

Empowering Adults to Thrive at Work: Personal Success Skills for 21st Century Jobs

A Report on Promising Research and Practice

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Executive Summary

To build a sustainable career in the 21st century workforce, no matter the job or occupation, adults need not only academic, technical, and professional knowledge, but also a broad set of *personal success skills.* These are the capacities that enable adults to deal with the challenges, relationships, transitions, and social systems that make up working life. Important capacities are basic job readiness, self-directed learning, self-management, personal responsibility, effective communication, career management, and everyday problem solving. All adults need personal success skills to thrive in the workforce. This report focuses on the needs of working-age adults who struggle with chronic unemployment or underemployment and are striving to build a sustainable career. As part of a many-pronged approach in education, workforce development, and social services, strengthening individuals' personal success skills can provide them with powerful levers for succeeding in the working world.

The overall purpose of this report is to support that endeavor. The goals are (1) to get the word out about the importance of personal success skills and the research that shows adults can develop them, (2) to provide guidance for navigating the complex landscape of research and practical knowledge about personal success skills, and (3) to present important and actionable steps for practice, research, and policy. With funding from the Joyce Foundation, a research team from SRI Education, a division of SRI International, investigated the current trends in research and practice through interviews with 33 experts and a review of published research in psychology, adult education, workforce development, learning sciences, neuroscience, and 21st century skills.

A Growth Mindset for the Development of Personal Success Skills in Adulthood

This report emphasizes what psychologists call a "growth mindset." This is a way of understanding human ability as malleable and changeable, while acknowledging that the process of learning can be challenging—requiring strong effort by the learner, effective learning strategies, and support from others. The growth mindset is substantiated by evidence from psychology, neuroscience, education, and other fields that illustrates the many ways that adults can grow and develop with effort and good supports. For example, most people are aware that the brain develops during childhood, but fewer realize that the adult brain also can develop and improve throughout the working-age years.

Another important body of research shows that having a growth mindset motivates a person to persist in the face of the challenges of learning. Many studies also show that it is possible to learn to have a growth mindset and that doing so boosts success. Adults who are chronically unemployed or underemployed have typically faced a lifetime of hardship and difficulty. It is important that these adults understand and internalize that adults can continue to learn, grow, and build new sustainable pathways in their lives. The practitioners, researchers, and policymakers who support these adults also need to understand that it is possible for their clients to grow and strengthen necessary skills and abilities.

Understanding Personal Success Skills and the Research on Building Them

The report is organized by a framework that integrates two holistic conceptualizations of personal success skills. The inner ring represents *foundational components,* those that underlie successful human functioning—what one knows, how one makes sense of the world, what one values, and how one manages oneself. The outer ring represents *applied competencies,* the intrapersonal, interpersonal, and cognitive abilities that involve application and use of the foundational components to navigate the working world. Integrating these conceptualizations is intended to convey greater clarity about personal success skills, provide new bridges between research and practice, and highlight research that supports the growth mindset by demonstrating how personal success skills are malleable.

The framework brings to light many promising research-based approaches to enhancing adults' personal success skills—some that require minimal training, some that require extensive practice and support, and some that can be developed through the design and structure of educational and work environments. These approaches are presented as promising but not proven. Evidence of impact at scale is limited, and experts are still exploring how to integrate personal success skills interventions in feasible and affordable ways into the variety of settings where underserved adults work and learn.

Foundational Components: Basic Capacities That Underlie Success

Distilled from research in the learning sciences, psychology, and neuroscience, the framework presents four interdependent components that are foundations for success.

Knowledge and skills—what one knows and can do. Knowledge and skills need to be acquired by adults across every aspect of their lives. The learning sciences provide research-based principles for designing environments that can support deep learning. For example, these principles emphasize the importance of motivating learning, building on learners' past knowledge and individual differences, supporting learners' reflection on their own understandings, and using social processes to increase learning opportunities.

Mindsets—beliefs that shape how one makes sense of the world. Mindsets are the frames through which people interpret social situations, challenges, successes, and failures, and they can directly influence perseverance. Research has shown that individuals can be taught to cultivate a growth mindset and other kinds of productive beliefs in a single session or a handful of sessions and that this directly improves achievement and success.

Values—guidelines for living. Values are lasting beliefs about what is good or bad and what is important in life. We focus on two kinds of values associated with successful career development: being

proactive, which is an orientation toward anticipatory and self-initiated behavior to bring about change in oneself or situations, and being prosocial, which is an orientation toward doing things that benefit other people or society as a whole. Research shows that proactive values can be promoted through encouragement of and opportunities for autonomy, and prosocial values can be promoted through practices that enable individuals to contribute in tangible ways to their peers or the larger community.

Self-regulation—how one manages oneself internally and with others. Self-regulation draws on basic elements of cognitive flexibility (i.e., executive functions), awareness of one's own internal experiences and the perspectives of others, and skills that support goal attainment. Research indicates that skills to build awareness and support goal attainment can each be developed in a small number of sessions, whereas directly improving executive functions can take multiple weeks of rigorous training sessions. Research is still needed to understand the effects of this kind of training on success in everyday life.

Applied Competencies: Using the Foundational Components to Navigate the Working World

Applied competencies include intrapersonal competencies, by which individuals understand and regulate their internal experiences and express them outwardly; interpersonal competencies, by which individuals interact and communicate with others to accomplish individual or collective goals; and cognitive competencies, by which individuals solve problems, make decisions, and create new ideas. There are more applied competencies than foundational components, as they are specific to the challenges and needs of the innumerable contexts in which adults work and learn. An example of the application of foundational components is how the interpersonal competency of teamwork draws on good self-regulation together with prosocial values and knowledge and skills that support a strong work ethic.

A number of research-based approaches are used in workplaces, social services organizations, and other adult educational contexts to promote the development of applied competencies. These include coaching, mentoring, and peer support; strategies to promote informal learning on the job; transforming one's personal life narrative; formal training programs; project-based learning in educational settings; and career interventions. In contrast to studies on foundational components, these approaches usually focus on an integrated set of competencies to reflect how they are used interdependently in the working world.

Recommendations

The recommendations address widespread barriers to providing effective and affordable supports for the development of the personal success skills necessary to build sustainable careers. Employers, workforce developers, educators, and workers themselves often lack clear ideas about what skills to focus on. Fragmented across different communities, the wisdom of research and practice is not always readily accessible. Many workplaces, service agencies, and educational institutions are underresourced for supporting personal success skills research and development.

A first recommendation for all stakeholders is to become informed about the learning sciences and key implications for adult learning.

Practitioners responsible for adults' employment or professional development should clarify and articulate the set of foundational components and applied competencies that fit the needs of their setting and populations. They should foster social

supports for adults to develop these skills through supervisory relationships and peer networks, as well as organizational or educational practices that provide opportunities for adults to practice and receive feedback in real-world contexts. They should also consider adopting and adapting specific research-based methods that target pertinent personal success skills.

Researchers should advance the research base on the programs, interventions, practices, and technologies that are effective and affordable for promoting the development of personal success skills for chronically unemployed and underemployed adults. They should translate research to promote research-based best practices and program implementation. They should also develop unified conceptualizations of personal success skills and models for development in different contexts.

Funders and policymakers should invest in ensuring that research-based approaches to building personal success skills are readily accessible and affordable. They should invest in programs and practices that promote the development of personal success skills. They should also support programmatic portfolios of interdisciplinary research and development.

Chapter 5 discusses the recommendations in greater detail.

1. Introduction

To build a sustainable career in the 21st century workforce, no matter the job or occupation, adults need a broad set of knowledge, skills, and competencies. This includes not only academic, technical, and professional knowledge, but also abilities to deal with the challenges, relationships, transitions, and social systems that make up working life. Important abilities include basic job readiness, self-directed learning, self-management, personal responsibility, effective communication, career management, and everyday problem solving. We call these *personal success skills.* While having these skills does not guarantee success because many external contextual factors influence outcomes, they do position individuals to better reach their potential and contribute to their workplaces, communities, and society.

Labor and education experts claim that critical gaps in personal success skills leave many working-age adults at a disadvantage in the midst of the sweeping changes and intense challenges associated with 21st century work. Although no statistics are available on the personal success skills attainment of the U.S. adult population, it is clear that individuals with weaker personal success skills may struggle in many ways. They find it difficult to get good jobs, manage everyday challenges of multiple priorities and communication, keep up with rapid changes in technology and other aspects of work, effectively seek to expand their education when needed, engage successfully with complex knowledge work, build and leverage the social capital necessary to build professional pathways, and so on. The consequences can be dire, with many adults potentially facing chronic unemployment or underemployment.

The good news is that extensive research shows that, with the right supports, working-age adults can build

and enhance their personal success skills. But there are several challenges to putting this knowledge into practice. One is a broad lack of understanding of what personal success skills are and why they are important. Another is the myth that after the years of schooling adults are not capable of growing and changing. For those ready to tackle these issues, another challenge is that the research base and practical wisdom about developing and measuring personal success skills are both vast and diffuse, making it difficult to home in on what is most important. This work spans multiple communities within and across the workforce, education, psychology, and other fields. Progress has been hindered by the overwhelming amount of information, lack of conceptual clarity and agreement about what personal success skills are, insufficient cross-sector coherence, and mixed messages about what the research says about how to promote and measure personal success skills.

The purpose of this report is to advance the endeavor to promote adults' development of the personal success skills necessary to build sustainable careers. The goals are (1) to get the word out about the importance of personal success skills and the research that shows that adults can develop them, (2) to provide guidance for navigating the complex landscape of research and practical knowledge about personal success skills, and (3) to present actionable steps

for practice, research, and policy. From interviews with experts and analyses of reports spanning a range of disciplines, we provide a framework that defines what the personal success skills are, review key approaches to practice and measurement, and offer recommendations for improving practice and advancing research and policy.

This report focuses on personal success skills for adults as individuals, but the systemic problems associated with inequitable education and poverty are complex and far reaching. Personal success skills development is only one of many approaches that society needs to apply so as to narrow gaps in opportunity, income, education, and other factors critical to people's well-being.

Personal Success Skills: A Working Definition

Personal success skills are referred to in the education, employment, and workforce development communities by a variety of terms—employability skills, 21st century competencies, job readiness skills, career and college readiness skills, noncognitive factors, soft skills, and transferable skills; social and emotional learning is a closely related term typically associated with foundational skills developed in childhood and adolescence. Several national and international institutions and organizations have developed frameworks to identify and articulate what these skills and competencies are.

The Joyce Foundation has chosen to use the term "personal success skills," defined as follows:

> Personal success skills encompass the intrapersonal, interpersonal, and cognitive competencies that individuals draw on to shape their future and thrive in the 21st century workforce throughout their adult lives.

This definition is based on the competencies identified in the National Research Council's (2012) content analysis of the most influential international and national frameworks. *Intrapersonal competencies* are those by which individuals understand and regulate their internal experiences and express them outwardly. *Interpersonal competencies* are those by which individuals interact and communicate with other people to accomplish individual or collective goals. *Cognitive competencies* are the thinking processes individuals use to solve problems, make decisions, and create new ideas. Intrapersonal, interpersonal, and cognitive competencies are not mutually exclusive aspects of workforce success; they function together as individuals deal with the challenges of working life. In childhood through young adulthood, people draw on personal success skills to succeed in academics and graduate from high school and college. In adulthood, people use these skills to attain outcomes critical to their personal well-being and the functioning of society.

Ideally, people develop personal success skills through experiences they have over their lifetime and through lifelong learning. In a well-functioning and adequately resourced setting, the seeds of personal success skills are planted in early childhood through the development of executive functions and early relationships, continue to grow in formal and informal learning environments throughout K–12 and postsecondary education, and are exercised and deepened through continuous lifelong learning in the workforce. In the best of circumstances, these socialization and educational processes provide people with the foundations and social capital to successfully take on the roles and responsibilities of adulthood. Unfortunately, not everyone is exposed to these ideal circumstances.

Empowering Adults Striving to Build Sustainable Careers

Many working-age adults struggle with chronic unemployment or underemployment as they strive to build sustainable careers. Some may be in the low-wage service sector and attempting to complete their education, some may be single working parents who depend on public assistance, some may be dealing with life courses that have been diverted by trauma, some may have histories of incarceration, and so on. In the immediate term, their greatest concern is likely to be to get a diploma or degree, to find gainful employment, or to demonstrate strong job performance that leads to long-term job retention. In the longer term, these adults should also have the opportunity to experience career advancement and job satisfaction and to make important contributions to their community and to society.

Beyond the reach of institutions that prepare young people for the working world, many such adults entered their working years without the ideal education, developmental experiences, or ongoing social supports to develop personal success skills to the depth necessary to attain their goals. This can be the case for any number of reasons, from trauma to illness to other personal misfortunes. While the profound social issues associated with class, poverty, and discrimination are beyond the scope of this report, it is important to acknowledge that for many, their less than ideal circumstances are closely tied to the great societal divides of education, employment, and income. The struggles of many adults are associated with a lifetime of inequitable access to educational and social resources. For example, U.S. adults without high school diplomas now earn wages roughly at the poverty level for a family of four, whereas adults with college degrees have almost twice the earnings of those with only a high school diploma (U.S. Department of Health and Human Services, 2015; U.S. Department of Labor, 2015a). Promoting the development of personal success skills does not in any way replace the need for other kinds of support systems and large-scale social changes.

As part of a many-pronged approach, strengthening personal success skills can increase adults' personal agency to deal with the broad challenges associated with building a sustainable career in the 21st century workforce:

- **Entering or re-entering the workforce.** Personal success skills can be important for obtaining entry-level and more advanced work after a period of unemployment or underemployment. For example, job readiness skills, such as polite communication and appropriate attire, can be important to starting one's working life effectively. These can be critical foundations for some populations that have faced the greatest challenges.
- **Managing the everyday challenges of working life.** Getting the job is just the beginning. Keeping it requires the skills to manage time and multiple priorities and goals, communicate effectively, deal skillfully with difficult relationships, and manage stress. Personal success skills are also necessary to behave ethically and work effectively with individuals with different cultural and ethnic backgrounds and deal with the cultural divides and various forms of discrimination that can exist in many workplaces.
- **Pursuing further education.** Many adults seek to broaden their skills and opportunities by returning to school to obtain a high school diploma or a postsecondary degree or credential. Many are among the first in their communities to move into higher education yet struggle against personal histories of difficulty in school. Personal success skills enable adults to navigate the norms and expectations of higher education institutions that may be new to them, to be effective in academic learning, and to build the relationships that will expand their social capital and open up important new opportunities.

- **Succeeding at complex knowledge work.** For those in or aspiring to be in professional careers, personal success skills are important for dealing with knowledge work. This is characterized by reliance on digital technologies, rapidly changing work demands, an inundation of information, extensive problem-solving requirements, complex interpersonal communication, and cultural and ethnic diversity of the workforce (Levy & Murnane, 2004; Merriam, Caffarella, & Baumgartner, 2007). Lifelong learning is an essential personal success skill because workers need to be self-directed in their professional development and continuous education. They must be proactive about learning on the job, and there can often be the need to seek out new opportunities or pursue additional credentialing. Other essential skills are associated with critical thinking, decision making, teamwork and collaboration, and information literacy.
- **Planning and managing a professional career pathway.** Personal success skills enable adults to plan and manage their career paths and to build and leverage social capital and financial resources to find entryways to promising pathways and organizations.

There is much reason for optimism and many places where adults can build these empowering capacities. Even beyond the reach of formal institutions of schooling, there are a wide range of settings with the potential to provide essential learning opportunities for adults. With the right supports, these opportunities may be associated with work, education, social services, hobbies, and the like (Exhibit 1).

Exhibit 1. Settings That Can Provide Opportunities for Adults to Strengthen Their Personal Success Skills

The Myth That Adults Cannot Learn and Grow

Many may wonder whether it is even possible to develop personal success skills in adulthood. That children and adolescents learn and grow is evident, but this may not be so apparent for adults. Here, we discuss two important branches of research indicating that the belief that adults cannot learn and grow is not only a myth, but one that could undermine efforts to empower adults.

The first branch of research from psychology, neuroscience, education, and other fields has produced significant evidence that adults are indeed capable of learning and growing and are actually doing so all the time. As we will discuss in Chapter 3, research on knowledge and skills, motivation, self-regulation, beliefs, professional development, and even basic processes of memory has demonstrated that adults are capable of tremendous growth and change throughout the working years. Evidence from neuroscience has also shown that the adult brain has the capacity to develop and improve throughout the working-age years (e.g., Davidson & Begley, 2012). Furthermore, developmental psychologists have described how the years of adulthood are a journey of milestones, transitions, and ongoing challenges that require and cause lifelong adaptation and growth (e.g., Bjorklund, 2010).

The second branch of research is on the *belief* that adults cannot learn and grow. Over the last couple of decades, some of the most important research in psychology and education has shown that people's "lay theories"—everyday understandings of themselves and others—shape how they interact with other people and persevere in the face of challenge. One fundamental type of lay theory is whether individuals see themselves and others as *malleable* like clay and capable of growing (a growth mindset) or fixed like plaster in their fundamental abilities throughout their lives (a fixed mindset). The consequences of having one or the other of these beliefs can be tremendous. In education, many research studies have shown that having a growth mindset about intelligence—believing that ability changes with effort, use of good strategies, and help from others—enables one to interpret challenge as part of the learning process and to sustain motivation and persevere (e.g., Blackwell, Trzesniewski, & Dweck, 2007; Dweck & Leggett, 1988; Paunesku et al., 2015).

Having a growth mindset about adults' capacity to learn and grow also powerfully shapes perceptions and ways of dealing with challenge. For example, people who believe that adults cannot change tend to rely on stereotypes and traits to understand others' behavior and are likely to have low expectations that individuals can master new competencies. In contrast, people who believe adults can change tend to seek to understand people through their motives, beliefs, and situations and are likely to have higher expectations that individuals can master new skills (e.g., Molden & Dweck, 2006; Neel & Lassetter, 2015; Plaks, Levy, & Dweck, 2009).

These two branches of research suggest that the concept that adults cannot learn and grow is both a myth and an impediment to adults developing important personal success skills. This does not mean that the conditions for growth are simple and easy. The theory of the growth mindset incorporates the notion that developing in new ways often requires effort, use of good strategies, and help from others. The growth mindset is critical for the adults who need to strengthen their personal success skills—especially the many who have faced a lifetime of hardship and difficulty. It is also important for the practitioners, researchers, and policymakers invested in their development.

Framing Questions and Approach

This research was designed to synthesize the answers to a set of questions into useful frameworks, conclusions, and recommendations. The remaining chapters address the following questions:

1. **What knowledge, skills, abilities, and competencies constitute personal success skills? What evidence is available to suggest that adults can develop personal success skills?**
2. **What methods and approaches do practitioners use to promote the development of personal success skills? What are some examples of how these methods are used in settings that address the needs of adults striving to build a sustainable career?**
3. **What are the key work-related purposes and methods for measuring personal success skills? What measures exist to assess personal success skills?**
4. **What are key recommendations for practitioners, researchers, and policymakers who seek to advance the development of personal success skills for adults who are striving to build sustainable careers?**

We sought to answer these questions through a combined approach of interviewing a wide range of experts and reviewing research literature in a broad set of scientific domains. The organizing framework for the report (see Chapter 2) was adapted from work done by the University of Chicago Consortium on School Research (CCSR), with its consultation. The framework adaptation process is described in the appendix.

We interviewed 33 high-profile and respected program leaders, researchers, and funders who are experts or thought leaders in adult education, workforce development, human resource development, neuroscience, and 21st century competencies in education and work (see the Acknowledgements). This roster was drawn from the authors of key literature. Experts were also nominated in consultation with the Joyce Foundation or other resources, using a "snowball" process, to identify the best possible informants. We developed a semistructured interview protocol for each informant tailored to his or her area of expertise. We conducted interviews by phone, except in a few cases when in-person interviews were particularly useful or convenient. We took extensive notes on each informant's responses and summarized and coded the notes thematically with respect to the research questions. Among our own team of four researchers, our analysis process was to identify key emerging issues and, with each interview, add to, refine, confirm, or disconfirm conceptual themes. From the interviews, we also identified cases of practice that could be used to highlight key concepts. Each case presented in Chapter 3 was vetted with the organization described.

The research team also identified pertinent research reports, policy documents, and white papers based on recommendations from the expert informants, searches on a variety of research topics, and the bibliographies of identified reports and researcher-nominated studies. This literature was drawn from research in a variety of domains and disciplines, including educational psychology, the learning sciences, social and emotional development in childhood and adulthood, adult learning and adult education, industrial/ organizational psychology, workforce development, career psychology, assessment theory and development, and positive psychology. These documents were used to complement findings from the interviews and provide further depth and context for the major themes that were identified.

2. An Organizing Framework for Personal Success Skills

This chapter examines two questions: *What knowledge, skills, abilities, and competencies constitute personal success skills? What evidence is available to suggest that adults can develop personal success skills?* We present a framework that builds on and integrates multiple perspectives on the abilities that are important for those striving to build a sustainable career. This framework was designed with three goals in mind:

- To promote conceptual clarity and provide guidance in navigating the complex space of definitions.
- To build stronger bridges between research and practice by drawing on and integrating complementary perspectives.
- To make explicit research that supports the understanding of personal success skills as malleable for adults with effort, use of good strategies, and help from others.

Overview of the Framework

The framework articulates the competencies that constitute personal success skills as described in the Joyce Foundation's definition:

> Personal success skills encompass the intrapersonal, interpersonal, and cognitive competencies that individuals draw on to shape their future and thrive in the 21st century workforce throughout their adult lives.

Exhibit 2 shows the framework developed for this report, and Exhibit 3 provides definitions of terms used in it. These will be described in detail in the rest of the chapter. The framework was adapted from a report released in 2015, *Foundations for Young Adult Success: A Developmental Framework,* by Nagaoka,

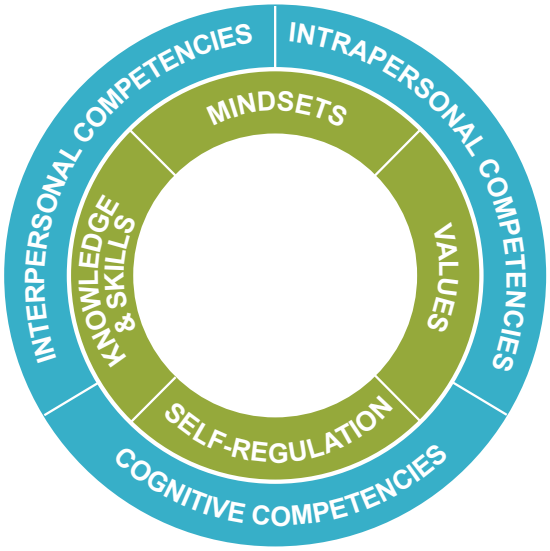


Exhibit 2. Framework for Personal Success Skills for Adults in the Workforce, Adapted from the CCSR Foundations for Young Adult Success Framework

Farrington, Ehrlich, and Heath at the University of Chicago Consortium on School Research (CCSR).[1] The appendix details how we adapted the University of Chicago framework for the purposes of this report.

The framework integrates two mutually informing conceptualizations—foundational components and applied competencies. For the foundational components, the underlying assumption is that how people behave or how well people perform depends on what they know and can do, what they believe, what they value, and how they manage themselves internally and with others. These components work together as an overall gestalt to enable success. This is represented on the inner ring of the framework and includes knowledge and skills, mindsets, values, and self-regulation. On the outer ring are the applied competencies, the intrapersonal, interpersonal, and cognitive competencies

[1] See https://ccsr.uchicago.edu/publications/foundations-young-adult-success-developmental-framework

Exhibit 3. Definitions of Foundational Components and Applied Competencies in the Framework

Foundational Components

A set of knowledge, skills, and psychological assets that underlie individuals' abilities to develop and enact key competencies successfully in the workforce. The components operate dynamically, shaping and reinforcing one another.

Source: Nagaoka, J., Farrington, C. A., Ehrlich, S. B., & Heath, R. D. (2015). *Foundations for young adult success: A developmental framework*. IL: University of Chicago Consortium on Chicago School Research.

Knowledge consists of facts, information, or understanding about oneself, others, and the world.

Skills are the learned abilities to carry out a task with intended results or goals. Skills can be general or domain specific, and can be academic, technical, professional, cultural, or institutional in nature.

Mindsets are beliefs and attitudes about oneself, the external world, and the interaction between the two. They are the default lenses that individuals use to process everyday experiences. Mindsets reflect a person's unconscious biases, natural tendencies, and past experiences. Though mindsets are malleable, they tend to persist until disrupted and replaced with a different belief or attitude.

Values are lasting beliefs, often culturally defined, about what is good or bad and what is important in life. Values serve as broad guidelines for living and provide an orientation for the future.

Self-Regulation is a set of internal processes that enable one to manage one's behavior, emotions, attention, and cognition while engaging with the world toward a goal. Self-regulation has numerous forms, including cognitive, emotional, behavioral, and attentional regulation.

Applied Components

The capacities necessary to generate appropriate performance and develop and realize goals in the social contexts of working life. These capacities involve application and use of the foundational components to navigate challenges, relationships, transitions, and social systems. It is assumed that key competencies are relevant to all individuals, can be learned, are necessary in most jobs and occupations, and work together dynamically.

Source: National Research Council (2012). *Education for life and work: Developing transferable knowledge and skills in the 21st century.* Washington, DC: The National Academies Press.

Intrapersonal

Work ethic/conscientiousness includes initiative, self-direction, responsibility, perseverance, productivity, grit, metacognitive skills, professionalism/ethics, integrity, citizenship, and career orientation.

Positive core self-evaluation includes self-monitoring, self-evaluation, self-reinforcement, and physical and psychological health.

Intellectual openness includes flexibility, adaptability, cultural awareness and competence, appreciation for diversity, continuous learning, and intellectual interest and curiosity.

Interpersonal

Teamwork and collaboration includes communication, cooperation, coordination, empathy/perspective taking, trust, service orientation, conflict resolution, and negotiation.

Leadership includes responsibility, assertive communication, self-presentation, and social influence with others.

Cognitive

Cognitive processes and strategies include critical thinking, problem solving, analysis, reasoning/argumentation, interpretation, decision making, adaptive learning, and executive function.

[General] knowledge includes information literacy, information and communications technology literacy, oral and written communication, and active listening.

Creativity includes both creative processes and innovation.

Note: Given the dynamic relationships among them, there is significant overlap between the foundational components and applied competencies.

that are applied and enacted in the contexts and settings of workforce participation. The applied competencies draw on the foundational components, all of which work together dynamically as individuals navigate the challenges, relationships, transitions, and social systems of working life. It is assumed that all these elements together are relevant to all individuals and are necessary in most jobs and occupations.

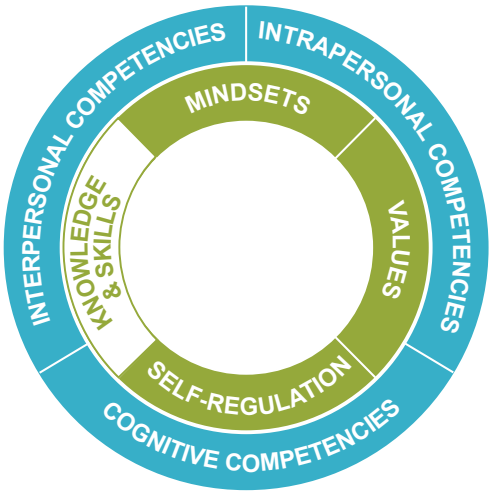
Foundational Components: Basic Capacities That Underlie Success

The following sections discuss each of the four components in greater detail. Each includes an overview of the pertinent research and discussion of malleability.

Knowledge and Skills: What One Knows and Can Do

It is commonly recognized that success in the workforce requires a constellation of knowledge and skills. In the CCSR framework, knowledge and skills are defined as follows:

> *Knowledge* is sets of facts, information, or understanding about oneself, others, and the world. *Skills* are the learned abilities to carry out a task with intended results or goals. Skills can be general or domain specific, and can be academic, technical, professional, cultural, or institutional in nature. (Nagaoka et al., 2015, p. 28)



The CCSR framework has several categories of knowledge and skills, which individuals learn in formal schooling, informal learning, and workplace settings throughout the life span:

- **Disciplinary knowledge and skills—**reading, writing, mathematics, social studies, science, and other core academic subject areas. Developing proficiency in numeracy and literacy may be a focal concern for adults striving to build sustainable careers (OECD, 2013b). Disciplinary knowledge can also include a broader understanding of the organization of a field and the approaches to thinking, inquiring, and learning within a particular academic domain.
- **Technical knowledge and skills—**specialized information about specific occupational domains, typically the focus of a job or profession. The U.S. Department of Labor (2015b) organizes careers into 16 clusters of pathways and occupations in the same field that require similar knowledge and skills, for example, health science, hospitality and tourism, and architecture and construction (see http://www.onetonline.org).
- **Professional knowledge and skills—**understanding the norms and expectations for behaviors in the workplace, also typically the focus of job and professional training. This category may include basic job readiness skills such as etiquette and norms for timeliness and positive communication, as well as ethical standards and other expectations of professional behavior. It also includes the ability to "read" a work environment to ascertain the specific cultural expectations.
- **Cultural knowledge and skills—**understanding behavioral norms, traditions, and modes of interactions of other groups of people that allow one to effectively interact with them. This knowledge may be germane to people from other races, ethnicities, geographical regions, and

countries. It can enable people to code-switch when moving between communities that differ in values and beliefs, allowing understanding without requiring assimilation.

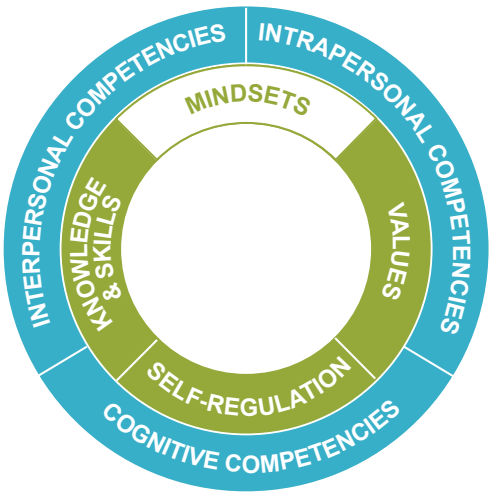
- **Institutional knowledge and skills—** understanding the institutions in which an individual functions and how to navigate systems within that institution to obtain needed support. Such institutions may be workplaces, community colleges, universities, social services, communities, and the like.

There is little contention that adults can continue to learn a vast range of knowledge and skills throughout life. In Chapter 3, we discuss the How People Learn (HPL) research synthesis (e.g., National Research Council, 2000), which distilled research in the learning sciences into comprehensive principles to inform the design of effective learning environments that promote deep learning.

Mindsets: Beliefs That Shape How One Makes Sense of the World

In the CCSR framework, mindsets are defined as follows:

> Mindsets are beliefs and attitudes about oneself, the external world, and the interaction between the two. They are the default lenses that individuals use to process everyday experiences. Mindsets reflect a person's unconscious biases, natural tendencies, and past experiences. Though mindsets are malleable, they tend to persist until disrupted and replaced with a different belief or attitude. (Nagaoka et al., 2015, p. 28)



Productive mindsets are essential for success in working life because they shape how people make sense of the setbacks, challenges, and failures they inevitably face and how they marshal resources to deal with them. In fact, compelling research evidence suggests that productive mindsets can have a powerful positive influence on a wide range of work and academic outcomes. Several specific mindsets have been identified as particularly adaptive and supportive of success outcomes. Building on CCSR's earlier work (see Farrington et al., 2012), we present those mindsets as first-person statements, along with a brief description of some of the research on their influence on success outcomes.

- **My ability and competence grow with my effort, use of good strategies, and help from others.** This statement is consistent with a growth mindset, the belief that ability is malleable and can be increased with effort and good support (e.g., Blackwell et al., 2007; Dweck & Leggett, 1988; Molden & Dweck, 2006; Neel & Lassetter, 2015; Paunesku et al., 2015; Plaks et al., 2009). This is contrasted with a fixed mindset, the belief that ability is fixed, something that one either possesses or does not. A growth mindset can be highly adaptive in that it affects how one interprets and responds to setbacks, challenges, and failures, making an individual more likely to persevere.
- **I can succeed at this.** When individuals have strong self-efficacy (belief in their ability to learn and to perform well) and high expectations for success, they are more likely to engage in tasks and persevere when these tasks are challenging (e.g., Bandura, 1997; Lennon, 2010; Schunk & Pajares,

2009). These beliefs affect how one construes and responds to difficulties and can be a stronger predictor of success than measured levels of actual ability and prior performance. These findings have been demonstrated in a wide variety of academic and work contexts, including career development and counseling (Thompson & Graham, 2015).

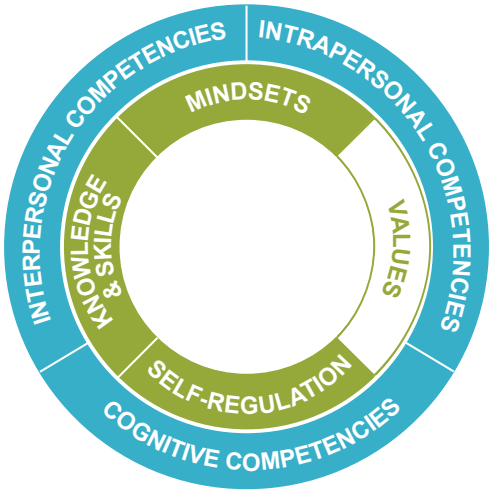
- **I am curious about and receptive to other people, novel ideas, and novel experiences.** This statement is consistent with the mindset of openness, an orientation toward flexibility and seeking new experiences. This orientation has been shown to be associated with healthy relationships, high academic test scores, and good job performance (e.g., Noftle & Robbins, 2007). Although researchers have yet to determine definitively how or why openness is adaptive, most likely this orientation enables individuals to be more flexible in coping with challenges and to be better able to take advantage of a wider range of positive resources and opportunities.
- **I belong in this community.** Extensive research shows that when people feel a sense of belonging in their workplace or learning environment—through relationships with peers, mentors, coaches, supervisors, or others—they are more productive and engaged (e.g., Walton & Cohen, 2007; 2011). For those without this mindset, challenges and setbacks can reinforce an alienation from others that can undermine motivation. With this adaptive mindset, individuals may be more likely to try hard to solve problems, seek help, advocate for themselves, and support others.

It can be challenging to change persistent beliefs, but extensive research shows that mindsets can be malleable with the right supports. For example, a number of studies in psychology and education have demonstrated the malleability of mindsets through short-term psychological interventions. Conducted primarily in academic settings, these studies have shown that mindsets can be taught or otherwise promoted and that doing so deeply affects learners' persistence and achievement (Yeager & Walton, 2011). Studies have targeted the growth mindset (e.g., Blackwell et al., 2007; Paunesku et al., 2015), self-efficacy (e.g., Bandura, 1997; Schunk & Pajares, 2009), and sense of belonging in the school and classroom (e.g., Walton & Cohen, 2007). Although adolescents have been the subjects of most of these studies, positive results have also been found for adults in higher education settings (e.g., Van Campen, Sowers, & Strother, 2013).

Values: Guidelines for Living

In the CCSR framework, values are defined as follows:

> Values are lasting beliefs, often culturally defined, about what is good or bad and what is important in life, which serve as broad guidelines for living and provide an orientation for the future. (Nagaoka et al., 2015, p. 34)



There are many different values that shape the ways people live and work. Here, we focus on two that are associated with successful career development. The first is valuing proactivity, which refers to anticipatory and self-initiated behavior to bring

about change in oneself or situations. Proactivity is consistent with personal agency, being active and intentional in shaping and managing one's own life course (Bandura, 2006). Individuals become active agents of their lives through setting thoughtful goals, planning, reflecting on actions, and knowing when and how to make adjustments to courses of action (Nagaoka et al., 2015). In their review of the research on proactivity in the workplace, Bindl and Parker (2011) described a surge of interest in proactivity as a reaction to traditional employment models (less common in the 21st century workforce) that assume that employees are simply to follow instructions and orders. They reported that many studies have shown that employees who demonstrate proactivity tend to perform their jobs more effectively, are more successful at managing their careers, and are better at coping with stress.

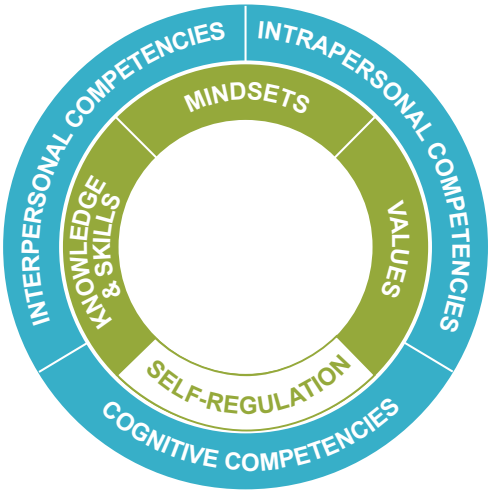
The other value associated with successful career development is being prosocial, or engaging in behaviors aimed at benefiting other people or society as a whole. Nagaoka and colleagues (2015) described these behaviors as including both morality and ethical decision making in everyday life (e.g., being kind, being truthful) and long-term "outcomes" of importance (e.g., having the respect of friends, contributing to community). Being prosocial can be a critical factor in collaboration and other kinds of socially oriented work activities. In addition, engaging in prosocial practices at work can enhance persistence, performance, commitment and dedication, and citizenship behavior on the job (Dutton, Roberts, & Bednar, 2011).

Research on organizational practices that directly affect proactive and prosocial behavior suggests that, while often long-lasting, values can be malleable and subject to change. A number of studies have indicated that the culture of a given work environment can shape people's proactivity and prosocial behavior. Factors such as opportunities to exercise autonomy and to make tangible contributions to others can greatly affect individuals' behaviors in any given context (Bindl & Parker, 2011; Dutton, Roberts, & Bednar, 2011).

Self-Regulation: How One Manages Oneself Internally and With Others

In the CCSR framework, self-regulation is defined as follows:

> Self-regulation is a set of internal processes that enable one to manage one's behavior, emotions, attention, and cognition while engaging with the world toward a goal. Self-regulation has numerous forms, including cognitive, emotional, behavioral, and attentional regulation. (Nagaoka et al., 2015, p. 28)



There is a vast research literature on self-regulation and many different perspectives on what the processes are and how they are developed. Other terms that are often used interchangeably with self-regulation are self-control, self-discipline, and willpower (Duckworth & Carlson, 2013). Self-regulation and its related concepts have been found to be associated with many success outcomes for children and adults. For example, Moffit and colleagues (2011) showed in a longitudinal study of 1,000 children from birth to age 32 that childhood

self-control predicted outcomes in adulthood such as physical health, absence of substance dependence, successful personal finances, and absence of criminal record. Another study (Duckworth, Weir, Tsukayama, & Kwok, 2012) showed that for a representative sample of nearly 10,000 American adults, the characteristic of conscientiousness was associated with both objective success (e.g., income and wealth) and subjective success (e.g., life satisfaction and positive affect).

There are many different facets of self-regulation; here, we discuss three that researchers have highlighted as critical and that surfaced as particularly important themes in our interviews with practitioners: executive functions, awareness, and striving to attain goals.

Executive functions. Executive functions are the basic cognitive functions that are necessary for planning, future-directed thinking, and monitoring of behavior. In their model of the relationship between executive functions and self-regulation, Blair and Ursache (2013) described executive functions as the "interrelated cognitive abilities that are required when one must intentionally or deliberately hold information in mind, manage and integrate information, and resolve conflict or competition between stimulus representations and response options" (p. 301). These abilities include: (1) cognitive flexibility, the ability to flexibly shift the focus of attention and to adjust behavior accordingly; (2) working memory, the active maintenance or updating of information over a relatively short time period; and (3) inhibitory control, the inhibition of automatic but nonoptimal or incorrect responses. The prefrontal cortex, the frontmost part of the brain, is responsible for much of executive functioning, as it integrates information from all the sensory systems to facilitate decisions about how to shift attention, monitor events as they occur, plan possible actions in response to those events, and determine emotional values of particular outcomes (Kalat, 1998).

Recent research has shown that the prefrontal cortex has the capacity to improve in structure and function throughout the adult years. Up until the last couple of decades, a prevailing dogma in neuroscience had been that the brain develops fully by early adulthood and stays hardwired throughout the rest of an individual's life. Contemporary neuroscientific research, however, has uncovered evidence that the adult brain is subject to *neuroplasticity*. Neuroscientist Richard Davidson and co-author Sharon Begley (2012) defined neuroplasticity of the brain as "the ability to change its structure and patterns of activity in significant ways" (p. 161). In their discussion of this relatively recent revolution in neuroscience, they described research that has shown that the adult brain can improve its structure and function as a result of both experiences that people have in the world and the purely internal mental activity of thoughts and attentional focus. For executive functions specifically, many laboratory-based cognitive training interventions focused on processes such as attentional control and basic reasoning have been shown in adults to lead to persistent changes in prefrontal cortex structure and improvements in basic executive functions (e.g., Bunge, 2015). Also, one study found that physical activity is a major influence on neuroplasticity as people age. Greater changes in brain structure were associated with brisk Nordic walking than with coordination training, which was better than guided relaxation (Voelcker-Rehage, Godde, & Staudinger, 2011). Another study found that assembly line workers in workplaces where many of their tasks changed over time had more gray matter in brain areas associated with learning and attention and higher cognitive functioning than assembly line workers whose tasks did not change significantly (Staudinger, 2015).

Awareness. The ability to self-regulate in a volitional way requires the awareness to think about, reflect on, and make choices about one's reactions and behaviors. Awareness can refer either to attentional focus on

phenomena occurring in the present moment or to ongoing understandings. Both are important for self-regulatory processes and can be directed toward oneself and others. Awareness directed toward oneself involves attention to one's thoughts, emotions, motivations, desires, and intentions as they are occurring. It can also include understanding of one's goals, values, preferences, and other internal experiences. Awareness directed toward other people (interpersonal awareness) is important for self-regulation. This is the ability to consider and understand other people's perspectives, including perspective-taking and the ability to infer the full range of other people's mental states. Interpersonal awareness can also include awareness of one's own reactions to others and how one's actions affect others. Both self-awareness and interpersonal awareness are critical to the self-regulation underlying effective communication.

There are several sources of evidence that awareness can be malleable in adulthood. One important source is the research on mindfulness and self-regulation, which was recently reviewed comprehensively (Ostafin & Robinson, 2015b). Mindfulness is defined as

> self-regulation of attention so that it is maintained on immediate experience thereby allowing for increased recognition of mental events in the present moment…[and] adopting a particular orientation toward one's experiences in the present moment, an orientation that is characterized by curiosity, openness, and acceptance. (Bishop et al., 2004, p. 232)

Extensive evidence shows that this kind of awareness can be taught and have positive effects on emotional and physical well-being, relationships, attentional focus, and educational outcomes (e.g., Brown, Ryan, & Creswell, 2007; Ostafin, Robinson, & Meier, 2015a; Shapiro, Brown, & Astin, 2008).

Striving to attain goals. Self-regulation also entails processes associated with setting goals and implementing plans to accomplish them. Theories about how individuals strive to achieve goals point to four general processes: (1) considering the space of possible goals and potential challenges, (2) selecting specific goals and formulating action plans, (3) enacting plans and monitoring progress, and (4) deliberating on the effectiveness of plans and strategies and reformulating as necessary (e.g., Duckworth, Grant, Lowe, Oettingen, & Gollwitzer, 2011; Gollwitzer, 1990; Winne & Hadwin, 1998). Many theories suggest that the type of goal a person chooses and the strength of commitment to it are important determinants of whether a person carries out the plans necessary to attain the goal (Gollwitzer & Oettingen, 2013). However, being strongly committed to a goal is necessary but not always sufficient for goal attainment; people may fail to get started on their plans, fail to stay on track once they have started, become overextended by striving for one goal to the extent that they lose sight of others, or fail to disengage from unattainable goals (Gollwitzer, 2015). Research indicates the importance of clearly articulating intended outcomes and implementation plans, anticipating potential obstacles, and preplanning how to deal with obstacles (e.g., Gollwitzer, 2015; Gollwitzer & Oettingen, 2013). Individuals may also need to use many strategies to see a plan through, such as managing time, seeking new information, asking for assistance from other people, and adjusting their course of action.

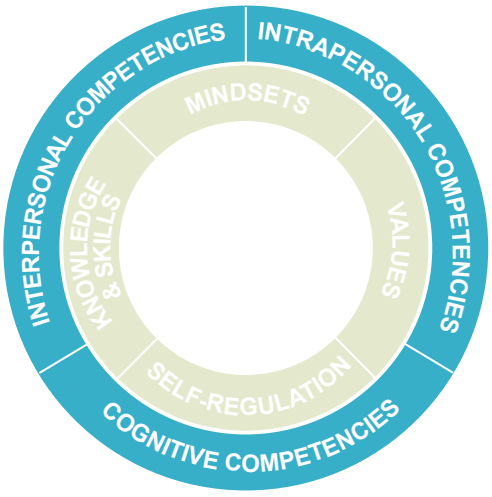
There is every reason to believe that the abilities to set goals and implement plans are malleable and teachable. Whereas individuals may have preferences for particular approaches to self-management, concrete strategies and tools are associated with processes such as planning, monitoring, and time management. For example, studies have shown that providing people with the opportunity to articulate a desired outcome, implementation plan, potential

obstacles, and plans for dealing with the obstacles fosters more effective goal attainment than articulating desired outcomes alone (e.g., Gollwitzer, 2015).

Applied Competencies: Using the Foundational Components to Navigate the Working World

Our conceptualization of applied competencies builds from the Organisation for Economic Cooperation and Development's (OECD, 2013a) definition:

> Competency is the capacity to generate appropriate performance: to marshal the resources (tools, knowledge, techniques) in a social context (which involves interacting with others, understanding expectations) to realize a goal that is appropriate to the context. Commonly, competency is described in terms of the application and use of knowledge and skills in common life situations as opposed to the mastery of a body of knowledge or a repertoire of techniques. (p. 5)



This involves application and use of the foundational components. Accordingly, together applied competencies make up a much more complicated set that is dependent on the needs and challenges of the particular contexts in which they are developed and applied. For a specific applied competency, it is possible, at least in principle, to identify the foundational components it requires. For example, teamwork and collaboration are commonly cited applied competencies. Enacted within working relationships and environments, each requires good self-regulation together with prosocial values and knowledge and skills that support the work. Given the dynamic relationships among the foundational components and applied competencies, there can be significant overlap between them.

Many prominent national and international organizations have invested in developing frameworks to describe the most fundamental or important applied competencies. Exhibit 4 presents several influential examples, each developed collaboratively by stakeholders in education and industry. Although not an exhaustive review of frameworks, these examples indicate the range of purposes and the breadth of thought leadership. While their terminology and level of detail may vary, most frameworks articulate a common set of concepts.

In 2012, the National Research Council conducted a content analysis of several prominent frameworks that described applied competencies. Guided by psychological theory, the authors identified the three domains of competencies, which are summarized in Exhibit 3. Intrapersonal competencies are the skills individuals use to understand and regulate their internal experiences and express them outwardly. At the highest level are work ethic and conscientiousness, positive core self-evaluation, and intellectual openness. Interpersonal competencies are the skills individuals use to interact and communicate with other people to accomplish individual or collective goals. These include teamwork, collaboration, and leadership. Cognitive competencies are the thinking processes individuals use to solve

problems, make decisions, and create new ideas. These include use of strategies, application of knowledge, and creativity.

The applied competencies draw on the foundational components, and all work together as people navigate working life. Individuals with highly developed applied competencies apply their knowledge and skills to the range of opportunities and challenges that they encounter. They have productive mindsets that allow them to process information about themselves and the world in a positive light that motivates them toward their goals. They have and act on proactive and prosocial values that support positive workforce participation. They engage their self-regulatory abilities on directed action in service of short-term and long-term goals, whether alone, with others, or in the larger world. While having this constellation of abilities does not guarantee success, these intrapersonal, interpersonal, and cognitive competencies help individuals maximize their potential for success in the workforce.

Exhibit 4. Examples of Influential Frameworks of Applied Competencies

Framework	Major Categories of Applied Competencies
National Network's Common Employability Skills http://businessroundtable.org/sites/default/files/Common%20Employability_asingle_fm.pdf This document was released in 2014, a collaborative effort by representatives of sectors expected to produce nearly 75 percent of job growth through 2020 (30 million new jobs). The effort was supported by the Business Roundtable, ACT Foundation, Joyce Foundation, Bill & Melinda Gates Foundation, and the Lumina Foundation.	The skills all employees need, no matter where they work: • Personal skills: integrity, initiative, dependability and reliability, adaptability, professionalism • People skills: teamwork, communication, respect • Applied knowledge: reading, writing mathematics, science, technology, critical thinking • Workplace skills: planning and organizing, problem solving, decision making, business fundamentals, customer focus, working with tools and technology
Employability Skills Framework http://cte.ed.gov/employabilityskills/ This framework was developed by the Office of Career, Technical, and Adult Education, U.S. Department of Education. The goal was to provide a unifying framework that cuts across workforce development and education sectors. Development was guided by a group of career and technical education, adult education, workforce development, and business organizations.	Employability skills are general skills necessary for success in the labor market at all employment levels and in all sectors. Categories are • Applied knowledge: applied academic skills, critical thinking skills, and resource management • Effective relationships: interpersonal skills and personal qualities • Workplace skills: resource management, information use, communication skills, systems thinking, technology use
Occupational Information Network (O*NET) http://www.onetonline.org/ Sponsored by the U.S. Department of Labor, the O*NET program is the nation's primary source of occupational information. It is a searchable database of comprehensive information on the skills and requirements of hundreds of occupations representing all sectors of the workforce.	Cross-Functional Skills are key competencies that facilitate performance across occupations. Major categories are • Social skills • Complex problem skills • Technical skills • Systems skills • Resource management skills

Exhibit 4. Examples of Influential Frameworks of Applied Competencies (Continued)

Framework	Major Categories of Applied Competencies
Partnership for 21st Century Skills (P21) http://www.p21.org/ P21 was founded in 2002 as a coalition of business, education, and policy leaders to advocate for 21st century skills development in U.S. K–12 education. P21 developed this framework through collaboration with teachers, education experts, and business leaders. The framework defines and illustrates the skills and knowledge students need to succeed in work, life, and citizenship.	In addition to disciplinary subjects, key outcomes include • Learning and innovation skills, the 4Cs: critical thinking, communication, collaboration, creativity • Life and career skills, including flexibility and adaptability, initiative and self-direction, social and cultural skills, productivity and accountability, leadership and responsibility • Information, media, and technology skills
Common Career Technical Core (CCTC) http://www.careertech.org/CCTC CCTC development was coordinated by the National Association of State Directors of Career Technical Education Consortium. The goal was to establish a set of rigorous, high-quality standards for Career Technical Education incorporating input from thousands of individuals representing K–12 education, business and industry, and higher education. The CCTC includes a set of standards for each of 16 career clusters, as well as an overarching set of Career Ready Practices, key competencies that apply to all programs of study.	Career Ready Practices include • Responsible citizenship • Application of academic and technical skills • Attending to personal health and financial well-being • Communicating effectively and with reason • Considering environmental, social, and economic impacts of decisions • Demonstrating creativity and innovation, employing valid and reliable research strategies • Ethical leadership and effective management • Planning one's own educational and career path • Using technology to enhance productivity • Critical thinking • Productive teamwork using cultural/global competence
OECD DeSeCo Project http://www.deseco.admin.ch/ In 1997, the OECD initiated the DeSeCo (Definition and Selection of Competencies) Project. The aim was to develop an international framework of the competencies necessary for a successful life and a well-functioning society to be used to strengthen international surveys, such as the PISA. OECD brought together stakeholders from a range of sectors and countries to identify universal challenges of the global economy and culture.	Three broad competencies are • Using tools interactively: tools include language, symbols, and text; knowledge and information; and technology • Interacting in heterogeneous groups: abilities to relate well to others, cooperate, and manage and resolve conflicts • Acting autonomously: abilities to act within the big picture; form and conduct life plans and personal projects; and assert rights, interests, limits, and needs
MHA Labs http://mhalabs.org/ MHA Labs is a public/private research and development nonprofit organization designing products and services to build and translate the 21st century skills of young people for personal, community, and economic success. The organization developed a system of key competencies critical for success, along with a toolkit, training approaches, and assessments for integrating these building blocks into education and work settings.	Thirty-five key competencies organized in the following domains: • Personal mindset • Social awareness • Collaboration • Planning for success • Verbal communication • Problem solving

Note: Frameworks were included only if they were developed collaboratively between stakeholders in education and the workforce.

* * *

The integration of the foundational and applied conceptualizations was designed with three goals in mind. First, it was intended to promote conceptual clarity. Both practice and research have been hindered by a lack of clarity about what personal success skills are. The various conceptualizations of applied competencies have resulted in what could be perceived as an overwhelming number of different skills. Among them, however, is a relatively small core set of foundational components that promote successful functioning when applied in context.

Second, this integrated perspective is intended to help make stronger connections between research and practice. Frameworks of applied competencies are critical to understanding what is necessary for workforce success in particular settings but on their own typically do not tie directly to social science research. At the same time, the foundational components each connect to a rich research base but on their own may not connect directly with what is needed in the context of workforce success. Together, these perspectives can move the field forward by informing each other.

The third goal was to provide direct evidence about the malleability of personal success skills. This framework draws on a substantial body of research that demonstrates that individuals can learn and develop throughout their working years. Evidence indicates that adults can change in significant ways what they know and can do, what they believe, what they value, and how they manage themselves.

The next chapter uses these features of the framework to explore some of the ways that practitioners are supporting adults who are striving to build sustainable careers.

3. Promoting the Development of Personal Success Skills

Adult educators, employers, and other practitioners promote the development of adults' personal success skills on the job and as part of broader programs of professional development, academic learning, and social services. This chapter examines two questions: *What methods and approaches do practitioners use to promote the development of personal success skills? What are some examples of how these methods are used in settings that address the needs of adults striving to build a sustainable career?* Rather than present a comprehensive review and analysis of all approaches and methods available and in use, the goal is to provide a broad overview of approaches that are prominent in the research literature and that were discussed repeatedly in our interviews with experts. The chapter is organized according to the framework presented in Chapter 2, and illustrative cases amplify several of the approaches and show how programmers combine methods to meet the needs of various adult populations.

Promoting the Development of Foundational Components

This section describes a variety of research-based approaches to promoting each of the foundational components.

Building Knowledge and Skills

The learning sciences provide guidance on promoting the development of knowledge and skills. This multidisciplinary field draws together research on expert versus novice performance, brain development, memory, motivation, engagement, social processes of learning, and so on. The National Research

Council (2000) report *How People Learn: Brain, Mind, Experience, and School* (HPL) distilled learning sciences research for practical use in the design of curriculum, instruction, technology, assessment, and teacher professional development. A later publication presented this work in seven HPL principles (National Research Council, 2002) (see sidebar).

The HPL principles are important for the development of adults' knowledge and skills in many ways. Principles 3 and 5—learning is affected by metacognitive strategies, learners' motivation to learn, and learners' sense of self—speak to the ways individuals leverage other foundational components in the process of learning. In fact, Grossman and Salas (2011), in their meta-analysis of training research, concluded that mindsets and self-regulatory abilities are key factors in how effectively people are able to use what they learn to improve their work success. Principles 4 and 7—individuals differ in how they approach learning and learning is enhanced through socially supported interactions—speak to the necessity of creating environments in which learning can be individualized and can occur with the strong support of peers and mentors. Principle 2—learners build knowledge based on what they know already—is particularly important for adult learners who, much more than children and adolescents, bring experience to their learning that can foster or hinder their development.

Principles of How People Learn

The National Research Council (2002) posited these seven principles derived from research on the nature of expertise and what it takes for novices to become experts. They are intended to be used as design principles for curriculum, instruction, technology, assessment, and professional development.

1. **"Learning with understanding is facilitated when new and existing knowledge is structured around the major concepts and principles of the discipline" (p. 118).** Research shows that experts in a given domain do not simply know a set of disconnected facts, but rather are able to think and solve problems using a complex network of ideas and thinking skills. Expert knowledge is typically organized around "big ideas" in a given field that provide the structure for understanding.
2. **"Learners use what they already know to construct new understandings" (p. 120).** Whatever learners are attempting to learn, they bring to that experience their prior knowledge, skills, beliefs, concepts, conceptions, and misconceptions, all of which shape how and what they learn.
3. **"Learning is facilitated through the use of metacognitive strategies through which the learner identifies, monitors, and regulates cognitive processes" (p. 122).** Closely tied to the awareness element of self-regulatory abilities, the development of metacognition enables learners to regulate their own learning and develop problem-solving capabilities.
4. **"Learners have different strategies, approaches, patterns of abilities, and preferred ways of learning that are a function of the interaction between their heredity and their prior experiences" (p. 123).** There are vast differences among learners. This can have important implications for both learning opportunities and assessment.
5. **"Learners' motivation to learn and sense of self affects what is learned, how much is learned, and how much effort will be put into the learning process" (p. 126).** Identity, mindsets, motivations, and values all play an important role in learning. Learners learn and develop competence when they are motivated to do so. There can be a wide range of different kinds of motives that can drive learning, from those that are extrinsic or performance-oriented to those that are more intrinsic, interest-driven, or mastery-oriented.
6. **"The practices and activities in which people engage while learning shape what is learned" (p. 127).** There is an inextricable link between the content learners learn and the practices by which they learn them. This is particularly important in considering transfer of competencies, as these can be used more robustly when taught using in multiple contexts, using varied examples, and in connection to everyday life.
7. **"Learning is enhanced through socially supported interactions" (p. 128).** Learning occurs through social interaction and collaboration. Membership in a community of learners can have a variety of benefits, such as giving learners opportunities to learn from others, to develop their own ideas through conversation, and to feel the social connectedness and belonging that is critical to motivating learning.

While the HPL framework has been influential in educational research, practice, and policy, experts recognize the need for learning sciences to better inform practice to support adults in the workforce. Whereas the basic principles of the HPL framework are still relevant today, since it was introduced at the turn of the century there has been much important new research (e.g., Jonassen & Land, 2012; Sawyer, 2014). The National Research Council is currently developing an HPL 2 framework that incorporates research from fields that have grown significantly, such as neuroscience and educational technology (National Academies, 2015), and that will address learning in adulthood more directly.

Building Productive Mindsets

The most extensive research literature on building productive mindsets focuses on interventions that teach the growth mindset, the understanding that ability and competence grow with effort, use of good strategies, and help from others. Growth mindset interventions are typically implemented in formal educational environments and require 1 to 10 hours of individual or group activities. In the most common approach, individuals are taught that the brain is like a muscle that grows as they put more effort into learning. Some interventions include instruction that teaches productive strategies, such as reflecting on one's understanding and trying new approaches. Use of these types of interventions is associated not only with shifts in beliefs, but also with direct impacts on motivation that lead to higher achievement (e.g., Blackwell et al., 2007; Paunesku et al., 2015). Designers of digital learning environments are exploring how to incorporate supports for such mindsets and strategies. Preliminary findings suggest that simply giving students messages stating that their ability grows with their effort can have small but significant effects on persistence and achievement.

Growth mindset intervention research has concerned mainly youth, but researchers and educators have been applying this work in settings that serve adult learners who most likely have had a history of academic struggle. For example, the Community College Pathways program has shown that embedding mindset interventions into developmental (remedial) mathematics instruction was associated with improved completion rates for Pathways students relative to other developmental math students (Van Campen et al., 2013). Researchers at the Project for Education Research That Scales (PERTS) (https://www.perts.net/) Center at Stanford University are exploring how to expand this work in other higher education settings. Research and development efforts continue to address how to scale promising approaches broadly to adult learner populations. Changing adults' prevailing values or mindsets, especially those that have been reinforced throughout an adult's lifetime, can require actively challenging persistent beliefs and coming to understand oneself in a different way. This may require strong motivation and a willingness to deal with uncertainty and change.

Building Proactive and Prosocial Values

The literature that addresses how to develop proactive and prosocial values per se is not extensive, but we did find significant research on how environments can shape these factors. Bindl and Parker (2011) discussed studies of work environment characteristics that can shape an individuals' proactivity within that setting. For example, the degree to which an environment encourages proactive behavior and provides the autonomy to engage in it can greatly affect employees' proactivity. Participatory leadership, which emphasizes the value of subordinates' contributions and involvement in decision making, and transformational leadership, which motivates employees to go beyond standard expectations,

also tend to be associated with higher proactivity. Environments that are demotivating or in which employees do not feel safe taking risks are unlikely to foster proactive behavior.

Dutton, Roberts, and Bednar (2011) described three kinds of organizational practices that cultivate prosocial behavior. One was facilitating employee-to-employee support services, such as donating resources for bereavement support, in which employees had the opportunity to experience themselves as helpful, caring, and benevolent. Another was facilitating community outreach practices for employees, such as volunteer work that helps them feel they are contributing and building stronger ties with the community. A third practice was directly exposing employees to the beneficiaries of their work, fostering awareness and learning about the positive impact that their work has on others and a greater sense of purpose in contributing to others. Practices such as these can help individuals learn to see themselves in a prosocial light and instill and deepen values geared toward having positive impacts on others and society. Dutton et al. discussed research showing that engaging in prosocial practices at work can enhance persistence, performance, commitment and dedication, and citizenship behavior on the job.

Building Self-Regulation Abilities

There are tens of thousands of studies on self-regulation, and a variety of research-based methods have been shown to develop self-regulatory abilities. For example, studies have demonstrated that individuals can increase their abilities to regulate their attentional focus (e.g., Morrison & Chein, 2011; Shipstead, Redick, & Engle, 2012), regulate their internal emotional experience and external emotional expression (e.g., Gross, 2007; Koole, van Dillen, & Sheppes, 2013), broaden the internal and external awareness that contributes to volitional control (e.g., Ostafin et al., 2015a), and plan and monitor processes involved in striving to attain short- and long-term goals (e.g., Gollwitzer & Oettingen, 2013). Self-regulatory interventions have been developed and applied in many domains, such as education, for example, through work on metacognition and self-regulated learning (e.g., Hall & Goetz, 2013; Zimmerman & Schunk, 2011) and in mental health and behavioral health interventions (e.g., Boekaerts, Pintrich, & Zeidner, 2005). To provide an introduction to self-regulation interventions, we present some key findings in the three domains reviewed in the framework.

Executive functions. In neuroscience research, executive functions are developed through training on processes such as attentional control and basic reasoning. Many laboratory-based cognitive training interventions have been shown in adults to lead to improvements in basic executive functions and persistent changes in prefrontal cortex brain structure (Bunge, 2015). This kind of training is rigorous, typically involving about 20 sessions of computer-based practice over several weeks, each lasting 30–60 minutes. Commercial versions of executive function tasks have become readily available to the public through online companies such as CogMed (http://www.cogmed.com/). Program administrators are beginning to use findings in brain science for executive functions training approaches (see Babcock, 2014).

Researchers are cautiously optimistic about executive functions training; more research is necessary to fully understand the mechanisms by which the training works and to investigate whether the effects transfer to personal success more broadly in everyday life (e.g., Diamond, 2013; Morrison & Chein, 2011; Shipstead et al., 2012). Bunge (2015) drew an analogy to nutrition science in which individuals with specific nutritional deficiencies can sometimes be treated with isolated nutrients, but health outcomes are typically derived from interactions among nutrients

that are not present when nutrients are taken singly. She emphasized the need to build multidisciplinary partnerships between neuroscientists and adult educators doing field-based interventions in order to leverage scientific findings to improve practice and real-world outcomes for adult populations that struggle with executive functions.

Awareness. To develop the awareness that facilitates self-regulation, mindfulness training has gained increasing attention in education, the workforce, physical health, mental health, and other domains (e.g., Brown et al., 2007; Ostafin et al., 2015a; Shapiro et al., 2008). Extensive evidence shows that mindful awareness of one's present-moment experiences can be taught and has positive effects on emotional and physical well-being, relationships, attentional focus, and work productivity. Much of the research is based on an 8-week intervention that entails 2 hours of formal training a week complemented by the participants' own daily practice. This type of training, called Mindfulness Based Stress Reduction (Kabat-Zinn, 1990), is available nationwide in hospitals, workplaces, and other adult education centers. Research has shown that mindfulness training has positive effects on cognitive performance (e.g., the ability to focus attention and process information quickly and accurately), stress management (e.g., better regulation of emotional affect and cultivation of positive psychological states), and development of the "whole person" (e.g., creativity, empathy, and self-compassion).

Striving to attain goals. People can develop a variety of skills to improve their ability to set goals and implement their plans. One example with a robust research base in children and adults is mental contrasting with implementation intentions (MCII) (Oettingen, 2015). This is a simple strategy that has been found effective in improving self-regulation in many life domains. In MCII, mental contrasting is thinking through a desired future outcome contrasted against the present reality that is in the way of attaining it. Implementation intentions are specific "if, then" plans that elaborate how the individual will respond to specific obstacles as they arise in the process of goal attainment. Researchers now call this the WOOP exercise, Wish-Outcome-Obstacle-Plan. Studies have shown that MCII supports persistence and achievement in academic domains (e.g., Duckworth et al., 2011), helped working mothers enrolled in a vocational business program attend classes more regularly (Oettingen, Kappes, Guttenberg, & Gollwizer, 2015), and can help people more effectively achieve difficult goals such as quitting smoking, losing weight, getting better grades, sustaining fulfilling relationships, and negotiating more effectively in business situations (Oettingen, 2015)

Promoting the Development of Applied Competencies

This section describes prominent research-based approaches used to promote applied competencies in the workplace, simulated workplaces, and other adult educational contexts. Given their applied and context-dependent nature, methods for promoting applied competencies tend to focus holistically on intrapersonal, interpersonal, and cognitive competencies as they are used in working life. In most settings, the applied competencies are not the end unto themselves; adults are building these competencies in the context of broader goals of job placement, educational attainment, professional advancement, and so on. The illustrative cases are intended to demonstrate some of the ways that practitioners on the cutting edge are using these methods in settings that support various populations of adults striving to build sustainable careers. Each focuses on multiple applied competencies at the same time, using multiple approaches and methods to promote them.

Coaching, Mentoring, and Peer Support

Supportive relationships are essential in developing personal success skills. These relationships can provide personalized guidance, insider perspectives on the knowledge and skills of a profession, accountability for actions to accomplish goals, encouragement to maintain productive mindsets in the face of challenge, and a sense of belonging. Here, we take a close look at three kinds of relationships—coaching, mentoring, and peer support.

Coaching is a widespread and general method used by managers, workforce developers, adult educators, career counselors, peer coaches, and professional coaches.

Coaching psychologists Grant and Spence (2010) define coaching as "a collaborative, action-oriented conversation" that involves steps of identifying outcomes and goals, identifying strengths, building self-efficacy, making action plans, monitoring progress, and modifying plans as needed. The coach's role is to empower the coachee and keep him or her motivated and on track. Through coaching, adults can get direct and personalized support in setting and achieving work-related goals, applying skills and strategies to the everyday interpersonal and intrapersonal challenges of working life, and the development of productive mindsets and positive core self-evaluation. There is a small but growing science of coaching psychology. For example, a meta-analysis

Illustrative Case: A Coaching Model to Support Low-Income Women
Crittenton Women's Union

Founded: 2006, Massachusetts	**Service Goal:** Jobs, well-being, housing
Delivery Model: Offered at program site	**Facilitators:** Coaching program and tools

Evidence: 100% of families have maintained permanent housing after 1 year, 80% enroll in school, 73% have bank accounts, average earnings are $11.17 an hour

Ruth Liberman guides policy for the Crittenton Women's Union (CWU) in Massachusetts, which provides mentoring and other services to enable low-income women to be financially independent. CWU fosters the development of personal success skills for securing housing and jobs and managing the responsibilities of raising children. The program emphasizes the skills that participants need to attain the five pillars of CWU's Bridge to Self-Sufficiency®: family stability, well-being, education, financial management, and career management.

A core CWU approach is Mobility Mentoring®. According to Babcock (2012), participants work with a Mobility Mentor who "assists the individual in establishing and attaining her own personal, long-term, multi-faceted goals for life improvement. The Mobility Mentor's primary focus is to coach the client in personal problem-solving, skill-building, and persistence to attain long-term goals (e.g., economic independence)" (p. 9).

Staff work individually with low-income women to create a personalized path out of poverty. A participant's ability to earn a family-sustaining wage is central to this work. The Economic Independence Calculator helps inform participants of the annual earnings they will need to support their families. CWU's most rigorous program, Career Family Opportunity, involves setting goals to obtain a family-sustaining wage and save $10,000 over 5 years.

CWU uses assessments to provide systematic input into the coaching process. These include both self-rating tools and rubrics that coaches use to rate participants. For example, participants are assessed on their strengths and the obstacles they face in achieving success in the five pillars of the Bridge to Self Sufficiency. When an assessment reveals an obstacle, specific short-term goals are set to address it. These short-term goals are reviewed and updated every 6 months.

CWU's participants show multiple positive outcomes in family stability, financial stability, job attainment, income levels achieved, and educational levels attained.

examined patterns of outcomes in 69 coaching outcome studies (see Grant & Cavanagh, 2007).

Mentoring and peer support are related to coaching and are critical to a person's building a sustainable career. Mentoring is a developmental relationship typically between a seasoned veteran and a protégé (Eby, 2011). Mentoring is used as part of induction into many professions and serves an important function in the development of professional and organizational knowledge and skills. A mentor can help individuals develop personal success skills in the context of their profession. At their best, mentors also help adults build self-efficacy and a growth mindset as they take on the array of new challenges that can arise in the early stages of a career. Peer support is used in many settings to promote personal success skills. Peers with more experience can serve as mentors to help adults find their way in new settings. Peers can also serve as coaches to help colleagues clarify goals, stay motivated, and hold each other to account. Peers form a critical support system for each other in developing a sense of belonging and social capital for problem solving and finding new opportunities.

Informal Learning on the Job

The workplace is perhaps the most important setting for developing applied competencies. The workplace provides people the opportunities to learn informally within the everyday challenges of their work (Marsick & Watkins, 2001). Employers and managers generally support informal learning through specific organizational

Illustrative Case: Learning on the Job
Center for Employment Opportunities

Founded: 1996, New York	**Service Goal:** Jobs for formerly incarcerated people
Delivery Model: Offered at program sites	**Facilitators:** Links with employers, transitional work sites

Evidence: Random controlled trial showing 16–22% reduction in criminal recidivism

Sam Schaefer and Bill Heiser, leaders of the Center for Employment Opportunities (CEO), say that the program addresses the needs of people released from prison to help them transition to work and life success. CEO is located in 11 cities in New York, Pennsylvania, Oklahoma, and California. CEO targets personal success skills for obtaining and retaining a job and offers direct support for job searches. As part of its multifaceted program, CEO focuses on participants' development of several applied competencies, including life skills, job start readiness, and job retention skills.

CEO uses a comprehensive program that includes a transitional job in which participants can earn a paycheck and develop skills as they search for employment. The staff emphasizes immediate rewards to build trust with participants. For example, CEO gives participants a graduation certificate for completing an initial 5-day formal training workshop on life skills, and it offers paid work at the program's transitional work sites within a week of entry into the program. At these sites, participants engage in such work as maintaining public parks and renovating public housing units.

CEO uses a measurement approach based on its Passport to Success booklet, which provides feedback to participants daily. The passport contains a rubric for crew supervisors to rate participants at the transitional work sites on cooperation with supervisors and coworkers, effort on the job, on-time arrival, and personal presentation, such as dress, physical energy level, listening skills, and eye contact. These data are analyzed to determine when participants have achieved baseline preparation for full-time employment. Once this milestone has been achieved, participants are considered job start ready and begin interviewing for full-time positions facilitated by Job Developers in CEO's vocational services teams.

After participants get a job, CEO continues to provide work-related counseling, financial incentives for staying employed, crisis management, and long-term career planning.

Evidence for the approach has been obtained through a randomized controlled trial that found that CEO reduced criminal recidivism by between 16% and 22%, which results in about $3.30 in tax-payer savings for every $1 invested.

practices and enabling conditions. Practices that support informal learning include open communication and an explicit emphasis on self-directed learning (Argyris & Schön, 1992; Senge, 2006). Studies have indicated that enablers of informal workplace learning include having access to peers and experts in an institutional learning network, dedicated learning time, and supportive management and positive staff attitudes (Lloyd et al., 2014). The most familiar method of supporting such norms is supervisorial coaching, but a range of techniques also exist for providing structured feedback to employees, maintaining open communication in meetings, soliciting critical feedback from employees of different seniority, and strictly limiting negative forms of social interaction (e.g., intimidation, blaming, ignoring). Learning can be hindered by workplace conditions such as lack of time, negative culture, absence of challenging work tasks, lack of expert support and advice, absence of expertise, inaccessibility to knowledge needed for a task, and limitations of instructional media (Billet, 1995).

For adults striving to build a sustainable career, developing the applied competencies to attain and sustain work can be a chicken-and-egg problem when they are not in workplaces in the first place. Workforce development practitioners use workplace simulations and transitional jobs with adults who have histories of personal trauma, poverty, and incarceration. These methods engage adults in real-world work tasks, sometimes with a real salary, and require participants to meet basic professional behavioral standards. At the same time, staff members in these types of programs can provide ongoing formative assessment and feedback based on their observations of participants' job readiness skills, such as emotional regulation in coworker interactions, showing up on time, and dressing appropriately. Sometimes program designers create specific situations designed to stress-test program participants to deepen the development of professional behavior.

Some research supports the notion that learners can develop confidence and expand critical thinking strategies through practice in supportive settings that scaffold skills development and provide formative feedback (Olejniczak, Schmidt, & Brown, 2010; Wingrave, Alqasemi, Clevenger, Sundarrao, & Dubey, 2013). These methods are promising but not proven, however. The need remains to provide practitioners with research-based approaches that they can use to support informal learning of applied competencies on the job.

Transformative Education

Since its start in the 1970s, the transformative education movement has concentrated on building learning experiences that promote fundamental changes in the ways adults see themselves and the world—potentially targeting the development of productive mindsets, self-regulatory abilities, awareness and deepening of values, and some of the more complex interpersonal and intrapersonal competencies. This movement is grounded in a humanist perspective that conceptualizes learning as a personal act to fulfill affective and development needs. Starting with early theorists, such as Mezirow, Daloz, and Freire, for nearly four decades researchers and practitioners have explored methods and approaches to facilitating transformation in workplace and organizational settings, as well as other life domains (Merriam et al., 2007).

There are many different theoretical approaches to transformative education. One is learning through narrative work. Merriam and colleagues (2007) described this approach in which adults construct stories about themselves, their lives, their organizations, and so on to make sense of their personal history or the history of their broader context. They discuss research showing that the process of developing an autobiography, in the form of journaling or blogging, can produce benefits related to the development of positive identity,

Illustrative Case: Transformative Education to Support Adult Community College Scholars
One Million Degrees

Founded: 2006, Illinois	**Service Goal:** College graduation
Delivery Model: Supplemental activities	**Facilitators:** Volunteer mentors, links with professionals
Evidence: Improved college graduation rates	

Paige Ponder leads One Million Degrees, which provides comprehensive supports for community college students to succeed in school, work, and life. Many of the participants are adults in the workforce. The program focuses on participants' aspirations, beliefs about themselves, communication skills, job readiness skills, and skills for building and leveraging social capital.

One Million Degrees uses a coaching model and a supportive peer community. When joining the program, each participant takes on the role of "Scholar." The program matches each Scholar with a volunteer coach and a full-time staff member, or Program Coordinator, and offers monthly workshops and group events. Scholars meet individually or in a small group with the volunteer coaches. Ideally, the coaches have a career in the field that the program participant seeks to pursue after college graduation. Coaches help their Scholars set goals and navigate challenges they face in their college studies and lives. The workshops and events cover career readiness, exploring different fields and company cultures, professional communication and etiquette, and personal networking. The program often organizes support groups for common experiences, such as military service or single motherhood.

Among its variety of offerings, One Million Degrees is a leader in using narrative and identity work. Lansing (2014) discussed how the program supports students' construction of self along three dimensions, each emphasizing the development of skills for leveraging social capital to increase success: (1) social actor, through activities that promote belonging and feeling accepted; (2) personal agent, through activities that promote an increasing sense of control over one's future and potential to impact the world; and (3) autobiographical author, through activities that promote making sense of one's self and future. Such activities include reflective writing exercises after workshops, opportunities to report to peers and coaches on successes and struggles, and the development of elevator pitches to articulate succinctly and persuasively who they are, their vision for the future, and how they plan to get there.

For the purpose of feedback to support Scholars' growth, One Million Degrees developed the assessment rubric Do Your PART, PART being an acronym for the success skills proactive, accountable, responsive, and timely. Program Coordinators rate each Scholar on the rubric, and Scholars evaluate themselves four times a year. The rubric monitors Scholars' engagement in tutoring, timely response to communications, on-time attendance at workshops, and meeting basic program expectations, and it guides the Scholar in setting goals for improving over time.

About 70% of One Million Degrees Scholars graduate, roughly three times the national community college graduation rate.

productive mindsets, awareness of values, integration of knowledge and skills, and the like. In educational settings—where mindsets, identity, and sense of self can deeply influence success outcomes—educational autobiographies can be used to help adults construct an understanding of how family, schooling, and their sociocultural environment have helped them construct their identities as adult learners.

Transformative education approaches that stem from social cognitive theoretical traditions engage individuals in understanding the value of changing behaviors and then offer models for practicing and improving new behaviors. These methods involve focused coaching or self-support tools (e.g., books, mobile apps) to help people develop new mental or physical habits. Typically, this involves an initial phase to commit to adopting a new habit into one's life, which focuses on contrasting the costs and benefits of changing a habit, and then a maintenance phase in which one tracks progress in adopting the new habit and results in one's health or performance.

Formal Training

Workplaces and workforce development programs offer formal training on applied competencies such as basic job readiness, teamwork and collaboration, leadership, creativity, communication skills, productivity, and stress management. Many of these training programs are in a workshop format and use behavior-focused methods, such as presenting examples of problematic and preferred behaviors followed by opportunities for employees to practice the preferred behaviors in role-playing exercises. These programs may also use cognitivist methods similar to those in transformative education that engage employees in reflecting on their perspectives about common work situations and then learning how a change in perspective could lead to better results. Formal learning methods in the workplace typically emerge from organizational needs assessments and are delivered as formal courses. The initial assessment may involve observations and interviews on work tasks and worker task performance to identify gaps in an organization's training programs or culture that cause poor performance. This gap analysis leads to the specification, design, development, delivery, and evaluation of the new formal training program.

Illustrative Case: Formal Training for Interpersonal Competencies
The Cara Program

Founded: Early 1990s, Illinois	**Service Goal:** Jobs
Delivery Model: Offered at program site	**Facilitators:** Links with employers
Evidence: 78% 1-year job retention rates as compared to 57% mean 1-year retention of national sample of workforce development programs (Miles & Woodruff-Bolte, 2013)	

Executive Director Maria Kim says the Cara Program is for adults who have been on public assistance and in prison. The average age of participants is 41, but the age span is 25 to 70. This population needs to develop personal success skills to "deal with the noise of life." Ms. Kim describes the program's target skills as "the harder skills": self-discovery, self-efficacy, perseverance, and relationship building. The Cara Program began as a job placement service, but programmers realized their participants' greatest challenge was retaining a job. They evaluated why people were losing their jobs and discovered common themes of problematic relationships and, as Ms. Kim put it, not managing the "past that comes up to haunt you when you're creating a new future."

Cara uses the methods of narrative, identity work, coaching, and role-plays on job-seeking and interpersonal workplace skills. The program engages participants in activities emphasizing self-reflection and repairing past wrongs. These include "looking in the mirror," which involves replacing the negative terms participants use to describe themselves with positive terms. Participants also engage in "restorative conversations" with family members, friends, and past abusers. Activities build teamwork, conflict management skills, and professionalism. Using role-plays and instruction, the program's coaches guide participants in creating resumes, going on job interviews, networking, managing finances, and receiving constructive criticism. The culminating activity is a simulated work setting where participants receive regular feedback on how to adjust their workplace behaviors and to reflect on what they have learned.

The program uses a set of measurement tools. One is the Employment Hope Scale (Hong, Polanin, & Pigott, 2012). As discussed in Chapter 4, this instrument measures self-ratings of perceived self-sufficiency. It is administered at four points: program entry, 4 weeks later, on being hired for a job, and some months after getting a job. The program coaches also use a "send-out eligibility" checklist to rate participants' performance in the simulated work setting for skills of conflict management, time management, team building, professionalism, and communication. A culture of feedback is cultivated in the program; feedback can come from the "boss" in the simulated work setting or fellow program participants.

Program participants post higher job retention rates than nonparticipants.

In our interviews, we found that some workforce development organizations have developed training on interpersonal competencies, such as compliance with social norms, resolution of interpersonal conflicts, and productively working in teams. Depending on the needs of the population and the aims of the program, training on interpersonal competencies may involve educating individuals about norms and etiquette of professional communication, providing didactic instruction on conflict management, and providing direct feedback about clarity and appropriateness of communication. To support teamwork, such organizations may encourage the use of 360-degree evaluations in which multiple team members provide each other with feedback. Sometimes trainees are asked to rehearse particularly difficult social interactions in advance, such as how to explain to a hiring manager past experiences with incarceration or how to receive criticism or questions from a supervisor. In setting norms for these training sessions, program instructors and coaches consistently model the social behaviors that adults need to use to feel safe taking calculated risks and making mistakes, to receive constructive feedback, and to experience a sense of belonging. In some cases, program designers strive to maintain the bonds of community long after the initial intervention has taken place by setting up a lasting professional or social network among program participants.

Formal training approaches that target applied competencies have been emerging from positive psychology, the study of the conditions that enable individuals to function optimally (Gable & Haidt, 2005). One example is the U.S. Army Master Resilience Trainer Course, a 10-day course designed to teach resilience skills to noncommissioned officers, who then will teach these skills to their soldiers (see Reivich, Seligman, & McBride, 2011). Among other learning goals, the course is intended to build mental toughness by helping soldiers learn to distinguish between activating events and the thoughts, emotions, and consequences that follow. Participants learn patterns of thinking that lead to adaptive outcomes and resilience using strategies for challenging counterproductive beliefs.

Proprietary corporate training programs used in professional settings often have the objective of cultivating leaders who excel in a range of the associated interpersonal and intrapersonal competencies. Our expert informants suggested that practitioners supporting chronically unemployed and underemployed adults need to have greater access to these kinds of methods and guidance in how to adapt them to use with their populations.

Project-Based Learning

Project-based learning methods, used predominantly in formal educational settings, engage learners in designing solutions to extended tasks. Project-based learning methods have been applied in diverse disciplines and settings to deepen disciplinary knowledge, collaborative skill, applied reasoning, problem solving, and creativity (e.g., Barrows, 1986). Project-based learning typically involves learners in teamwork to solve real-world problems that do not necessarily have straightforward solutions (Jonassen, 2000). Such activities engage a range of applied competencies, from the cognitive to the interpersonal to the intrapersonal. To complete these tasks, learners need to continually reassess gaps in their knowledge and negotiate with others to address the gaps. They may need to learn to absorb critiques from team members and apply that feedback productively to the task at hand. Project-based learning methods used on collaborative design projects give learners the chance to engage in cycles rapid prototyping, feedback, and iteration, processes that require extensive problem solving, critical thinking, communication, and metacognitive competencies (Razzouk & Shute, 2012).

Illustrative Case: Project-Based Learning in a Community College Setting

Academy for College Excellence

Founded: 2003, California	**Service Goal:** Remedial course completion, passing first transfer-level English and math courses
Delivery Model: Offer three signature courses on success skills as part of academics	**Facilitators:** Faculty and administrator training, curriculum, accelerated credit for basic skills
Evidence: Quasi-experimental studies that predict improved outcomes for ACE participants	

Founder Diego Navarro's Academy for College Excellence (ACE) serves adult learners attending community college whose educational background was marred by poverty and prejudice. ACE offers a series of courses for students and their instructors. In ACE terms, the program builds the skills of an effective college student: initiative, dependability and reliability, leadership, critical thinking and reasoning, problem solving, and collaboration and teamwork. Mr. Navarro estimates that he spent more than 1.5 years developing the program design. He borrowed leadership and team-building techniques from The Conversant Solution and Five Dynamics management training programs and based the framework on the Alternative to Violence program used in prisons and civic engagement programs.

As part of its multifaceted approach, ACE uses project-based learning within a learning community. The program engages the students in a term-long team research project intended to solve a problem in their communities and lives. In the course of completing the project, students are supported in developing teamwork and self-advocacy skills, receive remediation of English and mathematics deficiencies, and build computer skill competency. The team research project offers a way for students to reframe their personal narrative and develop a new identity as a successful college student and effective team member. Further, the class culture features peer support, and ACE professional development pedagogy indoctrinates all instructors and administrators into the ACE culture of coaching.

The ACE program has examined personal success skills outcomes associated with program participation. Using the College Student Self-Assessment Survey, program evaluators observed positive growth in such factors as students' academic self-efficacy, leadership and teamwork, college identity, interactions with others, mindfulness focusing, mindfulness accepting, mindfulness describing, and mindfulness observing (Karandjeff & Cooper, 2013).

Studies also predict that ACE participants are 7.8 times more likely to complete college-credit gatekeeper courses in English and mathematics in the next term than matched comparison students.

Career Interventions

Career interventions promote the development of applied competencies associated with job readiness and career management. According to the American Psychological Association *Handbook of Career Intervention* (Hartung, Savickas, & Walsh, 2015), along with placement services and vocational guidance to match people with occupations, career interventions promote development of the knowledge and skills people need to manage career transitions and improve career success and advancement. In view of recent economic trends (Immervoll & Richardson, 2011), career intervention methods are considered particularly useful for 21st century workers, who are expected to navigate numerous career changes over their working years (Baruch & Bozionelos, 2011; Pope, 2015). The growing field of career psychology provides a range of research-based intervention models, theory, and assessment approaches.

Several facets of career interventions can promote the development of the personal success skills needed for attaining work and managing one's career. One facet is building self-awareness through assessments of skills, values, and interests

and in-depth discussions of the results. Popular instruments are the Strong Interest Inventory, the Minnesota Importance Questionnaire, Holland's Vocational Preference Inventory, and Holland's Self-Directed Search. Another facet of career intervention is building knowledge about careers and the pathways to enter them. For example, workforce educators may have their students use online tools to compare the educational requirements and prospective earnings of different career tracks. One prominent career tool for exploring the job functions, requirements, and salary expectations of various career pathways is the O*NET database, sponsored by the U.S. Department of Labor. Another facet of career intervention is the development of skills needed to successfully search for and attain jobs. Such skills include informational interviewing, constructing compelling resumes, conducting targeted searches for positions, interviewing for positions, and negotiating salaries. As the job search process can take many steps and require persistence over a significant time, job search competencies can also include more general skills associated with setting long-term goals and developing and implementing action plans to attain them. Finally, depending on the needs of the population, career interventions may also encompass the development of appropriate entry-level job behavior. Skills such as being on time and handling conflict well can help ensure that individuals keep the jobs they have worked hard to attain.

Career intervention methods may be used in a variety of settings by career counselors, student affairs personnel, workforce development professionals, and other kinds of adult educators. While typically delivered in the context of a coaching relationship, career interventions increasingly are being delivered through interactive online tools (Severy, 2008). Further, awareness has been increasing that career interventions need to take into greater account how gender, ethnicity, and race shape career expectations and the kinds of approaches that are most suitable for different populations (e.g., McWhirter, 1997; Pope, 2015). More work is also needed to develop tools and techniques for practitioners who serve underemployed adults but are not trained as career counselors.

* * *

There are many promising research-based approaches to building foundational components and applied competencies—some that require minimal intervention, some that require extensive training and practice, some that require strong interpersonal relationships, and some that are implemented through the design and structure of educational and work environments. Many different strands of research inform these practice approaches. Practitioners serving various populations striving to build sustainable careers use some of these methods in combination and as part of larger efforts to promote job placement, educational attainment, or professional advancement.

These approaches are presented as promising but not proven. Evidence of impact at scale is limited, and experts are still exploring how to integrate personal success skills interventions in feasible and affordable ways into the variety of settings where unemployed and underemployed adults learn and work. Also,

a comprehensive review of all the research and practical wisdom in the field for promoting the development of personal success skills was beyond the scope of this report. There remains a need to examine comprehensively approaches across the major settings in which adults develop personal success skills and the limited but substantial evidence of the effectiveness of these approaches.

Across settings that serve adults striving to build sustainable careers, we found two additional broad challenges to implementing these intervention approaches. One was that these approaches can be resource intensive and take a significant amount of time. For example, while typical workforce services might have individuals obtain work within a few months, more substantial personal success skills development can take 6 months to a year or more. Another was that some approaches are well established in corporate and other professional settings for mid- and high-level professionals but have not been adequately adapted to the needs of entry-level employees with limited work histories. Many organizations, especially those that employ entry-level and service workers, may be limited in how much they can invest in human resource development. There is a need to provide a broader range of practitioners with easily accessible, affordable, and research-based approaches that they can use to support their adult learners or workforce, both informally and formally.

4. Measuring Personal Success Skills

In recent years, along with increasing attention to 21st century workforce competencies, there has been rapid development of more formal and standardized approaches to their assessment (Bedwell, Fiore, & Salas, 2011; Naemi, Burrus, Kyllonen, & Roberts, 2012; Stecher & Hamilton, 2014; National Research Council, 2011). In 2012, Baez estimated that there were more than 2,500 assessments for work-related intrapersonal and interpersonal competencies on the commercial market alone, and many more are also available in the public domain. At the same time, validated measures are still not available for all purposes and constructs.

Measuring personal success skills can serve many purposes in the organizations and institutions that help adults build sustainable careers. This chapter provides some basic information and examples of measures to help sift through the array of tools available and approach measurement in ways that are valid, fair, and useful. This chapter examines two questions: *What are the key work-related purposes and methods for measuring personal success skills? What measures exist to assess personal success skills?* This is not intended as a comprehensive review but rather a starting place for those interested in advancing measurement practices.

Essential Measurement Terminology

Adapted from the Standards for Educational and Psychological Testing (American Educational Research Association, American Psychological Association,& National Council on Measurement in Education, 2014, pp. 254–268)

Construct: The concept or characteristic that a test is designed to measure.

Fairness: The validity of test score interpretations for intended use(s) for individuals from all relevant subgroups. A test that is fair minimizes the construct-irrelevant variance associated with individual characteristics and testing contexts that otherwise would compromise the validity of scores for some individuals.

Reliability/precision: The degree to which test scores for a group of test takers are consistent over repeated applications of a measurement procedure and hence are inferred to be dependable and repeatable for an individual test taker; the degree to which scores are free of random errors of measurement for a given group.

Validity: The degree to which accumulated evidence and theory support a specific interpretation of test scores for a given use of a test. If multiple interpretations of a test score for different uses are intended, validity evidence for each interpretation is needed.

Work-Related Purposes for Measuring Personal Success Skills

Purpose is a driving factor in measurement validity. It determines what should be assessed, what methods should be used for assessment, and how assessment results should be communicated and to whom. Different purposes require different criteria for judging measurement validity, reliability, and fairness. Consequences must also be considered. Some purposes are relatively low stakes or formative in nature (e.g., input into career decisions and professional growth). Other purposes are high stakes and may be associated with key decisions that directly influence individuals' opportunities (e.g., input into hiring decisions). Different kinds of consequences and uses bring with them different ethical and legal considerations.

This section discusses five work-related purposes for measuring personal success skills. These purposes are common in the institutions and organizations that help adults build sustainable careers. They are formative feedback and career guidance, program evaluation and practice improvement, personnel selection and evaluation, readiness certification, and research and development. Note that many of the issues raised here are also applicable to education-related purposes, such as higher education admissions, student evaluation, and school accountability systems (see Atkins-Burnett, Fernandez, Jacobson, & Smither-Wulsin, 2012; Fredricks et al., 2011; Kyllonen, 2012; Kyllonen, Lipnevich, Burrus, & Roberts, 2014; Savitz-Romer, Rowan-Kenyon, Zhang & Fancsali, 2014).

Formative Feedback and Career Guidance

One of the most important purposes of measurement for promoting personal success skills is to provide adults with formative feedback and guidance. Illustrated in all of the case studies in the sidebars in Chapter 3, this was commonly reported in our interviews with leaders of organizations concerned with workforce development or supporting adults' transitions into higher education. Such assessments provide systematic targeted formative feedback to program participants on performance and growth as they work to develop specific personal success skills. Self-reports and ratings by peers, supervisors, and others with valuable perspectives on individuals' performance can provide critical insights into development processes. Many programs have developed rubrics that articulate increasing levels of mastery of their targeted personal success skills. MHA Labs (n.d.), described in the sidebar in this chapter, has developed a professional guidance assessment system for students and entry-level employees across settings.

A related purpose is career assessment. As part of career interventions that guide job search and career development (see Chapter 3), assessments can be used to provide individuals with input into their career planning processes. Assessments may be used to help people develop awareness and clarity about their knowledge and skills, values, interests, and strengths and weaknesses and how these may fit with characteristics of occupations and work activities and environments. Examples of popular instruments are the Strong Interest Inventory, the Minnesota Importance Questionnaire, Holland's Vocational Preference Inventory, and Holland's Self-Directed Search.

The central validity concerns for these types of measures are how meaningful the constructs assessed are to the individual, how accurately

Illustrative Case: Using an Assessment System for Professional Guidance
MHA Labs

Founded: 2011, Illinois	**Service Goal:** Create skills-driven work readiness pathways
Delivery Model: Services offered as citywide public access or at organization site; tools distributed online	**Facilitators:** Direct service training and consulting blended with free and low-cost tools
Evidence: Construct and assessment validation technical reports	

MHA Labs founder Leslie Beller and a network of researchers and practitioners developed MHA's evidence-based suite of tools. These include an entry-level work readiness skills framework with complementary assessments and tools and services that enable educators and employers to target seven skills and mindsets associated with personal success and entry-level job readiness: work ethic, time management, positive attitude, social awareness, communication (speaking, listening, writing), collaboration, and problem solving. This work readiness system was derived from MHA Labs "cradle to career" 21st century skills program that included thousands of employee performance reviews conducted over 4 years of summer job programs.

The work readiness system is designed for multiple settings and multiple stakeholders, including school educators, workforce developers, community workers, employers, and job seekers themselves. Its tools and assessments are blended with a real-time feedback-coaching model to identify a person's job readiness "power profile" and drive positive performance improvement. Managers and employers can use the profiles to communicate the skills and mindsets needed for a job position, orient new employees, and improve workplace outcomes. Educators can use the tools as diagnostics to guide their work readiness learning strategies. Workforce developers can create targeted evidence-based work-readiness curricula by focusing on the skills most predictive of workplace performance and use scorecard results to help individuals with their job search.

The MHA Labs assessment tools rely on observational ratings in real-world settings by supervisors, instructors, and the like. Ratings tap into 37 skills and five overall evaluation questions. The tools were built on the assumption that an observational skill rating provides a more credible measure of what a person can actually do than self-report and overall is more aligned with typical workplace performance reviews.

The MHA Labs workforce system is being used in the citywide summer jobs initiatives for Chicago, Washington DC, Minneapolis/St. Paul, and Brooklyn Center, MN. MHA Labs is also developing a customized assessment solution with Genesys Works, a national workforce development leader, to create a seamless model from school to job training to professional-level job placement.

they are assessed, and how clearly the results, interpretations, and implications for next actions are communicated. These relatively informal formative measures can be important for an individual's professional growth and career planning. In working with adults striving to build sustainable careers, an important consideration is how assessment responses to more standardized assessments might be shaped by the experiences of chronic unemployment, disenfranchisement, deficits in literacy skills, and so on. Some research has shown evidence of structural differences in patterns of responses to assessments of occupational interests by gender, ethnicity, and nationality (Burns, 2015), and there is a need for further research to better understand how results from surveys of career interests and work values should be interpreted and used by specific populations in specific situations.

Program Evaluation and Practice Improvement

Another common measurement purpose is to inform program evaluation and practice improvement. Such data can provide formative and summative information about program implementation and outcomes for adult educators, employers, program leaders, funders, and other program stakeholders. This information can be used to understand effects on participants and improve program practices. The information can also be used to indicate outcomes for accountability to funders or to guide decisions about program replication and scaling up. The stakes can range from relatively low when the results inform ongoing internal decisions about changes to program content or process to very high when they inform decisions about program funding or expansion. We found that high-stakes program evaluations typically rely on measures of primary success outcomes, such as employment and retention rates, income, grades, and recidivism. We did not find any examples of programs for which personal success skills were the primary program outcome; assessment of personal success skills in program evaluation typically has a lower stakes purpose of formative feedback or documenting implementation factors.

Two major validity concerns are sensitivity to intervention and feasibility of administration. Measures for program evaluation and improvement need to be able to detect benchmarks and growth on the specific indicators of program outcomes. This requires that assessments be closely aligned with program goals, defined in language that is directly related to those goals and recognizable as such by program staff and participants, and supported by a clear theoretical model of the different stages in development on the construct being measured and a logic model of how the program works. Feasibility is often a concern because measures typically need to be used at multiple time points to indicate growth without overburdening participants or having participants pay less attention to the assessment over time. Duckworth and Yeager (2015) advised that such measures be "brief, easily collected, and contextually appropriate" (p. 26).

Personnel Selection and Evaluation

Many assessments of personal success skills have been designed with the purpose of providing information to employers to support their decisions about employee hiring, compensation, and promotion. For example, the U.S. military has been a leader in this work and has supported the development of personnel selection measures that emphasize personal success skills. Since 2009, the Army and the Air Force have made the Tailored Adaptive Personality Assessment System an integral part of their screening for new recruits. Formal "soft skills" assessment tools also serve the needs of private sector employers, workforce development, and education (Duckworth & Yeager, 2015; National Research Council, 2012). Screening for personal success skills might serve broader social purposes in some cases (to screen out violent offenders from being armed security officers, as an extreme hypothetical example); however, scholars caution that these uses have the potential to serve the interests of assessors while harming the most marginalized people who are trying to enter the job market.

Besides requiring the rigorous standards for validity, reliability, and fairness of all assessments, assessment for selection purposes is highly regulated. Federal employment laws provide specific guidelines on employee selection procedures and are enforced by the U.S. Equal Employment Opportunity Commission, limiting employers' use of measures that are biased or unfair to certain groups (O*NET, 2000). Employers using personal success skills assessments

for selection purposes should make sure that they are adhering to the validity and fairness requirements in the *Standards for Educational and Psychological Testing* (American Educational Research Association et al., 2014). Additional information on legal and ethical standards for use of assessments for workplace testing for employment and credentialing is in *Testing and Assessment: An Employer's Guide to Good Practices* prepared by the U.S. Department of Labor (O*NET, 2000) and the Society for Industrial and Organizational Psychology's *Principles for the Validation and Use of Personnel Selection Procedures* (2003).

Readiness Certification

Assessments for the purpose of readiness certification provide a credentialing organization with information to support an individual's readiness for particular kinds of work. Job applicants, education and training providers, and employers all have an interest in such assessments. Until recently, certification of work readiness almost exclusively targeted knowledge and skills, including disciplinary and technical knowledge and skills, and cognitive competencies, such as problem solving. However, as employers increasingly call for soft skills in new hires, leaders responsible for certifying general work readiness have found ways to incorporate assessment of interpersonal and intrapersonal competencies in certification systems. Two examples are the ACT National Career Readiness Certificate Plus (NCRC Plus) and the Work Skills Certification System (WSCS) from CASAS/LRI, Inc., which both incorporate new pertinent inventories in their assessment batteries along with existing tests of cognitive skills.

Besides the legal and ethical issues mentioned above, a central validity concern with readiness certification assessments is the degree to which scores are predictive of important success outcomes in the workforce. Generally, pairing other types of data, such as a personality inventory, work sample, structured interview, or integrity test, with a cognitive skills test has been shown to enhance the ability to predict job performance over use of cognitive skills measures alone (Schmidt & Hunter, 1998). Studies showing strong evidence of the predictive validity of the NCRC Plus and WSCS were not found at the time of this writing; however, the strengths of these systems is in the specific guidance they provide for workforce development program curriculum and learning objectives. NCRC Plus has an extensive job analytic component to create profiles of the literacy, numeracy, and problem-solving skill levels a job requires and includes interpersonal and intrapersonal skill levels required of particular occupations. The WSCS is aligned with the CASAS literacy, numeracy, speaking, and listening competencies and performance levels and includes indicators associated with customer service and employability.

Research and Development

Measures for the purpose of research and development provide information to test hypotheses and guide theory and program model development. They may be used in laboratory experiments, correlational studies, design research, policy analysis, and so on. Scientific inferences drawn from research data are typically not high stakes for individuals or programs, but they can have broad intellectual and practical influences and must be based on defensible empirical data. Research instruments must have strong technical qualities, and data need to be collected and analyzed with rigorous methods that protect the privacy of individuals as research participants. Research instruments can sometimes be adapted for use in applied settings for professional guidance or program evaluation purposes, but assessment users must first address validity concerns

associated with the new purpose. Assessments used for one purpose are not always readily applicable for another; the instrument may need to be tailored to a new context or to the needs of a particular population.

Methods for Measuring Personal Success Skills

Here, we describe four major measurement methods, along with some of the associated strengths and central challenges to valid, reliable, and fair use of the results (see Exhibit 5).

Self-Report

In instruments that rely on self-report, test takers are asked to rate themselves, either by answering open-ended questions or by indicating whether or how well a statement describes them. Primary self-report methods are surveys and interviews. Key strengths of self-report methods are that they can be relatively easy to administer and score and that they can tap directly into the test taker's personal experiences. Core challenges of self-ratings are the potential test-taker biases that can weaken validity; for example, Bedwell, Fiore, and Salas (2011) described four:

1. *Social desirability bias* is the tendency to respond in ways that, rather than truthful, are culturally appropriate, acceptable, or desirable.
2. *Reference bias* is the tendency to evaluate oneself in comparison to one's own group of peers rather than to a broader or more objective set of standards. This most likely occurs because individuals lack knowledge about groups beyond their own peers.

Exhibit 5. Four Personal Success Skill Assessment Methods

Method	Strengths	Limitations	Common Uses
Self-report Test takers are asked to rate themselves	• Easy to construct, administer, and score • Direct measure of personal experience	• High potential for test-taker bias and faking to invalidate results	• Inform low-stakes decisions (e.g., guidance, research) • Combined with other measures to inform higher-stakes decisions (e.g., selection, evaluation)
Report by others Individuals rated by instructors, hiring managers, supervisors, peers	• Easy to construct, administer, and score • Ratings often based on long-term observation of behavior	• High potential for test-taker bias • Limited access to personal experience	• Inform low-stakes decisions (e.g., guidance, research) • Combined with other measures to inform higher-stakes decisions (e.g., selection, evaluation)
Behavioral tasks Test takers engage in a real-world task or simulation	• Lower potential for test-taker bias • High potential for authentic and contextualized measures of competencies	• Difficult to construct authentic, contextualized tasks • Cost of administration may be high	• Inform higher stakes decisions (e.g., selection, certification, evaluation)
Biographical data Evaluation of artifacts of an individual's education, training, and work experience	• Ratings based on long-term evidence of experience and performance	• Difficult to obtain and rate data • High potential for faking or missing data to invalidate results	• Inform higher stakes job selection decisions

3. *Acquiescence bias* is the tendency of survey respondents to answer all questions in the affirmative.
4. *Consistency motif bias* stems from the tendency of survey respondents to want to maintain what they consider to be consistency in their pattern of responses. Respondents may apply their own lay theory of how test items are interpreted and adjust their responses accordingly.

Faking may also be a problem in self-report methods, especially when the test taker knows that the stakes are high. When using self-rating, test users can mitigate biases and faking through particular strategies of test construction or by triangulating sources of evidence.

Report by Others

Similar in format to self-reports, reports by others rely on observers to do the rating. Typical observers are instructors, hiring managers, supervisors, and peers. Advantages of obtaining ratings by others over self-report are that they may provide a perspective that is more objective or knowledgeable if the rater is in fact well-trained and minimally influenced by biases. Others' ratings are often more predictive of outcomes than self-reports (Connelly & Ones, 2011). However, ratings by others can be subject to some of the same response bias issues as self-report methods, as well as to a *halo effect*, a bias in which the observer's overall impression influences his or her ratings at a given time. Another challenge is that external raters have limited access to the individuals' internal experiences and motivations for their actions. Further, in situations in which objectivity and systematicity are critical, one of the greatest challenges can be ensuring interrater reliability, that is, consistent responses across raters. Attaining adequate interrater reliability requires clear rating criteria, training of raters, and tests of agreement—all of which can be expensive and time-consuming and require specific expertise to conduct.

Behavioral Tasks

In behavioral tasks, test takers engage in a real-world task or simulation and the test results are derived from their performance. Used most commonly to assess cognitive competencies, this method can also be used to assess some intrapersonal and interpersonal competencies. Often, for the sake of reliability in task administration and scoring, the task requires test takers to respond to a simulated situation that could be encountered in the workplace. Response formats can include answering a simple question, solving a multistep problem, producing a product, or interacting behaviorally. An important strength of behavioral tasks is that they enable individuals to demonstrate applied workforce competencies. A major challenge is the difficulty of constructing tasks that elicit behaviors in a way that is truly indicative of how a person would behave in the real world. Digital technologies offer promising possibilities because of their potential to standardize task presentation and score examinees automatically, for example, through engagement with avatars and complex simulated environments.

Biographical Data

Using biographical data for assessment involves the evaluation of extant documents or artifacts of an individual's relevant education, training, and work experience. The most common use of this method is the informal assessment of people as part of the hiring process, as in the review of resumes, diplomas, certificates, and other documents. A person's documented experiences can support important high-level inferences concerning many aspects of cognitive, intrapersonal, and interpersonal

competencies. At the same time, any hiring manager knows that for a thorough understanding of a person's personal success skills, these data must be complemented by interactions with the person. The rise of social networks such as LinkedIn has created opportunities for large-scale analyses of biographical data for employers, job seekers, and researchers and developers. Analyses of the "big data" generated by these networks may support validation of predictive inferences about personal success skills in the future.

Measuring Foundational Components

As introduced in Chapter 2, the foundational components of success are what one knows and can do, what one believes, what one values, and how one manages oneself internally and with others. Here we review some important approaches and considerations in measuring these foundational facets of successful functioning. Exhibit 6 shows examples of several instruments.

Exhibit 6. Examples of Foundational Component Assessment Instruments

Component	Instrument	Method	Purpose	Predictive Validity Evidence
Knowledge & skills	Watson-Glaser Critical Thinking Appraisal® (WGCTA) (2008)	Behavioral task	Personnel selection	Strong for work performance
	Torrance® Test of Creative Thinking (TTCT) (1966)	Behavioral task	Guidance	None for work or academics
Mindsets	Theory of Intelligence Scale (1995)	Self-report	Guidance, research	Strong for academic performance
	Curiosity and Exploration Inventory (2009)	Self-report	Guidance, research	None for work or academics
Values	Situational Judgement Task of Personal Initiative (SJT-PI) (2009)	Behavioral task	Personnel selection	Strong for work performance
	Reid Report, 29th Edition (1987, 2002)	Self-report	Personnel selection	Strong for work performance
Self-regulation	NIH Toolbox Dimensional Change Card Sort Test (DCCS) (n.d.)	Behavioral task	Guidance	None for work or academics
	Mindful Attention Awareness Scale (MAAS) (2003)	Self-report	Research	None for work or academics
	Employment Hope Scale (2012)	Self-report	Program evaluation	Some for work performance

Measuring Knowledge and Skills

Knowledge and skills are the most common, familiar, and well-establish targets of measurement. Discussion of these measures is beyond the scope of this report, but a few comments are provided. In Chapter 2, we discussed the many different types of knowledge and skills that are pertinent to personal success. For disciplinary knowledge and skills, such as literacy and numeracy, a wide range of off-the-shelf assessments can serve a variety of work-related purposes. Similarly, for technical knowledge and skills, including skills that are specific to occupations, many specialized assessments are on the market. Many of them have been shown to predict job performance (National Research Council, 2011). Other types of knowledge, such as understanding professional norms and expectations, cultural norms and values, and institutional structures and systems, can be relevant to developing personal success skills but are much less frequently assessed. They are often assessed informally through interviews or conversations with mentors and peers.

Measuring Mindsets

There is a strong research base for mindsets that have been shown to influence persistence and performance: the growth mindset, self-efficacy, curiosity and openness, and belongingness. For each of these mindsets, measures are typically short self-report surveys (10 items or fewer) in which individuals rate their perceptions of themselves. Indeed, self-report is probably the best way to measure mindsets because it directly accesses individuals' beliefs and sense of self.

Measures of mindsets have been used extensively in research. One example is Dweck, Chiu, and Hong's (1995) widely used measure of the growth mindset, which is shown in Exhibit 7. Measures of self-efficacy, the mindset "I can succeed at this," can be found in the studies of Bandura and other psychologists. Self-efficacy measures are typically domain specific, targeting not simply an overall sense of confidence, but one's beliefs about efficacy to succeed at particular tasks, disciplines, or occupations. Many measures of curiosity and openness have been used widely in research. For example, Kashdan and colleagues (2009) developed the Curiosity and Exploration Inventory, which measures an individual's recognition, pursuit, and integration of novel and challenging experiences and information. Another common measure is the openness factor of the NEO Five Factor Inventory (Costa & McCrae, 1992). Measures of social belonging can be found in the research literature on belonging uncertainty (e.g., Walton & Cohen, 2007; 2011). These self-report instruments ask questions about the degree to which individuals experience a sense of social belonging in the setting they find themselves in.

Exhibit 7. Items From a Commonly Used Self-Report Measure of the Growth Mindset

Theory of Intelligence Scale*
1. You have a certain amount of intelligence and you really can't do much to change it.
2. Your intelligence is something about you that you can't change very much.
3. You can learn new things, but you can't really change your basic intelligence.

*Higher score reflects more of a fixed mindset; item are reverse-scored to characterize the growth mindset.

Note: More information is available at www.mindsetonline.com

Source: Dweck, C. S., Chiu, C., & Hong, Y. (1995). Implicit theories and their role in judgments and reactions: A world from two perspectives. *Psychological Inquiry, 6*(4), 267–285.

In recent work in community colleges, Yeager, Bryk, Muhich, Hausman, and Morales (2014) have argued for the need for "practical measures" of mindsets that can be used to assess changes, predict when students are at risk for failure, and set priorities for improving practice. They presented a set of practical measures that can be used in day-to-day practice for these ends. As a set, the measures bring together the most important and predictive aspects of a variety of mindsets using instruments that can be administered in under 3 minutes.

Measuring Values

Measures of proactive and prosocial values can serve many purposes, including research, formative feedback, career guidance, and personnel selection. Like mindsets, values are typically assessed using self-report methods as these are the most direct for tapping into individuals' internal experiences.

Bindl and Parker (2011) reviewed available proactivity measurement approaches. They pointed out that there are several self-report measures of proactivity (e.g., Bateman & Crant, 1993; Parker & Collins, 2008) but that these measures are especially subject to social desirability bias. They reported on the work of other researchers who have developed situational or scenario-based interviews triangulated with survey responses (e.g., Frese, Fay, Hillburger, Leng, & Tag, 1997; Parker, Williams, & Tuner, 2006). In these interviews, respondents are given scenarios of hypothetical problems at work and asked to explain how they would solve them. Respondents are also asked to describe examples of their own initiative at work. Responses to both types of questions could then be coded relative to activeness and degree of overcoming barriers. Bledow and Frese (2009) developed the Situational Judgment Test of Personal Initiative (SJT-PI), a survey in which respondents rate their preferences for various kinds of self-initiative-related behaviors as responses to hypothetical situations. Bledow and Frese presented evidence that the SJT-PI is a valid predictor of workplace performance.

For prosocial values, many commercial assessment instruments are on the market. For career guidance, some assessments of values help people understand their orientation to social service and the degree to which it would be important to their satisfaction to seek work that enables them to make contributions to other people (U.S. Department of Labor, 2015b). Another class of assessments can be characterized as "integrity testing" (Berry, Sackett, & Wiemann, 2007; National Research Council, 2011). Integrity testing is a subset of values testing for personnel selection purposes. There are two main types of integrity tests, "overt" and "personality oriented." Overt integrity tests are typically self-report questions about one's honesty and attitudes toward theft. Examples include the Personnel Selection Inventory, the Reid Report, and the Stanton Survey. Personality-oriented measures focus on broader constructs such as dependability, conscientiousness, and social conformity. Tests in this category include the California Psychological Inventory, the Personal Reaction Blank, and the PDI Employment Inventory (Berry et al., 2007).

Measuring Self-regulation

Given the vast research base on self-regulation, a wide range of assessment approaches and tools exist, primarily for research purposes, but also to evaluate interventions that promote self-regulatory abilities in clinical and other settings. However, experts do not yet agree on how to measure self-regulation. In his report to the National Research Council (2011) workshop on Assessing 21st Century Skills, Hoyle noted that despite the publication of 114 chapters in edited volumes and about 120 articles published each year between 1998 and 2010 on the topic of self-regulation, psychologists have not reached consensus on how to define and measure self-regulation (p. 67). As a starting point, we return to the three facets highlighted in the framework.

Executive functions. The most common approach to measuring executive functions is through computer-based tasks in which individuals have the opportunity to demonstrate the functions of cognitive flexibility or attentional control, working memory capacity, and inhibitory control of automatic or nonoptimal incorrect responses. Examples of these kind of measures can be found throughout the executive functions literature (e.g., Diamond, 2013; Morrison & Chein, 2011; Shipstead et al., 2012), but an essential resource in applied settings is the National Institutes of Health (NIH) Toolbox for the Assessment of Neurological and Behavioral Functions (http://www.nihtoolbox.org/). This repository contains a multidimensional set of brief measures to assess cognitive, emotional, motor, and sensory functions. It is intended as a standard set of measures that can be used as common currency for evaluating intervention and treatment effectiveness in a range of settings and developmental changes in populations from early childhood through late adulthood (National Institutes of Health, n.d.). Specific tools for executive functions include the NIH Toolbox Dimensional Change Card Sort Test, which is a measure of cognitive flexibility, and the NIH Toolbox Flanker Inhibitory Control and Attention Test, which measures attention and inhibitory control. Both assessments are administered in less than 10 minutes. The assessment instruments in the NIH Toolbox are designed for research and clinical diagnostic purposes, and there is no evidence of the predictive validity of these tools for work performance.

Awareness. For awareness, we drew on the extensive research literature on the salutary effects of mindfulness practice in which individuals are trained to pay attention with curiosity to present-moment experiences. Along with the research base on mindfulness that spans more than three decades, a number of assessment instruments have been developed and psychometrically validated for different purposes and populations. Mindfulness is predominantly measured through self-report surveys about respondents' awareness and present-moment experience. Sauer and colleagues (2013) conducted a broad review of the state of the art of these measures, noting the differences in operational definitions and applicability to different settings and populations. A repository of these measures can be found on the website of the American Mindfulness Research Association (https://goamra.org/resources/measuring-mindfulness/).

Striving to attain goals. Striving to attain goals is a complex set of processes that entail understanding what goals are possible, selecting goals, making plans, implementing plans and monitoring progress, and reflecting on and adapting implementation processes. Many of these processes are driven by skills that individuals can learn, such as time management and the mental contrasting with implementation intentions (MCII) process described in Chapter 3. A common approach for understanding how individuals approach the problem solving involved in setting goals and planning is through think-aloud protocols. This is an interview process that elicits, captures, codes, and analyzes people's verbalizations of their problem-solving processes as they are happening. The think-aloud methodology has been used extensively, for example, in the research literature on self-regulated learning to understand how students approach open-ended academic challenges (e.g., Greene, Robertson, & Costa, 2011).

There are also self-report measures that capture individuals' perceptions of their own goal-striving abilities and tendencies. One important instrument, developed specifically for low-income job-seekers, is the Employment Hope Scale (Hong et al., 2012). This scale captures perceived self-sufficiency with respect to (1) psychological empowerment

(including self-worth, self-perceived capability, and future outlook) and (2) the process of moving toward future goals (self-motivation, utilization of skills and resources, and goal orientation). The Employment Hope Scale was developed in the context of job training and has been used to provide formative feedback to program participants. One setting where it is used is the Cara Program, which is described in detail in a sidebar in Chapter 3. A more general construct that has received much attention in recent years is grit, which Duckworth and colleagues (Duckworth, Peterson, Matthews, & Kelly, 2007) defined as "working strenuously toward challenges, maintaining effort and interest over years despite failure, adversity, and plateaus in progress" (pp. 1087–1088). These researchers have developed a scale that can be used to measure an individual's intrinsic grit in striving to achieve long-term goals. Items from the scale include both consistency of interest and perseverance of effort. This scale is used for adolescents and adults in a range of settings.

Measuring Applied Competencies

As introduced in Chapter 2, the applied competencies are the cognitive, intrapersonal, and interpersonal competencies that are applied and enacted in the contexts and settings of workforce participation. As we have discussed, the conceptual clarity and clear ties to research are less robust for applied competencies than for the foundational components. To examine measurement of this complex and messy space, we explored key findings from recent published reviews on measuring these competencies (Bedwell et al., 2011; National Research Council, 2011; Stecher & Hamilton, 2014). We also draw attention to many of the important overlaps in measurement approaches among the foundational components discussed above and the applied competencies. As the applied competencies primarily are rooted in practice, assessment experts have looked to the research base in the foundational components to inform many of the measurement approaches for applied competencies. This is consistent with our conceptualization of the applied competencies as the engagement of foundational components in workforce settings.

Measuring Cognitive Competencies

Assessment of applied cognitive competencies has the longest history and largest base of work. Cognitive competencies encompass cognitive processes, such as critical thinking and executive function; knowledge; and creativity and innovation. There are three important areas of overlap with the foundational components described above. Measures for knowledge and skills, critical thinking, and executive functions have strong research bases and, in many cases, have been demonstrated to show predictive validity.

However, a lack of shared agreement and conceptual clarity about definitions of some cognitive competencies is a major barrier to valid measurement. Although measures of such constructs as critical thinking and creativity exist, these constructs are not defined consistently. In his presentation on measures of critical thinking at the National Research Council workshop on Assessing 21st Century Skills (2011), Kuncel pointed to the low correlation of results across commonly used critical thinking tests such as the Watson-Glaser™ Critical Thinking Appraisal, the Cornell Critical Thinking Test, the California Critical Thinking Skills Test, and the California Critical Thinking Disposition Inventory (National Research Council, 2011). Similarly, despite a long history of efforts to define and measure creativity, scholars do not agree on what creativity is or how it differs from other constructs such as innovation and divergent thinking (Stecher & Hamilton, 2014). The most popular test for measuring

creativity, the Torrance Tests of Creative Thinking (TTCT), focuses on divergent thinking. It uses such questions as "how many original uses can you think of for a brick?" However, experts have expressed concerns about the psychometric quality of the TTCT and about its focus on divergent thinking over other possible definitions of creativity.

Measuring Intrapersonal Competencies

Measurement of intrapersonal competencies is complicated by the diversity of constructs within this domain. Intrapersonal competencies encompass various facets of work ethic/conscientiousness, positive core self-evaluation, and intellectual openness. The lack of consensus in the current state of theory and conceptual framing of definitions of intrapersonal competencies poses a major obstacle to good measurement (National Research Council, 2011; Stecher & Hamilton, 2014); however, together these competencies have strong overlap with the constructs associated with the foundational components of self-regulation, mindsets, and values—many of which are connected to robust measurement approaches. Future research and development efforts may explore commonalities and coherence across measurement approaches to these diverse constructs and the kinds of adaptations needed to produce valid and reliable methods for various work-related purposes.

One common approach to operationalizing both intrapersonal and interpersonal competencies draws on the Five Factor Model (Big 5) of personality. This describes individuals' tendencies toward conscientiousness, extraversion, openness, agreeableness, and emotional stability. Many industrial/organizational psychologists argue that some personality factors and facets should be considered as the equivalent of some intrapersonal and interpersonal competencies (e.g., Naemi, Seybert, Robbins, & Kyllonen, 2014; Roberts, Martin, & Olaru, 2015). Typically, self-report methods are used to measure personality constructs and are designed as standardized individual measures. Thus, they do not fill the need identified by the National Research Council (2011) for contextualized assessment (see below). However, such tests do cover a range of interpersonal and intrapersonal skills constructs, and some employ methods to overcome limitations of the self-report method related to faking. Two such tests are the Tailored Adaptive Personality Assessment System and the ETS WorkFORCE™ Assessment for Job Fit.

Measuring Interpersonal Competencies

Experts agree that the multifaceted constructs within the domain of interpersonal competencies are not yet clearly defined and are therefore hard to measure (Bedwell et al., 2011; National Research Council, 2011; Stecher & Hamilton, 2014). In his presentation to the National Research Council (2011) workshop on Assessing 21st Century Skills, Fiore presented a taxonomy of interpersonal skills and pointed out that the multiplicity of names for constructs for measurement within the domain was related to the fact that interpersonal skills have attitudinal, behavioral, and cognitive components. The taxonomy he presented (developed by Klein, DeRouin, & Salas, 2006) includes communication skills (such as active listening, oral communication, written communication, assertive communication, and nonverbal communication) and relationship-building skills (such as cooperation and coordination, trust, intercultural sensitivity, service orientation, self-presentation, social influence, and conflict resolution and negotiation) (National Research Council, 2011, pp. 43–44). Fiore argued that measures of such skills for personnel selection purposes, performance appraisals, or training need to be conducted "in a suitable, realistic context in order to be able to examine the attitudes, cognitive processes, and

behaviors that constitute social skills" (National Research Council, 2011, p. 45).

Commonly used measures of interpersonal skills typically focus on more narrowly defined constructs, such as teamwork. Teamwork can be measured using self-report or informant-report ratings or with situational judgment tests (which present test takers with a hypothetical scenario and ask them to choose the best course of action) or through direct observations of team interactions. Fiore suggested that parsing out and measuring constructs such as teamwork may not be as useful as a more holistic approach that would provide evidence of the interactions among the facets that contribute to interpersonal skills (National Research Council, 2011).

However, currently, most assessment of interpersonal skills is conducted through self-report, making it difficult to assess skills in the context of social interaction. While taking context into account in measurement is complex, technology may offer a solution by enabling standardized assessment of people's interactions with actors or avatars in a simulated environment (National Research Council, 2011).

* * *

In the organizations and institutions that help adults to build sustainable careers, measuring personal success skills can be important for many work-related purposes. Few practitioners responsible for adults' employment and development have the resources needed to develop their own high-quality assessments specifically tailored to their goals and the characteristics of the adults they serve. They need ready access to high-quality measures with empirically based guidance about which measures to use and the requirements for fair and appropriate use. As a starting place for those interested in advancing measurement practices, this chapter provides an overview of the work-related purposes of personal success skills assessments and pointers to some tools and research.

Although we found research-based measurement approaches associated with each of the foundational components, we uncovered only a handful of concrete examples of how practitioners could use these instruments in their everyday work. This was affirmed by the relative lack of clarity about measurement of the applied competencies, for which the experts are struggling to develop consensus on definitions. One implication is that a strong need exists to bridge research and practice to put these tools in the hands of those who need them in the field. Such bridges may include making measurement tools more broadly accessible and usable and exploring what adaptations may be necessary to apply them in practical and ethical ways to serve the needs of adults seeking entry into the workforce. Also, as applied competencies are engaged in real-world contexts, such bridges may include further development of behavioral tasks that enable individuals to demonstrate their competencies in performance-based assessments. Technology may offer solutions by permitting standardized assessment of people's interactions with actors or avatars as they work in simulated environments.

5. Recommendations

This chapter answers the final framing question: *What are key recommendations for practitioners, researchers, and policymakers who seek to advance the development of personal success skills for adults who are striving to build sustainable careers?* The chapter is organized to address the roles and responsibilities of these various stakeholders.

A Recommendation for All Stakeholders: Become Informed about the Learning Sciences

Building an understanding of the science behind learning and implications for adult development is essential to acting on the recommendations that follow. The learning sciences, influential in research, practice, and policy across all domains of education, is a multidisciplinary field that draws together the research bases on expert versus novice performance, brain development, memory, motivation and engagement, learning as a social process, and other facets of learning. As a starting place, the following are seven learning sciences principles of how people learn distilled by the National Research Council (2002) and how they can apply to adult learning:

1. *Learning with understanding is facilitated when new and existing knowledge is structured around the major concepts and principles of the discipline.* Adults' development of personal success skills can be enhanced when they understand the bigger picture of what personal success skills are and why they need to learn them, both in general and specifically within a particular environment.
2. *Learners use what they already know to construct new understandings.* This is particularly important for adult learners who, much more so than children and adolescents, bring to their learning experience prior knowledge, beliefs, values, concepts, and misconceptions, all of which influence how they learn.
3. *Learning is facilitated through the use of metacognitive strategies through which the learner identifies, monitors, and regulates cognitive processes.* Adults' development of personal success skills can be enhanced when they have clear articulations of the skills they are striving to learn, tools and strategies for assessing their progress and receiving constructive feedback from others about their own progress, and strategies for learning how to close gaps in performance.
4. *Learners have different strategies, approaches, patterns of abilities, and preferred ways of learning that are a function of the interaction between their heredity and their prior experiences.* The vast differences among adult learners can have important implications for the ways that learning opportunities need to be structured and supported. Approaches, strategies, and tools need to be adapted to the needs of particular adult populations and to the different needs of learners within these populations.

5. *Learners' motivation to learn and sense of self affects what is learned, how much is learned, and how much effort will be put into the learning process.* The effort that adults put into learning and development will be driven to a large extent by how motivated they are to learn. Many different kinds of motives can drive adult learning, from those that are extrinsic or performance-oriented to those that are more intrinsic, interest-driven, or mastery-oriented.
6. *The practices and activities in which people engage while learning shape what is learned.* Because personal success skills apply to the challenges, relationships, transitions, and social systems of the workplace, adults must learn by doing under realistic conditions.
7. *Learning is enhanced through socially supported interactions.* Coaching and mentoring can be critical supports for learning. Membership in a community of peer learners can have a variety of benefits, such as giving learners opportunities to learn from others, to develop social capital to open up new opportunities, and to feel the social connectedness and belonging that are critical to motivating learning.

The following are recommended additional readings on the learning sciences and adult learning:

- Kasworm, C. E., Rose, A. D., & Ross-Gordon, J. M. (2010). *Handbook of adult and continuing education.* Thousand Oaks, CA: Sage.
- Knowles, M. S., Holton, E. F., & Swanson, R. A. (2015). *The adult learner.* New York, NY: Routledge.
- Merriam, S. B., & Bierema, L. L. (2014). *Adult learning: Linking theory and practice.* San Francisco, CA: John Wiley & Sons.
- National Research Council. (2000). *How people learn: Brain, mind, experience, and school.* Washington, D.C.: National Academy Press.

Recommendations for Practitioners Responsible for Adults' Employment or Professional Development

With the right supports, a wide range of settings can provide opportunities for adults to enhance their personal success skills. These include workplaces, workforce development programs, institutions of higher education, professional training programs, and other institutional settings. These recommendations are intended for adult educators, employers, managers, social service providers, and others responsible for adults' employment or professional development. While this report is not intended as a practice guide, we provide some basic ideas that can be used to advance the promotion of personal success skills. They are intended to be general enough to fit the needs of a variety of populations, but approaches would need to be tailored to fit particular contexts of implementation.

1. Articulate clearly the personal success skills that you intend to promote and build the case for why they are important.

The learning sciences suggest that adults' development of personal success skills can be enhanced when they understand the bigger picture of what personal success skills are and why they need to learn them, both in general and specifically within a particular environment. Clarity and shared understandings are essential. Adult educators should reflect on and articulate the foundational components and applied competencies that are necessary for success in their local context and for their learners' future in the workforce. They should develop clear and actionable descriptions of what these skills look like in practice. They should also include clear

descriptions of why the skills are important and the benefits they are intended to confer for the individual and organization. To the extent possible, adult educators should develop these articulations in collaboration with the people who will be learning and using them. The personal success skills educators intend to promote should also be reflected in the assessments chosen or developed for use in the program. Off-the-shelf assessments may not define personal success skills in the ways defined for a particular program, so care should be taken to avoid letting assessments unduly influence the learning objectives of the program.

2. Ensure that individuals have opportunities to develop personal success skills with the support of strong relationships with coaches, mentors, and peers.

Supportive relationships can provide adult learners personalized guidance, insider perspectives on the knowledge and skills of a profession, accountability for actions to accomplish goals, encouragement to maintain productive mindsets in the face of challenge, and a sense of belonging. Coaching is a universal collaborative approach to identify outcomes and goals, identify strengths, build self-efficacy, make action plans, monitor progress, and modify plans as needed. Mentoring is personal guidance provided, usually by seasoned veterans, to more junior individuals. Peer support is used in many settings to promote personal success skills.

Those responsible for skills development need to demonstrate deep respect for learners, understand the risks and accountabilities of supporting adults in this type of learning, and know how to apply facilitation skills such as active listening, empathy and perspective-taking, cultural awareness, and supportive group norm-setting. To the extent possible, educators should take a long-term view of development and provide supports that can begin as early as possible and be sustained over long periods of time.

3. Ensure that individuals have opportunities to practice applied competencies in context, to receive structured feedback on progress, and to access resources that will further their learning to close gaps in their performance.

Adults must learn many of the applied competencies by doing them under realistic conditions of working life. The workplace itself is an important setting for developing applied competencies informally through everyday activities. Employers and managers support informal learning through organizational practices and enabling conditions, such as open communication, feedback on specific performances, emphasis on self-directed learning, access to peers and experts in an institutional learning network, dedicated learning time, and supportive management and positive staff attitudes. The most familiar method is supervisorial coaching, but other techniques include maintaining open communication in meetings, soliciting critical feedback from employees of different seniority, and strictly limiting negative forms of social interaction. Proactive and prosocial values can be promoted through encouragement of and opportunities for autonomy and through practices that enable individuals to contribute to their peers or the larger community.

Employee recognition programs, for example, can go beyond simply identifying an individual to include descriptions of the personal success skills that the person exhibits as a way to illustrate these skills in practice. Employee feedback systems can incorporate the most relevant personal success skills, creating mechanisms for providing specific

and actionable feedback and opportunities for improvement. Employers can also provide structures and tools that adults can use to reflect constructively on their work experiences and how they are learning from them. Such practices reinforce the value of deepening personal success skills for the individual and the organization and incorporate tools for self-assessment that are linked to resources that can support a variety of needs.

Practitioners also need to take into consideration practical and ethical issues associated with measurement involving struggling, marginalized, or vulnerable adult populations. For example, it is important to mitigate issues of limited language or literacy proficiency, educational level, cultural/world knowledge, and accessibility that can arise for specific subgroups and can cause unfair and systematic differences in results that are unrelated to the construct the assessment was designed to measure. It is also important to consider the potential of assessment practices to further marginalize adults who are already struggling to succeed in the workforce.

4. Consider adopting and adapting specific research-based methods to promote foundational components and applied competencies that are particularly important for your setting and adult population.

Several promising interventions have research backing for promoting foundational components and applied competencies. Chapter 3 discussed several examples:

- Mindsets interventions
- Executive functions training
- Mindfulness training
- Developing skills for striving to attain goals
- Transforming the narrative of one's life or education
- Project-based learning
- Career interventions

There is great potential for these and other methods to be adapted to the needs of particular adult populations and also to the different needs of learners within these populations. Note that these are promising but are not proven; evidence of impact at scale is limited, and coherent methods are needed for integrating them into the variety of settings in which adults work and learn. As part of this adaptation process, practitioners will also need to consider carefully how to evaluate impacts of these methods.

Recommendations for Researchers

These recommendations are intended for researchers who want to advance the knowledge base for supporting the development of adults' personal success skills. These recommendations respond to high-level gaps and needs that were expressed by the experts we interviewed.

1. Advance the research base on what programs, interventions, practices, and technologies are effective and affordable for promoting the development of personal success skills for chronically unemployed and underemployed adult populations.

Researchers should continue to advance knowledge about what is effective, for whom, and under what circumstances. For findings that already exist across disciplines, researchers should conduct synthetic multidisciplinary reviews and meta-analyses to establish comprehensively what the research and evaluation evidence suggests. These studies should also make explicit where the gaps in knowledge and

practice. For promising but not yet proven programs and approaches designed for struggling adults, researchers should conduct evaluation research. For programs and approaches that are shown to be effective for mid- and high-level professionals, researchers should examine what adaptations may be needed to make them effective for entry-level professionals and adults who are chronically unemployed or underemployed. User-centered design paradigms that engage the voices of target populations in iterative design processes can be used to help customize approaches to fit the problems of practice in particular adult education contexts.

Several conceptual areas have been identified as having strong promise to advance work with struggling adults, but multidisciplinary research and development efforts will be required to realize this promise. For example, growing neuroscientific research is addressing interventions for strengthening executive function capacities. To leverage these scientific findings to improve practice and real-world outcomes for adults, multidisciplinary partnerships are needed between neuroscientists and adult educators on field-based interventions. Another promising area is educational technology. Developing personal success skills can take extended periods of time and require personal one-on-one support. Many organizations, especially those that employ or train entry-level and service workers, have limited development resources. These organizations would benefit from the development of innovative approaches for efficiency, scalability, and personalization using technologies such as virtual environments (including serious games), digital libraries of multimedia resources, adaptive learning technologies, visual and speech recognition technologies, social media, and mobile technologies.

2. Translate findings and provide research-based guidance on how to promote the development of personal success skills and use assessments in ways that are fair and valid.

Researchers should help practitioners understand and use research to improve their programs and everyday practices. Researchers should translate and make actionable the pertinent findings in the learning sciences, psychological sciences, neuroscience, and assessment development and disseminate findings in practitioner-oriented venues. Experts in the learning sciences, industrial/organizational psychology, and workforce development should work together to provide readily accessible resources that explain appropriate uses of programs and research-based practices in underserved settings to promote the development of personal success skills. Experts in assessment, workforce development, and education should work together to provide for practitioners high-quality assessment instruments and empirically based guidance in how to use them in ways that are fair and valid for chronically underemployed or unemployed adult populations. Researchers can also advance practice by providing tangible illustrations of what success looks like and setting reasonable expectations for the time frames necessary for program investments to be effective.

3. Create more unified conceptualizations of personal success skills and models of pathways for development of personal success skills in different contexts.

Researchers should work to deepen conceptual clarity about what personal success skills are and how they can be developed over the life course and in the various contexts in which adults work and learn. In

research translations addressing problems of practice, researchers should seek to tease apart conceptual distinctions that are critical to practice and consolidate constructs that cannot be separated for practical purposes. Research on learning trajectories for foundational components and applied competencies would be a tremendous benefit for practitioners developing approaches to foster development at different levels of proficiency. Little is yet understood about how applied competencies develop over time in work contexts and how individuals, particularly adults who are chronically unemployed or underemployed, can apply them to specific challenges associated with working life. For example, researchers might conduct longitudinal studies to guide the development of coherent models of developmental pathways in different work and educational contexts. Collaborative partnerships, working groups, professional conferences, and peer-reviewed publications should promote unifying themes and developmental trajectories.

Recommendations for Funders and Policymakers

These recommendations are intended for funders and policymakers who provide infrastructure development strategies, policy frameworks, and support for specific programs that promote adults' development of the skills needed for sustainable careers.

1. Invest in making research-based approaches to fostering and measuring personal success skills easily accessible and affordable for a broad spectrum of practitioners responsible for adults' employment and professional development.

Few practitioners working with chronically unemployed or underemployed adults have the resources needed to stay up to date on the most current research, obtain high-quality training approaches, or develop their own high-quality assessments specifically tailored to their goals and the characteristics of the adults they serve. Pooling together, curating, and translating already available resources could greatly improve practice across settings. Funders should support efforts to make research-based approaches to personal success skills development easy to find and affordable to implement by supporting the development of resources for employers, managers, adult educators, and others responsible for adult learning. Digital libraries, workshops, publications, collaborative partnerships, and cross-sector convenings are some possible productive synergistic activities. These efforts should be accompanied by outreach to build interest, buy-in, and long-term investment.

2. Invest in programs and practices that promote the development of personal success skills.

Many settings that employ, serve, or educate chronically unemployed or underemployed adults have traditionally focused on technical training or job placement services or both. Leaders have begun to recognize the need to support the development of the broader range of personal success skills that enable people to build sustainable careers. Many such leaders see high value in making this kind of transition but are challenged by limited resources to expand their services. To make a broader impact in empowering adults, they will need investments to provide the resources for buying program materials, training staff, enabling staff to provide one-on-one support for their clients, and evaluating informally or formally the impacts of these new activities. Ongoing program implementation will require sustained support.

3. Invest in programmatic portfolios of interdisciplinary research and development.

Foundations and federal agencies should invest in programmatic portfolios of research that investigate questions with the greatest potential to expand the field's capacity to support underserved adults in developing personal success skills. Suggested lines of research are identified in the recommendations for researchers. Portfolios should leverage the capacities of multidisciplinary teams that include experts in psychology, neuroscience, education, and the workforce. For maximum impact, industry, government, philanthropy, and academia must work together to coordinate efforts toward a central focus.

* * *

As part of a many-pronged approach to workforce development and education, the development of strong personal success skills can give adults the personal agency to deal with the challenges associated with building a sustainable career.

Taken together, these recommendations are intended to advance the practice, research, and policy necessary to empower a broader spectrum of U.S. adults to thrive in the 21st century workforce.

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Appendix: Process of Adapting CCSR's Developmental Framework

The framework used in this report was adapted from *Foundations for Young Adult Success: A Developmental Framework*, recently developed by Nagaoka, Farrington, Ehrlich, and colleagues at the University of Chicago Consortium on School Research (2015). The CCSR framework was intended to leverage the state of the art in research, practice, and policy to guide anyone working with children and adolescents across the developmental spectrum, including educators, parents, and afterschool providers. It presented a vision of what the fundamental outcomes of 18 years of learning and development should be and drew important practice and policy implications. The CCSR authors framed this work as follows:

> Every society in every age needs to grapple with the question of what outcomes it hopes to produce in raising its young. What exactly do we hope our children will be able to accomplish as adults? What vision guides our work? How do we make that vision a reality for all children? How do we better harness what is known in the research, practice, and policy arenas to ensure that all youth have what they need to successfully meet the complex challenges of young adulthood? (Nagaoka et al., 2015, p. 1)

The CCSR framework was developed by expert researchers in education and developmental psychology using rigorous research methods. The research took place in three phases. The first phase was to define success and identify the factors critical for success in young adulthood. The second phase was to understand how each factor is developed over the course of early life, from the preschool years through young adulthood. The third phase was to understand how these factors can be fostered in a holistic, coordinated way across the various formal and informal settings where children learn and develop (e.g., schools, community organizations, and homes). During each phase, the researchers synthesized the best of research evidence and interviewed and met with research, practice, and policy experts in a range of fields, disciplines, and programs. These sources of information were continuously synthesized, and versions were vetted and iteratively improved in two convenings of research and practice experts. This work culminated in documents describing findings from each phase (Nagaoka et al., 2014a; 2014b), and the final report is publicly available at https://ccsr.uchicago.edu/publications/foundations-young-adult-success-developmental-framework.

In this report, we made two major adaptations to the CCSR framework to align with our subject and scope:

- **Focus on adult success in the workforce.** Whereas the CCSR framework provides a general perspective on adult success in the various roles and responsibilities of adulthood (i.e., work, health, education, family, friends, civic engagement), we focused on success factors for the workforce. We thus elaborated further on aspects specific to workforce success and minimized discussion of other aspects of adult life.
- **Focus on only foundational components and applied competencies.** The CCSR framework provides a developmental process model that

conceptualizes not only the knowledge, skills, and competencies necessary for success, but also the processes involved in their development and enactment. In particular, the CCSR framework includes a deep exploration of the dynamic interplay between the contextual factors that influence development and ongoing opportunities and the agency and integrated identity that underlie individuals' self-determination within their situations. While these aspects are also critically important for adults in the workforce, in the presentation of our organizing framework, we considered these processes beyond the scope of a discussion about what personal success skills are.

The adaptation of the CCSR framework was informed by our review of the research literature and interviews with experts in psychology, education, and workforce development. The new perspective has been vetted with the CCSR researchers, as well as other expert reviewers.

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