and partnership development, and finance and operations. She is part of the leadership team developing Asia Society's curriculum, professional development, and assessment resources on global competence, which have been implemented in over 60 schools in Asia Society's International Studies Schools Network. During her time at Asia Society, Alexis also established a national initiative to advance global learning in non-formal education programs, and launched an international working group and research project to study 21st century competencies in education systems in the US and five countries in Asia. Prior to joining Asia Society, Alexis worked on educational technology projects for Relief International in Central Asia and the Middle East. She is a graduate of Bryn Mawr College and holds a Masters in Public Administration from Columbia University's School of International and Public Affairs.

Jeremy Burrus, Ph.D. is the Senior Director of ACT's Center for Social, Emotional, and Academic Learning (SEALs). Before coming to ACT, he was a Principal Research Scientist at ProExam's Center for Innovative Assessments, and prior to that he was a Research Scientist at Educational Testing Service. He graduated with a PhD in Social Psychology from the University of Illinois, Urbana-Champaign in 2006, and was a post-doctoral research scholar at Columbia Business School in New York City from 2006-2008. His main research interests are in developing innovative assessments of social and emotional learning skills, cognitive biases, and cross-cultural competence.

Kate E. Walton, Ph.D. is a Principal Research Scientist in ACT's Center for Social, Emotional, and Academic Learning. In 2005, she graduated with a Ph.D. in Personality Psychology from the University of Illinois, Urbana-Champaign, then was a post-doctoral research fellow in the Clinical Science and Psychopathology Research Program in the Department of Psychology at the University of Minnesota. She was an Associate Professor of Psychology at St. John's University until 2017 when she joined ACT, Inc. She is primarily interested in social and emotional skill and personality assessment and development.

Cristina Anguiano-Carrasco, Ph.D. is currently a Senior Research Scientist at the Center for Social, Emotional, and Academic Learning (SEAL-Team) at the Learning Accelerator at ACT, Inc. Iowa City, Iowa. She completed her doctoral dissertation in Research Methods and Psychometrics from the University Rovira I Virgili, Spain in 2013, where she also taught. She also was a visiting scholar at CITO, in the Netherlands, and the University of Massachusetts, Amherst, in the United States. Thereafter, she served as a Senior Research Associate at the Center for Academic and Workforce Readiness and Success, at Educational Testing Service (2014-2017). Her research focuses on social and emotional skills, related response biases, and improving the measurement and assessment of constructs such as grit-tenacity, cross-cultural competence, teamwork, and self-efficacy. Over the course of her career she has published extensively in peer-review scientific journals, having developed over 20 different social and emotional assessments for different populations (i.e., K-12, higher education, and the workforce). Dr. Anguiano-Carrasco is currently the lead scientist on a range of major ACT research projects, which focus especially on international adaptations and evaluation of social and emotional skills products and services.

Richard D. Roberts, Ph.D. is currently CEO and Co-Founder of Research and Assessment: Design Science (RAD Science) Solution, an evidence-based organization that contributes validated assessments, training protocols, and services aligned to the United Nations Sustainable Development Goals (SDGs) for multiple business sectors. A scientist-practitioner trying to work within this social-mission based framework, for two decades he has been at the forefront of research and development around cognitive (e.g., ASVABTM) and noncognitive (e.g., SELF+eTM, ACT TesseraTM) skill assessment systems. Dr. Roberts has published over a dozen books and more than 200 articles on these topics in diverse sub-disciplines (including, education, psychology, business, medicine, and engineering). Previously serving senior leadership roles at the Educational Testing Service (ETS), ProExam, and ACT Inc., Dr. Roberts has worked closely with major organizations such as the Intelligence Advanced Research Projects Activity, Organisation for Economic Co-operation and Development, Army Research Institute, World Bank, Australian Research Council, and the Bill and Melinda Gates Foundation. Among Dr. Roberts' professional honors are two ETS Presidential Awards, two PROSE book awards, a University medal, and a National Research Council Fellowship.

Authors' Note

The impetus for this paper came from the Center for Global Education at Asia Society, whose Global Cities Education Network (GCEN) seeks to share promising practices to develop system responses to systemic education problems, ultimately improving education for all students. The GCEN is an international learning community of city school systems in Asia and North America that collaborate to identify common high-priority challenges, research best practices, and then develop effective and practical solutions that can be adapted to varying cultural and political contexts. The Charles Stewart Mott Foundation provided resources to support the publication and dissemination of this paper to members of the Global Cities Education Network and other stakeholders.

The views and opinions expressed in this article are solely those of the authors and do not purport to represent the views of the Asia Society, ACT, Inc., or any of the organizations the authors are variously affiliated with.

Contents

Introduction	5
From a Babel of Skills to the Big Five Factors	6
The Big Five Factors as a Rosetta Stone for Educators	8
Relevance for Education Systems	13
Relevance for Workforce Systems	14
The Translation Tool: Big Five Personality Assessment	17
Self-Report Likert-Type Scales	17
Forced-Choice Assessment	17
Situational Judgment Test	18
Biographical Data	19
Others-Reports	19
Towards a Comprehensive Social and Emotional Assessment System.	20
Conclusion	20
References	21

Introduction

A commitment to developing character, social and emotional skills, and 21st century competencies can be found in the mission statements of many schools across the globe (Stemler & Bebell, 2012) and in national policy statements worldwide (Torrente, Alimchandani, & Aber, 2016). In addition to delivering academic learning, schools proclaim their commitment to developing students to become life-long learners, skillful collaborators, moral individuals, confident and persistent problem-solvers, organized and conscientious leaders, innovative thinkers, and much more.

These types of outcomes, however, are rarely intentionally inculcated through elementary and secondary teaching and learning. As a result, such skills are often fostered through informal means—as a byproduct of good teaching or good parenting—or through non-formal programs, including extracurricular activities and programs organized by community-based organizations. This means that some students benefit from the opportunity to develop these skills, while others do not. In fact, they are as important as academic abilities in predicting success in school and careers (Poropat, 2009; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007), and thus are essential for all students.

Social and emotional skills are as important as academic abilities in predicting success in school and careers and thus are essential for all students.

At the same time, policymakers and employers around the world are realizing the mismatch between the outcomes promoted by their education systems and the skills required for work and life in the 21st century. Recognizing that these skills need more careful attention in primary and secondary educational practice, in recent years, various organizations have identified many of these types of skills as essential. In a survey conducted by the National Association of Colleges and Employers (2017), problem-solving skills, ability to work in a team, communication skills, leadership, and work ethic topped the list of attributes most sought after by employers in the US. While also valued, analytical/quantitative skill was the sixth most valued attribute. Despite being highly valued, several reports have noted that social and emotional skills are often lacking in new employees joining the workforce in the US (e.g., Casner-Lotto & Barrington, 2006). These findings have been reflected in global reports as well (Deloitte and Global Business Coalition for Education, 2018).

As a result, education systems worldwide are engaged in a reassessment of the knowledge, skills, and dispositions students need for success in today's rapidly changing and complex world. The Center for Global Education at Asia Society has been at the forefront of the educational response to globalization, working with educators, academics, policymakers, and other stakeholders to define global competence for primary and secondary education (Boix Mansilla & Jackson 2011). Global competence is the capacity and disposition to understand and act on issues of global significance. As such, global competence includes a combination of cognitive, social and emotional, and civic engagement skills that are not easily categorized in current education frameworks.

What is needed is an evidence-based framework to help educational policymakers and educators make sense of the plethora of skills beyond academics that are critical for 21st century success, along with strategies and approaches to effectively teach and reliably assess these skills. This paper puts forward one such framework, the Big Five personality factors, which can act as a Rosetta Stone to “translate” the various concepts and terms used among and between researchers and practitioners, economists and businesspeople, and policymakers in education systems in different countries.

Social and emotional factors could and should play a more pivotal role in educational policy and practice than hitherto realized.

Interpreting critical social and emotional educational outcomes through the lens of the Big Five tethers them to the hundreds or thousands of psychological studies conducted in the past two decades. The conclusion of this research is clear and compelling: these traits matter. Research has shown that several of these traits may be as important for academic performance as cognitive ability is, and that these traits positively predict performance, behavior, and satisfaction in work and life (e.g., Poropat, 2009). Although social and emotional learning (SEL) once appeared only relevant to early childhood and primary education, there is now a solid evidentiary base showing it is not only plausible, but also credible, through secondary and even post-secondary education. In the context of fairly recent studies showing that personality can change over the lifespan, research suggests that social and emotional factors could and should play a more pivotal role in educational policy and practice than hitherto realized.

This paper describes the Big Five personality factors, how they were determined, and how they have been demonstrated to be universal across different ages and consistent across different countries and cultures. It concludes by reviewing many of the approaches to assessment of these skills, and the related challenges and solutions. As many other reports and organizations have noted (e.g., Asia-Pacific Education Research Institutes Network, 2014; Center for Universal Education at Brookings, 2017; EFA Global Monitoring Report Team, 2012; Oxford Research, 2010), effective implementation strategies need to be further documented, shared, and evaluated for education systems to commit to systematic and intentional support of social and emotional outcomes for all students.

From a Babel of Skills to the Big Five Factors

At the turn of the millennium, the Partnership for 21st Century Skills (P21) launched its work with a long list of the skills that are now required for success in the 21st century. Then, recognizing the value of simplicity, P21 decided to put their focus on four, which they call the 4 C's: critical thinking, communication, collaboration, and creativity (though "self-regulation" is something of an honorary fifth in their publications). Others have attempted to distill the essence of character, social and emotional skills, and 21st century competencies into a manageable few. For example, the Collaborative for Academic, Social, and Emotional Learning (CASEL) selected five "competency clusters": self-awareness, self-management, social awareness, relationship skills, and responsible decision-making.

Tony Wagner's (2010) bestseller, *The Global Achievement Gap*, highlights seven "Survival Skills": problem-solving and critical thinking, collaboration across networks and leading by influence, agility and adaptability, initiative and entrepreneurship, effective written and oral communication, accessing and analyzing information, and curiosity and imagination. Another bestseller, Paul Tough's (2013) *How Children Succeed* champions grit, curiosity, and the hidden power of character in its subtitle. Indeed, many, many different terms have been used by educators, practitioners, policy makers, and researchers. We distill a subset of these in Table 1 that follows.

It is no simple task for educators to narrow down the above list, prioritize what is most important, and develop these skills in young people. It is easy to see why: they are all good things, at least in moderation, and their instruction is not self-evident. In 2012, the National Research Council, in its landmark report *Education for Life and Work*, attempted to cut through the morass by declaring three clusters of competencies: Cognitive, Interpersonal, and Intrapersonal. They argue that the many terms inside of each cluster may or may not be meaningfully differentiated, and it would seem more important to keep the highest attention to the three clusters and to worry less about parsing them in much greater detail.

Table 1: Terms describing key social and emotional skills

Assertiveness	Adaptability	Cheerfulness	Collaboration
Collegiality	Communications	Confidence	Coping with Stress
Creativity	Cultural Competence	Curiosity	Dependability
Determination	Effortful Control	Enthusiasm	Entrepreneurialism
Ethical Behavior	Fairness	Friendliness	Global Mindset
Grit	Growth Mindset	Honesty	Imagination
Innovation	Integrity	Kindness	Leadership
Liveliness	Moderation	Optimism	Organization
Patience	Persistence	Planning	Professionalism
Punctuality	Resilience	Responsibility	Self-Consciousness
Self-Esteem	Self-Regulation	Sociability	Teamwork
Time Management	Tolerance	Trustworthiness	Work Ethic

Decades of psychological research have found that the power of the Big Five Factors lies precisely in the fact that these are the set of constructs that are most strongly differentiated, non-overlapping, and predictive of valued societal outcomes across domains of school, work, and leisure.

A different approach is offered here. Rather than creating a new and original taxonomy, and instead of looking for something alliterative (the 4C's, the Seven Survival Skills), our approach instead draws upon an already well-established taxonomy of personality traits, called the Big Five Personality Factors, from which can be drawn the set of social and emotional attributes most significant for life and work. Decades of psychological research have found that the power of the Big Five Factors lies precisely in the fact that these are the set of constructs that are most strongly differentiated, non-overlapping, and predictive of valued societal outcomes across domains of school, work, and leisure (Kyllonen, Lipnevich, Burrus, & Roberts, 2014; MacCann, Duckworth, & Roberts, 2009; Poropat, 2009; Schmidt & Hunter, 1998). They also have the benefit of being already demonstrated as universal across the lifespan (Roberts & DelVecchio, 2000; Roberts, Walton, & Viechtbauer, 2006) and relatively consistent across cultures (De Raad, 2002; McCrae & Terracciano, 2005; Schmitt, Allik, McCrae, & Benet-Martinez, 2007). Scientific evidence documents that the Big Five Factors are reliable when measured in a wide variety of ways and in differing contexts (Jackson, Wood, Bogg, Walton, Harms, & Roberts, 2010; Lipnevich, MacCann, & Roberts, 2013; McCrae & Terracciano, 2005; Schmitt et al., 2007).

The Big Five Factors as a Rosetta Stone for Educators

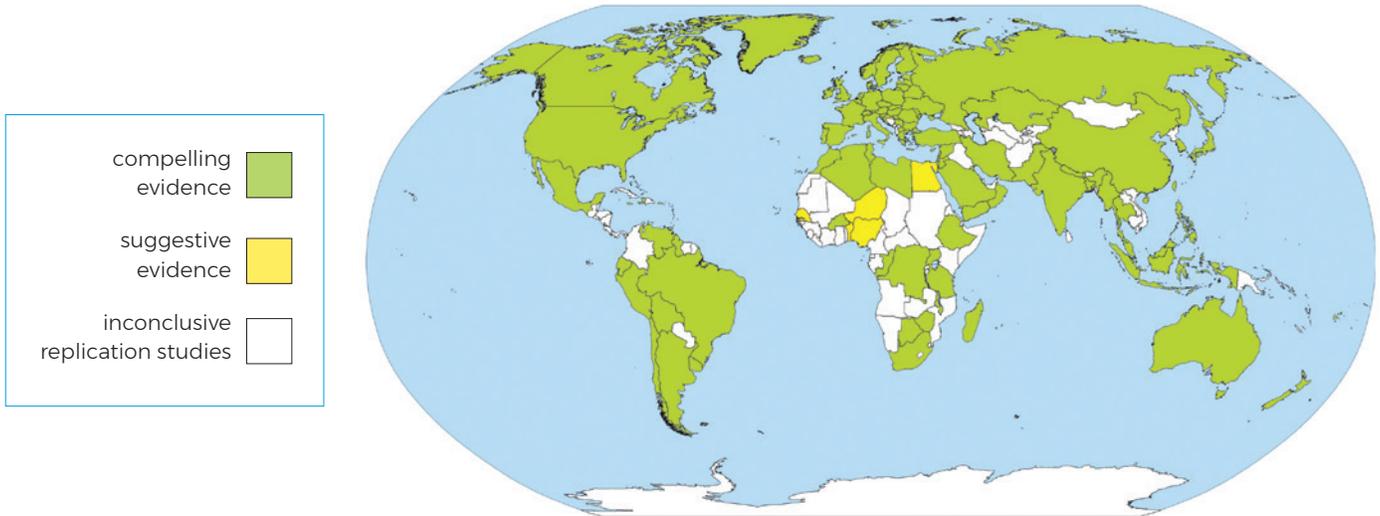
This research has lent support to the Big Five's universality in the vast majority of countries, cultures, and languages across the world.

In contrast to centuries of personality research and models, starting back in ancient times with Hippocrates (ca. 400 BC) and Galen (ca. 150 CE), the Big Five emerged from a statistical analysis of natural language, instead of theoretical assumptions or causal explanations. Under the assumption that all important matters in life have been named and are thus represented in our language, Allport and Odbert (1936) searched Webster's New International Dictionary from 1925 for English words that describe human characteristics. In total, 18,000 English words were selected, with 4,500 being classified as descriptions of stable personal traits. Cattell (1943) applied factor analytic procedures to reduce the massive list of traits by analyzing the underlying patterns of associations among them. He then collected personality data from different sources (e.g., interpersonal ratings, objective measures of daily behavior, and questionnaire results) in diverse populations to arrive at 16 major personality factors (Cattell, 1957, 1973). He was not able to replicate his 16 factors again, but the modern psycholexical approach was born and applied by many researchers to come (Fiske, 1949; Norman, 1963, 1967; Tupes & Christal, 1961), and subsequent factor analyses typically result in five factors. These Big Five are typically labeled Extraversion, Agreeableness, Conscientiousness, Emotional Stability (often times referred to by its opposite, negative pole, Neuroticism), and Intellect (which was later relabeled Openness).

Extraversion describes a person's likelihood to engage in social interaction and propensity towards sensation seeking. Less extraverted persons are more reserved and less socially dominant. Like Extraversion, Agreeableness is a trait primarily influencing interaction with others. A very agreeable person may be described as friendly, helpful, and empathic. A disagreeable person is considered to be cold and unfriendly. Conscientiousness primarily describes achievement-related traits. A person high in Conscientiousness can be described as very organized, diligent, and perfectionistic. Emotional Stability describes a person's capability to cope with stressful situations and emotions. Low Emotional Stability (i.e., Neuroticism) is often accompanied by feeling depressed, stressed, anxious, or worried. Openness is somewhat related to cognitive ability (Ackerman & Heggestad, 1997) and can best be described as a person's interest in, and acceptance of, unfamiliar cultures, ideas, values, artistic endeavors, and even feelings. The opposite pole of Openness is thought to comprise conservatism. John, Naumann, and Soto (2008) offer complete descriptions of the five traits.

Even though they were first discovered in the English language, replication studies, either involving the full psycholexical approach (DeRaad, 2000), or applying translations of established Big Five personality inventories, have often resulted in the same five factors (McCrae & Terracciano, 2005; Schmitt et. al, 2007). Indeed, this research has lent support to the Big Five's universality in the vast majority of countries, cultures, and languages across the world.

Figure 1: Map of the globe showing where measurements of the Big Five Model of Personality have been applied and replicated



The popularity and expansion of the Big Five depicted in, for example, Figure 1, emerged because it is the best compromise between an easy to understand model and an exhaustive representation of all aspects comprising a human's personality. This means that these broad factors measure personality relatively efficiently but with relatively low fidelity (Soto & John, 2009). The Big Five traits lie at what may be referred to as the "foundational level" (Soto & Tackett, 2015) of what is a hierarchical structure of personality traits (Markon, 2009; Markon, Krueger, & Watson, 2005). That is, there are more specific facets at lower levels of the hierarchy, which may be useful for measuring specific traits with much greater precision, and the appropriate facets can be selected for every situation, increasing time and cost efficiency.

Seeing that the Big Five factors are broad and multifaceted, it becomes clear why so many constructs (e.g., grit, growth mindset) can be integrated into the Big Five framework. In Table 2, we illustrate how the many social and emotional skill terms can be aligned to the Big Five. It is only in the interests of space that we do not classify all such constructs.

Table 2: Terms describing key social and emotional skills aligned to the Big Five factors

Conscientiousness	Agreeableness	Emotional Stability	Openness	Extraversion
Dependability	Collaboration	Confidence	Creativity	Assertiveness
Grit	Collegiality	Coping with Stress	Curiosity	Cheerfulness
Organization	Generosity	Moderation	Global Mindset	Communication
Persistence	Honesty	Resilience	Growth Mindset	Friendliness
Planning	Integrity	Self-Consciousness	Imagination	Leadership
Punctuality	Kindness	Self-Esteem	Innovation	Liveliness
Responsibility	Trustworthiness	Self-Regulation	Tolerance	Sociability

The Big Five can therefore be considered as something of a Rosetta Stone for understanding social and emotional skills and their typology. By offering the same content presented in the words of three different languages, the Rosetta Stone allowed archaeologists to understand how languages related to one another, and how different words in different languages have the same meaning. Using the Big Five factors, we can understand that concepts such as time management, grit, and responsibility are all manifestations of Conscientiousness, at least in significant measure.

Many in the field are beginning to recognize that the Big Five is a comprehensive framework for organizing social and emotional skills. For example, ACT recently developed the *ACT Holistic Framework*, a framework that outlines what people should know and be willing and able to do to succeed in education and the workforce (Camara, O'Connor, Mattern, & Hanson, 2015). The ACT Holistic Framework goes beyond traditional academic skills and identifies three other factors that are important to success. These factors are *cross-cutting capabilities* (e.g., collaborative problem solving, critical thinking), *education and career navigation* (e.g., interests, fit), and *behavioral skills* (e.g., work ethic, collaboration). Social and emotional skills are subsumed by the behavioral skills component of the framework. The organizing framework for behavioral skills is the *HEXACO* model of personality (Ashton & Lee, 2007), which is essentially the Big Five model plus one additional factor, called *honesty/humility*. Thus, ACT is one large research organization that has put a stake in the ground in support of the usefulness of the Big Five in organizing social and emotional skills.

Similarly, the Organisation for Economic Co-operation and Development (OECD), an organization whose mission is to promote policies that will improve the economic and social well-being of people around the world, has taken an interest in the measurement of such skills, encouraged by the abundant research that links personality traits to academic and workforce success. OECD created a committee to determine the best approach for measuring such skills, with the Big Five again coming out on top (e.g., Chernyshenko, Kankaraš, & Drasgow, 2018; Kankaras, 2017). OECD is now conducting a world-wide, longitudinal study using the Big Five framework. The endorsement of the Big Five framework by OECD, an organization with a clear international and large-scale focus, is itself a testament to the ability of this framework to appropriately measure such skills across countries, languages, and cultures.

The Big Five can therefore be considered as something of a Rosetta Stone for understanding social and emotional skills and their typology.

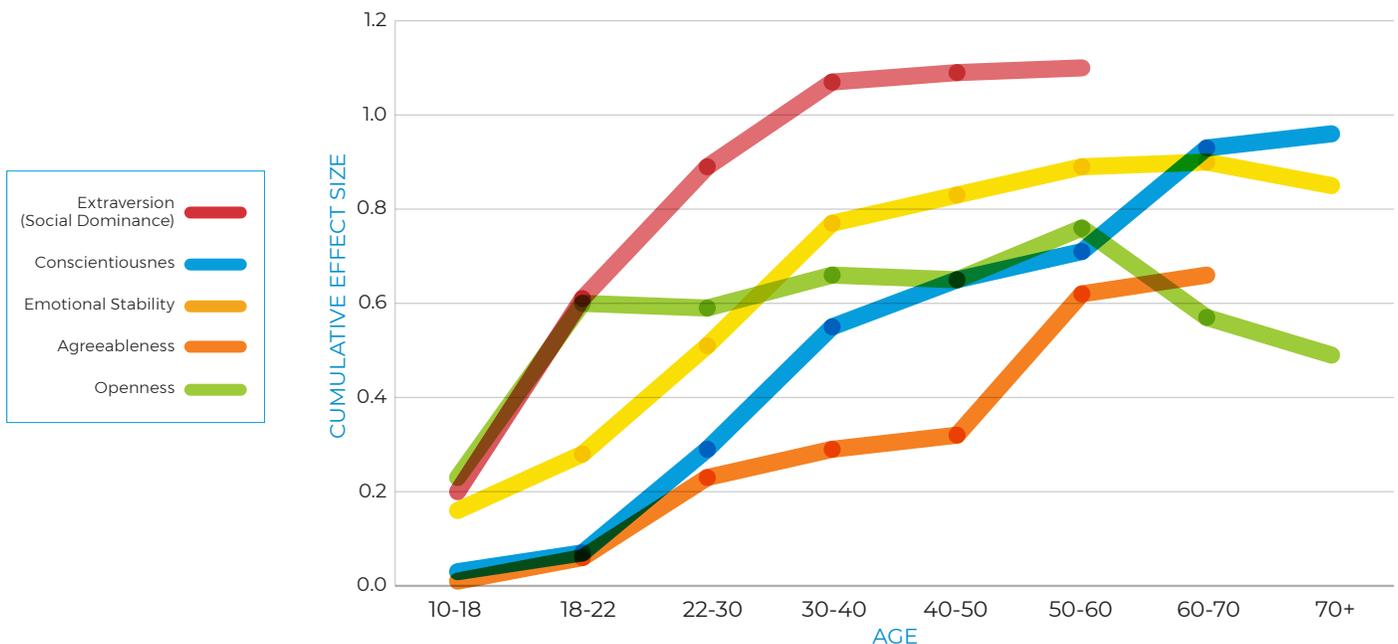
There is a very high potential payoff from investment in the development of social and emotional skills.

There is another aspect of the Big Five model that should not go unnoticed by educators. In the past, some had argued that personality is “set like plaster,” showing little to no development beyond the age of 30 (Costa & McCrae, 1994; James, 1981). Roberts and DelVecchio (2000) carried out a meta-analysis examining 152 longitudinal studies showing considerable rank-order consistency of personality across time with estimated effects of .31 in childhood, .54 in college, .64 by age 30, and .74 by ages 50-70. These values could be misconstrued as supporting the idea that personality is immutable (Costa & McCrae, 1994). However, rank-order stability and significant mean-level change are not mutually exclusive observations. That is, individuals can maintain their relative standing within a group over time, thus yielding high estimates of rank-order consistency, but the entire group could show uniform increases or decreases, which would yield non-zero estimates of mean-level change.

Roberts, Walton, and Viechtbauer (2006) carried out a meta-analysis examining mean-level change in personality over the lifespan, and their findings refute the notion that personality is immutable. They found that individuals become more socially dominant (i.e., extraverted), conscientious, agreeable, and emotionally stable throughout the lifespan, particularly in adolescence and early adulthood. The effects were not slight; cumulative change over the lifespan approached or exceeded a full standard deviation in some cases (see Figure 2). What is more, not only does personality trait change occur naturally (Roberts et al., 2006), but meta-analytic data suggest that marked change can occur as the result of intervention (Roberts et al., 2017), and further data suggest that school-based social and emotional learning programs can be effective for improving social and emotional skills (Mahoney, Durlak, & Weissberg, 2018).

At least one important corollary stems from this body of research; it highlights the potential for educational interventions. Coupled with social and emotional skills’ high valuation by parents, educators, and employers (Gallup, 2018), this research suggests that social and emotional factors could and should play a more pivotal role in educational policy and practice than realized thus far. Put simply, there is a very high potential payoff from investment in the development of social and emotional skills (see Belfield et al., 2015).

Figure 2: Meta-analytic evidence showing personality change over the lifespan



Social and Emotional Learning in a Global Context

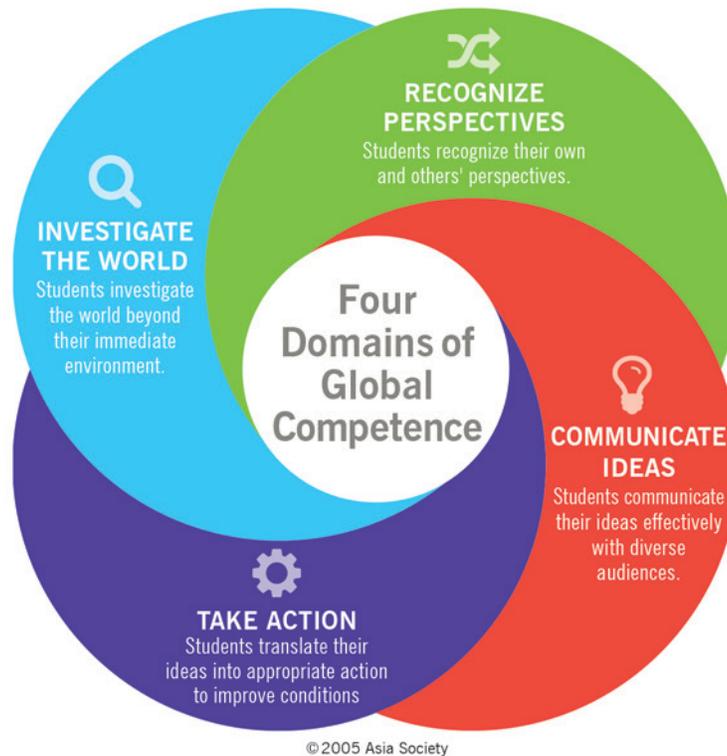
In addition to considering the research base, educators must also consider the teaching and learning of social and emotional skills in the context of globalization. The global economy, climate change, increased migration, and the rapid pace of technological development all place these skills in a broader frame of reference. To successfully navigate this changing world, the social and emotional skills listed in Table 2 will need to be applied in a global context.

In response to this need, and in a remarkable moment of global consensus, the member states of both the United Nations (UN), through its adoption of the Sustainable Development Goals (SDGs) in 2015, and the OECD, through its Programme for International Student Assessment (PISA) in 2018, prioritized education for global citizenship and global competence.

Global competence is defined by the OECD as a combination of knowledge, skills, and values (2017). These include knowledge about the world and other cultures, skills to understand the world and to take action, attitudes of openness, respect for people from different cultural backgrounds, and global mindedness, and valuing human dignity and diversity.

As such, global competence is multi-faceted and requires cognitive development, social and emotional learning, and civic learning (Boix Mansilla 2016). Both the OECD and the Center for Global Education at Asia Society have identified four overlapping dimensions of global competence (OECD and Asia Society, 2018). Globally competent youth:

The imperatives of an interconnected and rapidly changing world only further emphasize the importance of embedding social and emotional skills into primary and secondary education.



The imperatives of an interconnected and rapidly changing world only further emphasize the importance of embedding social and emotional skills into primary and secondary education.

Relevance for Education Systems

There is a vast literature documenting the importance of the Big Five in predicting important outcomes, such as academic success. This allows educators to make far better use of existing research on what constructs are important, what constructs can be changed, and how meaningful change can happen. Table 3 gives a summary of the research that has thus far been conducted on the relationship between the Big Five Factors and academic performance, with an accumulated sample size of over 70,000 students (Poropat, 2009). It displays the correlations between the Big Five factors and cognitive ability with academic performance (in this case, as measured by grade point average).

Table 3: Meta-analytic correlations between the Big Five and cognitive ability and grade point average in primary, secondary, and tertiary education

	EDUCATIONAL LEVEL		
	Primary	Secondary	Tertiary
Conscientiousness	.28	.21	.23
Agreeableness	.30	.05	.06
Emotional Stability	.20	.01	-.01
Openness	.24	.12	.07
Extraversion	.18	-.03	-.01
Cognitive Ability	.58	.24	.23

In secondary education, Conscientiousness is nearly as important for academic performance as is cognitive ability, yet it receives less attention in large scale group score assessments with policy impact.

This research is compelling and clearly demonstrates that these traits matter. In secondary education, Conscientiousness is nearly as important for academic performance as is cognitive ability, yet it receives less attention in large scale group score assessments with policy impact (e.g., from OECD's PISA exam or the new assessments of the Common Core in the United States). Little attention, therefore, is paid to how these types of skills might be enhanced during a student's school career.

The last point in particular is apposite. Research in this field has led to the conclusion that personality traits can be manipulated, and in fairly brief and sometimes innocuous ways (Dweck, 2012). Even so, more focused interventions may have especially powerful ramifications. Another meta-analysis on afterschool programs sheds light on how interventions related to these social and emotional factors play out in the one place

they can be targeted in the United States without getting stonewalled by state and national educational policy or related large-scale assessments. Summarizing the results of over seventy-five studies, and especially those afterschool programs where social and emotional skills are inculcated, Durlak, Weissberg, and Pachan (2010) noted that these non-formal learning programs had an overall positive and statistically significant impact on the youth who participated. These changes did not occur in all domains, but rather in three main areas: feelings and attitudes, indicators of behavioral adjustment, and school performance. In particular, there were significant increases in youths' positive self-perceptions, bonding to school, positive social behaviors, school grades, and achievement test scores. There were also significant reductions for problem-related behaviors. In addition, certain programs that used a protocol focused on sequenced, active, focused, and explicit (SAFE) programming were associated with practical gains in participants' test scores of 12 percentile points between the afterschool and control group, a result that is similar to, or better than, those obtained by many other evidence-based interventions for school-aged populations. Durlak et al. (2010) concluded that current findings for afterschool programs "merit support and recognition as an important community setting for promoting youths' personal and social well-being and adjustment" (p. 302).

Supporting the development of a student's Conscientiousness, Agreeableness, Emotional Stability, Openness, and Extraversion (particularly in the early years) is clearly of utmost importance. Other school-related outcomes are equally important. A case in point is retention. Burrus et al. (2013) undertook a comprehensive review of the higher education literature to ascertain those factors that might readily be the most important to focus on for increasing student retention. Again, the Big Five personality factors appear to play a significant role.

Relevance for Workforce Systems

The value of the Big Five as a Rosetta Stone does not end with education. The Big Five factors are also increasingly viewed as important for a variety of uses in the workforce: employment selection, career training, outcomes assessment, professional development/enhancement, and succession planning, to name a few. In this domain, they are being widely adopted as a near consensual model for behavioral economics, psychology (particularly, industrial, organizational, and military psychology), and, in the United States, Department of Labor policy and practice.

Consider the United States Department of Labor's Occupational Information Network (O*Net), which provides occupational definitions to help job seekers, businesses, and the human resource specialists who are pivotal in staffing these businesses, understand the world of work. It contains numerous resources, including lists of worker characteristics required for occupations. The Big Five model ostensibly guides these worker characteristics. Sackett and Walmsley (2014) combed the entire O*Net database to highlight those social and emotional skills valued by each profession. Table 4 lists the importance of the Big Five to 23 job families representing over 1,000 occupations distilled in O*Net. For the educator interested in their students' eventual life beyond school and college, the results are telling.

The value of the Big Five as a Rosetta Stone does not end with education.

Table 4: The relative importance of Big Five facets and factors to 23 job families representing over 1,000 occupations in O*Net (Big Five factors are in brackets)**Important O*NET Worker Style Characteristics**

Job Family	Top Ranked	Second Ranked	Third Ranked
Architecture and Engineering	Analytical Thinking (O) / Dependability (C)	Integrity (C)	Initiative (C)
Arts, Design, Entertainment, Sports, and Media	Dependability (C)	Adaptability and Flexibility (ES)	Initiative (C) / Stress Tolerance (ES)
Building, Grounds Cleaning, and Maintenance	Dependability (C)	Cooperation (A)	Self-Control (ES)
Business and Financial Operations	Integrity (C)	Dependability (C)	Analytical Thinking (O) / Cooperation (A)
Computer and Mathematical	Analytical Thinking (O)	Dependability (C)	Cooperation (A)
Construction and Extraction	Dependability (C)	Cooperation (A)	Self-Control (ES)
Education, Training, and Library	Dependability (C)	Integrity (C)	Self-Control (ES)
Farming, Fishing, and Forestry	Dependability (C)	Self-Control (ES)	Independence (C)
Food Preparation and Serving	Cooperation (A)	Dependability (C)	Self-Control (ES)
Healthcare Support	Dependability (C)	Concern for Others (A)	Integrity (C)
Healthcare Practitioners and Technical	Integrity (C)	Dependability (C)	Concern for Others (A)
Installation, Maintenance, and Repair	Dependability (C)	Integrity (C)	Cooperation (A)
Legal	Integrity (C)	Dependability (C)	Analytical Thinking (O)
Life, Physical, and Social Science	Integrity (C)	Analytical Thinking (O)	Dependability (C)
Management	Dependability (C)	Integrity (C)	Leadership (E, A)
Office and Administrative Support	Dependability (C)	Integrity (C)	Cooperation (A)
Personal Care and Service	Dependability (C)	Self-Control (N)	Integrity (C)
Production	Dependability (C)	Cooperation (A)	Integrity (C)
Sales and Related	Dependability (C)	Integrity (C)	Self-Control (ES)
Transportation and Material Moving	Dependability (C)	Self-Control (ES)	Integrity (C)

This translates into meaningful information about career readiness and workplace success. Indeed, as is the case with its relation to educational outcomes, the influence of the Big Five on work-related outcomes and behavior has been assessed in many studies, which cumulatively account for several hundreds of thousands of persons (Barrick, Mount, & Judge, 2001; Berry, Ones, & Sackett, 2007; Judge, Rodell, Klinger, Simon, & Crawford, 2013; Sackett & Walmsley, 2014). Table 5 displays the correlations between the Big Five and a number of work-related outcomes, including overall job performance (usually supervisor ratings), task performance, organizational citizenship behavior, and counterproductive workplace behaviors.

Table 5: Relationships of the Big Five and a variety of workplace outcomes as determined by various meta-analyses totaling over 190,000 workers

	Job Performance	Task Performance	Organizational Citizenship Behavior	Counterproductive Work Behavior
Conscientiousness	.33	.31	.40	-.40
Agreeableness	.22	.13	.23	-.51
Emotional Stability	.13	.11	.21	-.31
Openness	.10	.14	.04	-.08
Extraversion	.26	.15	.28	-.04

As in the educational context, greater Conscientiousness positively predicts job performance and behavior and also increases job satisfaction (Sackett & Walmsley, 2014). One should not, however, underestimate the influence of the other Big Five factors. As can be seen in Table 5, Agreeableness is consistently shown to be of value, and it actually does the best job of predicting counterproductive workplace behaviors, which can cost the labor market millions (perhaps billions) of dollars per year. These Big Five factors have been shown to be related to more specific job performance; managers perform better with more Extraversion, higher Emotional Stability and Agreeableness improve teamwork and interaction with others (e.g., clients), and higher Openness enhances training proficiency.

The Translation Tool: Big Five Personality Assessment

As fascinating as this information about the Big Five might be, it is not valuable without effective ways to teach and measure these attributes. Neither researchers nor educators could determine which programs, approaches, and interventions are most effective, evaluate their success at their initiatives, and identify which students most need this support without meaningful assessment techniques. Therefore, the question becomes: how can we best measure the Big Five? Several methods exist, which are summarized below and explained in further technical detail in the Appendix.

Self-Report Likert-Type Scales

Self-reports have been used in social and emotional research for decades and have proven to be very efficient in gathering a lot of information in a brief period of time. Individuals are asked to indicate their level of agreement with a number of different statements (e.g., “I work hard at school”). This type of assessment is preferred in environments when there are no stakes for the self-assessor and faking is not expected (Lipnevich et al., 2013). Respondents, however, may fake their responses on self-assessments to avoid having to attend training programs or to appear more attractive to a prospective school admissions officer, university system, or employer (Zickar, Gibby, & Robie, 2004). Fortunately, researchers have identified several promising methods for collecting data through self-reports while reducing fakability. These include giving real-time warnings, using a forced-choice format, and using one’s estimates of how others will respond to help control for faking (Ziegler, MacCann, & Roberts, 2011).

Forced-Choice Assessment

There are several variants of this method, including pair comparisons, rank-ordering, and multidimensional forced-choice. In pair comparisons, the test-taker must choose between two statements (e.g., Which is more like you: “I work hard” or “I enjoy working in teams?”). In rank-ordering, test-takers must rank a series of equally desirable statements in order from “most like me” to “least like me.” The statements may be unidimensional (i.e., items within a block measure the same trait) or multi-dimensional (i.e., items within a block measure different traits). There is compelling evidence to suggest that forced-choice tests are less fakeable than standard rating scales and have stronger associations with performance outcomes (Drasgow et al., 2012; Jackson et al., 2000). An empirically based procedure for item selection and test development, combined with new statistical modeling techniques, seems to produce the best of all worlds - fake-proof normative tests that can also tell individuals how they score relatively on each dimension (Brown & Maydeu-Olivares, 2011). To date, forced-choice assessments have not been widely used in primary and secondary education, although they show promise, particularly for high school students. While they may have acceptable psychometric properties, and even predict valued educational outcomes, they do not reflect tasks students actually complete in school. The situation resonates with a similar instance in cognitive testing; although analogies tasks were demonstrable predictors of first year college GPA, the College Board replaced these in the SAT® with essays because essays, not analogies, are tasks students actually must complete successfully while at college.

There is compelling evidence to suggest that forced-choice tests are less fakeable than standard rating scales and have stronger associations with performance outcomes.

Situational Judgment Test

In a Situational Judgment Test (SJT), test-takers are presented with various situations, each with several possible responses that must be evaluated (see Table 6 for an example). SJTs represent fairly simple, economical simulations of relevant school-, home-, or job-related tasks. This methodology is suitable for virtually any social and emotional skill (Lipnevich et al., 2013; MacCann & Roberts, 2008; Wang, MacCann, Zhuang, Liu, & Roberts, 2009). SJTs can be text-based or presented through multimedia, and responses can be multiple choice (i.e., select the best response), constructed response (i.e., provide a response to this situation), or ratings (i.e., rate each response for its effectiveness on a Likert-type scale) (Lievens & Coetsier, 2002; Lievens & Sackett, 2006).

Table 6: A situational judgment test item

You are part of a group assignment that your teacher has given on artificial intelligence. As your group is dividing up the workload, it becomes clear that both you and another student are interested in the same topic. This student has received good marks on this topic in the past, but you have been extremely excited about working on this part of the project for several months even though it is new to you.

What would be the best response?

(a)	Toss a coin to determine who gets to work on that particular aspect of the project.
(b)	Insist that, for the good of the group, you should work on that aspect of the project because your interest in the area means you will do a particularly good job.
(c)	Insist that, for the good of the group, you should work on that aspect of the project because you are able to give it more time.
(d)	Ignore your own desires and allow the other person to work on that aspect of the project.
(e)	Choose a different group member to work on that aspect of the project so that no one person is privileged over another.

SJTs may be developed to reflect both general and more subtle and complex judgment processes than are possible with conventional tests.

SJTs have several advantages over the traditional Likert-type assessments more commonly used to measure the social and emotional skills described throughout this paper. First, SJTs may be developed to reflect both general and more subtle and complex judgment processes than are possible with conventional tests. Second, SJTs appear to be associated with a less adverse impact on ethnic minorities, which may be of relevance to subgroup differences in any population under consideration (Schmitt et al., 2009). Third, SJTs can be re-purposed as formative assessments, so as to provide

a student with feedback on his or her competencies in the domain of interest. Fourth, SJTs appear to be less susceptible to faking, compared to Likert-type assessments, where the improvement due to incentives can be up to a full standard deviation (Hooper, Cullen & Sackett, 2006). Fifth, SJTs have the advantage of face validity; participants in these surveys can quickly and easily see what they are measuring, and it makes intuitive sense to them that being able to answer these type of questions would correspond to the skills being assessed. Last but not least, students report them as engaging and worth completing (Lipnevich et al., 2013), which better supports multiple administrations and retains student “buy-in” to the ongoing process of social and emotional assessment.

Biographical Data

Biographical data (also known as biodata) is another approach. In this paradigm, individuals are asked standardized questions about their past behaviors, activities, or experiences (e.g., “During the past month, how many times have you been involved in group projects?”). Respondents are offered multiple-choice answer options or are requested to answer questions in an open format (e.g., state frequency of behaviors). Biodata may offer a less fakeable method of assessment than standard Likert-type assessments, as there are several test characteristics that can be implemented to minimize faking (Schmitt, Oswald, Kim, Gillespie, & Ramsay, 2003). These include asking individuals to elaborate on the biodata details (e.g., “What was the name of the last group project you did?”) or combining results obtained with alternative measurement approaches (e.g., self-report Likert-type). It is noteworthy also that the biodata approach has variously survived legal challenges in high stakes (i.e., selection) contexts (<http://www.state.nj.us/csc/msb/decisions04/2004September/pdf/FAguannoEtAl.pdf>).

Others Reports

Others (e.g., teachers, supervisors, trainers, colleagues, friends, faculty advisors, coaches, etc.) can rate individuals on various social and emotional skills. This method has a long history, and numerous studies have been conducted that employed this methodology. Other reports have an advantage over self-reports; that is, although they are prone to rating biases, they preclude socially desirable responding. Self- and other reports do not always converge, but other reports are often effective in predicting a range of educational outcomes (Kenny, 1994; Wagerman & Funder, 2006).

Letters of recommendation represent a specific form of other reports and have been extensively used in a broad range of academic and workplace contexts (Arvey, 1979). Letters of recommendation provide stakeholders with detailed information about the applicant’s past performance, with the writers’ opinion about the applicant being presented in the form of an essay. One major drawback of letters of recommendation is that they are not in standardized format; different letter writers may include or exclude qualitatively different types of information, such that it is difficult to judge one letter against another. A standardized format for such letters can be developed to prompt letter writers to respond to specific items using a Likert scale, in addition to eliciting open-ended comments (Kyllonen, 2008). Developing a standardized format for the primary and secondary school community, using constructs thought highly relevant, would seem feasible and could indeed supplement the information provided by self-assessments that the individual might take.

If we are to prepare our current generation of primary and secondary students for the demands of a vastly more competitive global economy, it is time to make the commitment to embed social and emotional skills into education practice, implement aligned assessments, and use them to drive improvement of outcomes for our students.

Towards a Comprehensive Social and Emotional Assessment System

Among the social and emotional assessment tools currently available, one example is ACT® Tessera® (ACT, Inc., 2019), which is currently available for students in grades 6 through 12 and has been piloted for elementary and post-secondary education use. ACT Tessera is an online, comprehensive system designed to measure five social and emotional skills: Grit, Teamwork, Resilience, Curiosity, and Leadership. These constructs are based on, and can be aligned with, the Big Five personality factors.

In addition to being based on the robust Big Five model, a significant feature of ACT Tessera is its multi-method design. ACT Tessera includes forced choice items and SJTs in addition to self-report Likert-type items. In such multi-trait multi-method designs, bias due to any method effects is diminished through a “triangulation process” (Kenny & Kashy, 1992, p. 170).

Upon completion of the assessment, students receive individualized feedback, teachers receive a roster report, and school administrators receive a report describing their students and providing some comparisons between their students and the national aggregate.

Reliability and validity evidence is available for ACT Tessera (ACT, Inc., 2019; N = 24,400 for the middle school form, and N = 9,112 for the high school form). The scales appear to be reliable as indicated by test-retest reliabilities ranging from .55 to .66 for the middle school form, and .58 to .76 for the high school form. There is also substantial evidence for the assessment’s validity. For example, the scales correlate with GPA in the expected direction, and, as expected based on prior studies (e.g., Poropat, 2009), Grit has the highest positive correlation with GPA.

Conclusion

The value of social and emotional skills could not be clearer, whether by the research evidence of hundreds of studies or by the common sense and intuition of nearly every classroom teacher. The Big Five personality model, widely recognized and trusted among psychology researchers and increasingly appreciated by economists, policy makers, and educators, offers a foundation for organizing the enormous list of desirable skills and traits commonly discussed when promoting social and emotional skills. Furthermore, reliable and meaningful assessments of these skills exist.

The rest remains for educators and education decision makers. The excuse “we can’t measure that” no longer has merit when it comes to critical social and emotional attributes. Educators already understand the importance of the value, but major gaps persist in awareness of the strategies they might use to translate social and emotional measurement data into action, including techniques for teaching, learning, and assessment. If we are to prepare our current generation of primary and secondary students for the demands of a vastly more competitive global economy, it is time to make the commitment to embed social and emotional skills into education practice, implement aligned assessments, and use them to drive improvement of outcomes for our students.

References

- Ackerman, P. L. & Heggestad, E. D. (1997). Intelligence, personality, and interests: Evidence for overlapping traits. *Psychological Bulletin*, 121, 219-245.
- ACT, Inc. (2019). *ACT(R) Tessera(R) Technical Manual*. Iowa City, IA: ACT, Inc.
- Allport, G.W., & Odbert, H.S. (1936). Trait-names: A psycho-lexical study. *Psychological Monographs*, 47 (1).
- Asia-Pacific Education Research Institutes Network (2014). Integrating Transversal Competencies in Education Policy and Practice (Phase I). *ERI-Net Regional Policy Study Series Vol. 1*.
- Ashton, M.C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Review*, 11, 150-166.
- Barrick, M. R., Mount, M. K., & Judge, T. A. (2001). Personality and performance at the beginning of the new millennium: What do we know and where do we go next? *International Journal of Selection and Assessment*, 9, 9-30.
- Belfield, C., Bowden, A. B., Klapp, A., Levin, H., Shand, R., & Zander, S. (2015). The economic value of social and emotional learning. *Journal of Benefit-Cost Analysis*, 6, 508-544.
- Berry, C. M., Ones, D. S., & Sackett, P. R. (2007). Interpersonal deviance, organizational deviance, and their common correlates: A review and meta-analysis. *Journal of Applied Psychology*, 92, 410-424.
- Boix Mansilla, V. (2016), How to be a global thinker, *Educational Leadership*, Vol.74/4, pp. 10-16.
- Boix Mansilla, V. & A. Jackson (2011). *Educating for Global Competence: Preparing Our Youth to Engage the World*, Asia Society and Council of Chief State School Officers. Retrieved from <https://asiasociety.org/files/book-globalcompetence.pdf>
- Brown, A., & Maydeu-Olivares, A. (2011). Item response modeling of forced-choice questionnaires. *Educational and Psychological Measurement*, 71, 460-502.
- Burrus, J., Elliott, D., Brenneman, M., Markle, R., Carney, L., Moore, G., Betancourt, A., Jackson, T., Robbins, S., Kyllonen, P. C., & Roberts, R. D. (2013). Toward a comprehensive understanding of student persistence and goal attainment: "Putting and keeping you on track." *Educational Testing Service Research Report No: RR-13-14*. Princeton, NJ: Educational Testing Service.
- Camara, W., O'Connor, R., Mattern, K., & Hanson, M.A. (2015). Beyond Academics: A Holistic Framework for Enhancing Education and Workplace Success. ACT Research Report Series. 2015 (4). ACT, Inc.
- Care, E., Kim, H., Anderson, K., & Gustafsson-Wright, E. (2017). *Skills for a Changing World: National Perspectives and a Global Movement*. Center for Universal Education at Brookings. Retrieved from <https://www.brookings.edu/wp-content/uploads/2017/03/global-20170324-skills-for-a-changing-world.pdf>
- Casner-Lotto, J., & Barrington, L. (2006). *Are they really ready to work? Employers' perspectives on the basic knowledge and applied skills of new entrants to the 21st century U.S.* New York, NY: The Conference Board. Retrieved from http://www.conference-board.org/pdf_free/BED-06-Workforce.pdf
- Cattell, R.B. (1943). The description of personality: The foundations of trait measurement. *Psychological Review*, 50, 559-594.
- Cattell, R.B. (1957). *Personality and motivation structure and measurement*. New York: World Book.
- Cattell, R.B. (1973). *Personality and mood by questionnaire*. San Francisco: Jossey-Bass.
- Christal, R. E. (1994). *The Air Force self-description inventory. Final R&D status report*. Armstrong Laboratory, Brooks AFB, Texas.

Costa Jr, P. T., & McCrae, R. R. (1995). Domains and facets: Hierarchical personality assessment using the Revised NEO Personality Inventory. *Journal of Personality Assessment*, 64, 21-50.

Costa, Jr., P. T., & McCrae, R. R. (1994). Set like plaster? Evidence for the stability of adult personality. In T. Heatherton & J. Weinberger (Eds.), *Can personality change?* (pp. 21-40). Washington, DC: American Psychological Association.

Deloitte and Global Business Coalition for Education (2018). *Preparing tomorrow's workforce for the fourth industrial revolution: For business A framework for action*. Retrieved from <https://www2.deloitte.com/global/en/pages/about-deloitte/articles/gx-preparing-tomorrow-workforce-for-the-fourth-industrial-revolution.html>

DeYoung, C. G., Quilty, L. C., & Peterson, J. B. (2007). Between facets and domains: 10 aspects of the Big Five. *Journal of Personality and Social Psychology*, 93, 880.

Drasgow, F., Stark, S., Chernyshenko, O. S., Nye, C. D., Hulin, C., & White, L. A. (2012). *Development of the Tailored Adaptive Personality Assessment System (TAPAS) to support Army selection and classification decisions*. Fort Belvoir, VA: US Army Research Institute for the Behavioral and Social Sciences.

Durlak, J. A., Weissberg, R. P., & Pachan, M. (2010). A meta-analysis of After-School Programs that seek to promote personal and social skills in children and adolescents. *American Journal of Community Psychology*, 45, 294-309.

Durlak, J. A., Weissberg, R. P., Dymnicki, A. B., Taylor, R. D., & Schellinger, K. B. (2011). The impact of enhancing students' social and emotional learning: A meta-analysis of school-based universal interventions. *Child Development*, 82, 405-432.

Dweck, C. S. (2012). *Mindset: How you can fulfill your potential*. New York: Constable & Robinson Limited.

EFA Global Monitoring Report team (2012). *The education for all global monitoring report*. Paris: UNESCO.

Eysenck, H. J. (1990). Biological dimensions of personality. In L. A. Pervin (Ed.) *Handbook of personality theory and research*. New York: The Guildford Press.

Faxon-Mills, S., Hamilton, L., Rudnick, M., & Stecher, B.M. (2013). *New Assessments, Better Instruction? Designing Assessment Systems to Promote Instructional Improvement*. Santa Monica, CA: RAND Corporation.

Fiske, D.W. (1949). Consistency of the factorial structures of personality ratings from different sources. *Journal of Abnormal and Social Psychology*, 44, 329-344.

Gallup, Inc. (2018) "Assessing Soft Skills: Are We Preparing Students for Successful Futures?"

Hooper, A. C., Cullen, M. J., & Sackett, P. R. (2006). Operational threats to the use of Situational Judgment Tests: Faking, coaching, and retesting issues In J. Weekley and R. Ployhart (Eds.), *Situational Judgment Tests* (pp. 205-323). Mahwah, NJ : Lawrence Erlbaum Associates.

Jackson, J. J., Wood, D., Bogg, T., Walton, K. E., Harms, P. D., & Roberts, B. W. (2010). What do conscientious people do? Development and validation of the Behavioral Indicators of Conscientiousness (BIC). *Journal of Research in Personality*, 44, 501-511.

James, W. (1981). *The principles of psychology* (Vol. 1). Cambridge, MA: Harvard University Press. (Original work published 1890)

John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative Big Five trait taxonomy: History, measurement, and conceptual issues. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality: Theory and research* (pp. 114-158). New York, NY: Guilford Press.

John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. *Handbook of personality: Theory and research*, 2, 102-138.

Judge, T. A., Rodell, J. B., Klinger, R. L., Simon, L. S., & Crawford, E. R. (2013). Hierarchical representations of the five-factor model of personality in predicting job performance: Integrating three organizing frameworks with two theoretical perspectives. *Journal of Applied Psychology, 98*, 875-925.

Kankaraš, M. (2017). *Personality matters: Relevance and assessment of personality characteristics* (OECD Education Working Papers Vol. 157). Paris, France: OECD Publishing.

Kyllonen, P.C., Lipnevich, A. A., Burrus, J., & Roberts, R. D. (2014). Personality, motivation, and college readiness: A prospectus for assessment and development. *Educational Testing Service Research Report No: RR-13-14*. Princeton, NJ: Educational Testing Service.

Kyllonen, P. C., Roberts, R. D., & Stankov, L. (Eds.) (2008). *Extending intelligence: Enhancement and new constructs*. New York: Routledge.

Lipnevich, A. A., MacCann, C., & Roberts, R. D. (2013). Assessing social and emotional constructs in education: A review of traditional and innovative approaches. In D. H. Saklofske, C. B. Reynolds, & V. L. Schwean (Eds.), *Oxford handbook of child psychological assessment*. (pp. 750-772). Cambridge, MA: Oxford University Press.

MacCann, C., Duckworth, A., & Roberts, R. D. (2009). Identifying the major facets of Conscientiousness in high school students and their relationships with valued educational outcomes. *Learning and Individual Differences, 19*, 451-458.

Mahoney, J. L., Durlak, J. A., & Weissberg, R. P. (2018). An update on social and emotional learning outcome research. *Phi Delta Kappan, 100*(4), 18-23.

Martin, J., & Pullman, L. Mission Skills Assessment User's Guide and Toolkit. (2014). Index Group. Retrieved from <http://www.indexgroups.org/msa/docs/MSA-Toolkit-Interactive.pdf>

McCrae, R. R., & Terracciano, A. (2005). Universal features of personality traits from the observer's perspective: data from 50 cultures. *Journal of Personality and Social Psychology, 88*, 547.

Miller, G.A. (1991). *The science of words*. New York: Scientific American Library.

National Association of Colleges and Employers (2017). *The Key Attributes Employers Seek on Students' Resumes*. Retrieved from <https://www.naceweb.org/about-us/press/2017/the-key-attributes-employers-seek-on-students-resumes/>

National Research Council. (2012). Education for life and work: developing transferable knowledge and skills in the 21st century. Committee on Defining Deeper Learning and 21st Century Skills. J. W. Pellegrino & M. L. Hilton (Eds), *Board on Testing and Assessment on Science Education, Division of Behavioral and Social Sciences and Education*. Washington, DC: The National Academies Press.

Norman, W.T. (1963). Toward an adequate taxonomy of personality attributes: Replicated factor structure in peer nomination personality ratings. *Journal of Abnormal and Social Psychology, 66*, 574-583.

OECD (2017). *Preparing Our Youth for an Inclusive and Sustainable World: The OECD PISA global competence framework*. Organisation for Economic Co-Operation and Development (OECD). Retrieved from <https://www.oecd.org/education/Global-competency-for-an-inclusive-world.pdf>

OECD and Asia Society (2018). *Teaching for Global Competence in a Rapidly Changing World*. OECD and Asia Society. Retrieved from <https://asiasociety.org/sites/default/files/inline-files/teaching-for-global-competence-in-a-rapidly-changing-world-edu.pdf>

Oxford Research (2010). Transversal Analysis on the Evolution of Skills Needs in 19 Economic Sectors. *European Community Programme for Employment and Social Solidarity*.

Poropat, A. E. (2009). A meta-analysis of the five-factor model of personality and academic performance. *Psychological Bulletin, 135*, 322-338.

Roberts, B. W., & DelVecchio, W. F. (2000). The rank-order consistency of personality traits from childhood to old age: A quantitative review of longitudinal studies. *Psychological Bulletin, 126*, 3-25.

Roberts, B. W., Kuncel, N. R., Shiner, R., Caspi, A., & Goldberg, L. R. (2007). The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes, *Perspectives on Psychological Science*, 2, 313-345.

Roberts, B. W., Walton, K. E., & Viechtbauer, W. (2006). Patterns of mean-level change in personality traits across the life course: A meta-analysis of longitudinal studies. *Psychological Bulletin*, 132, 1-25.

Roberts, B. W., Luo, J., Briley, D. A., Chow, P. I., Su, R., & Hill, P. L. (2017). A systematic review of personality trait change through intervention. *Psychological Bulletin*, 143, 117-141.

Sackett, P. R., & Walmsley, P. T. (2014). Which personality attributes are most important in the workplace?. *Perspectives on Psychological Science*, 9, 538-551.

Schmidt, F. L., & Hunter, J. E. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, 124, 262-274.

Schmitt, D., Allik, J., McCrae, R. R., & Benet-Martinez, V. (2007). The geographic distribution of Big Five personality traits: Patterns and profiles of human self-description across 56 nations. *Journal of Cross-Cultural Psychology*, 38, 173-212.

Schmitt, N., Keeney, J., Oswald, F. L., Pleskac, T. J., Billington, A. Q., Sinha, R., & Zorzie, M. (2009). Prediction of 4-year college student performance using cognitive and noncognitive predictors and the impact on demographic status of admitted students. *Journal of Applied Psychology*, 94, 1479-1497.

Soland, J., Hamilton, L., and Stecher, B. (2013). *Measuring 21st century Competencies: Guidance for Educators*. Santa Monica, CA: RAND Corporation.

Soto, C. J., & John, O. P. (2009). Ten facet scales for the Big Five Inventory: Convergence with NEO PI-R facets, self-peer agreement, and discriminant validity. *Journal of Research in Personality*, 43, 84-90.

Stemler, S. E., & Bebell, D. (2012). *The school mission statement: Values, goals, and identities in American education*. New York: Taylor and Francis.

Torrente, Catalina, Anjali Alimchandani, Lawrence Aber (2016). "International Perspectives on Social-Emotional Learning" *Handbook of Social Emotional Learning*, Ed. Joseph A. Durlak, et al. The Guilford Press.

Tough, P. (2013). *How children succeed: Grit, curiosity, and the hidden power of character*. New York: Houghton Mifflin Harcourt.

Tupes, E.C., & Christal, R.C. (1961). Recurrent personality factors based on trait ratings. *USAF ASD Technical Report, 61-97*, U.S. Air Force, Lackland Air Force Base, Texas.

Wagner, T. (2010). *The Global Achievement Gap: Why even our best schools don't teach the new survival skills our children need—and what we can do about it*. New York: Basic Books.