Abstract

Background

The National Academy of Sciences, Engineering, and Medicine (the National Academies) conducted a study grounded in the reality that higher education is increasingly important for students’ subsequent career success and the nation’s international competitiveness. At the same time, there is growing interest in the role of intrapersonal and interpersonal competences both in fostering academic success and as important outcomes of college. The number of years a person spends in school, for example, strongly predicts adult earnings and also predicts health, and civic engagement (National Research Council, 2012). Yet, educational attainment in the United States is lagging, as young Americans who heretofore led the world in completing postsecondary degrees are now falling behind their global peers (Organization for Economic Cooperation and Development, 2013).

Policymakers and researchers promoting a broad national “college completion agenda” are exploring the roles of various competencies in supporting student success. A previous National Academies study classified competencies into three broad domains (National Research Council, 2012):

- Intrapersonal competencies involve self-management and the ability to regulate one’s behavior and emotion to reach goals;
- Interpersonal competencies involve expressing information to others as well as interpreting others’ messages and responding appropriately; and
- Cognitive competencies involve reasoning and memory.

That study found that development of competencies in each domain facilitated deeper learning of content and academic success, while some cognitive and intrapersonal competencies were also associated with future career success. With more research available to guide teaching and assessment of cognitive competencies, the study recommended further research on assessment of intrapersonal and interpersonal competencies.

Purpose

To address the national imperative to increase college completion and to study the role of intrapersonal and interpersonal competencies in college success, the National Science Foundation (NSF) charged the National Academies to convene a multi-disciplinary committee of experts to:

… Examine how to assess interpersonal and intrapersonal competencies (e.g., teamwork, communication skills, academic mindset, and grit) of undergraduate students for different purposes. This examination will include identifying a range of competencies that may be related to postsecondary persistence and success and that evidence indicates can be enhanced through intervention. The committee will author a report that establishes priorities for the development and use of assessments related to the identified
intrapersonal and interpersonal competencies that influence higher education success, especially in STEM.

The committee will carry out three principal analytical tasks:

- **Task 1:** Review the relevant research to more clearly define interpersonal and intrapersonal competencies, to examine whether and to what extent a range of these competencies may be related to each other and to persistence and success in undergraduate education (especially in STEM) and to examine the extent to which these competencies can be enhanced through intervention.

- **Task 2:** Examine available assessments of the interpersonal and intrapersonal competencies or competency clusters that are most strongly related to undergraduate persistence.

- **Task 3:** Establish priorities for development and use of these assessments for different purposes.

**Research Design/Data Collection**

Rather than collecting original data, the National Academies study committee reviewed existing research, gray literature, and best practices related to the study charge. To define the scope of its search, the committee interpreted the meaning of key terms in the study charge. The committee defined “postsecondary persistence and success” as persistence and success in undergraduate education, reflected in such measures as retention from one semester or one year to the following semester or year, grade point average, and graduation. It also adopted a broad definition of “competency” to include a range of individual attitudes, behaviors, beliefs, and dispositions. In light of the increasing diversity of undergraduate students, the committee gave special attention to research on the success of student groups that have historically experienced lower persistence and success than other groups. These include three racial/ethnic minority groups (Black, Hispanic, and American Indian), along with first-generation college students, students from low-income families, and women in certain STEM disciplines. Further, although focused on individual competencies, the study committee recognized that intrapersonal and interpersonal competencies are shaped by sociocultural contexts that affect how students experience and respond to situations, including learning activities and assessment prompts; such contexts may be particularly important in shaping intrapersonal and interpersonal competencies for students from under-represented subgroups (Sato, Pastelis, and Geiringer, 2015).

With these definitions in mind, the committee conducted an extensive search of the literature to identify competencies that are related to persistence and success in undergraduate education and can be enhanced through intervention. The committee reviewed research using both correlational and experimental methods, but judged the strength of the evidence related to each competency based exclusively on research that has developed and tested the competency through random assignment interventions.

To examine available assessments of the competencies most strongly related to undergraduate persistence, the committee reviewed the nature and quality of existing assessments of the identified competencies together with research and professional standards.
related to the overall process of developing, validating, implementing, and interpreting, the results of assessments.

Symposium Focus and Findings

This symposium focuses on study results with regard to the first two tasks in the study charge. Although study results must remain confidential until the publication of the National Academies report, which is expected in early March, 2017, the broad outlines of the four presentations are described below.

1. Competencies that Research Suggests are Related to College Success. This presentation first summarizes the committee’s approach to reviewing the literatures of personality, developmental and social psychology and higher education to identify competencies that are empirically related to college success. Secondly, based on the identified competencies and drawing on the lenses of social and developmental psychology, the presentation shares a developmental framework describing how the competencies may shape students’ successful progression through college. While acknowledging the wide differences in situational contexts and individual characteristics that influence college success, the framework lays out challenges and core questions about self that college students are likely to face in common and in roughly the same order over the course of their college careers. Research underlying each of the competencies also is summarized.

2. Meta-Analysis of Random Assignment Studies of Interventions Targeting the Identified Competencies. This presentation describes the process and results of an analysis of available intervention studies on the identified intrapersonal and interpersonal competencies. The study is based on an extensive search of available studies, yielding 49 articles containing 61 studies that met the inclusion criteria. These criteria required that the intervention: (a) sought to manipulate one of the competencies identified by the committee; (b) consisted of clearly defined treatment and control/comparison groups comprising college students or individuals who were about to matriculate in a college; (c) was based on at least 10 subjects per group (most samples were much larger); (d) incurred less than 50 percent attrition between the beginning of the intervention and the time the outcome was measured; and (e) employed random assignment. In its study, the committee used the search results to evaluate, for each competency, the strength of the evidence of a relationship with college success. Subsequent to completion of the Academies study, a formal meta-analysis was conducted and will be reported.

3. Promoting Diversity, Equity, and Inclusion: The study’s developmental framework emphasizes the developmental stages and core questions that are likely common to all or most students. Still, every college student’s experience is unique. Gender, race/ethnicity, age, social class—and their unique configurations—shape students’ college experiences in profound and innumerable ways and result in significantly lower college success rates for under-represented groups (U.S. Department of Education, 2015). This presentation explores the ways in which the success of diverse students groups is affected by systems of influence that include not only the competencies possessed by individual students, but also students’ interactions with others in different learning and living environments. For example, researchers have found that the discrimination, microaggressions, and “chilly” climates in some STEM classrooms and laboratories negatively affect students’ beliefs about their ability
to seriously engage STEM, and undermine their feelings of competence (see Henderson, Beach, and Finkelstein, 2011). The Identity-Context Congruence perspective of Byrd and Chavous (2011, 2012) provides a general frame for considering how students’ experience of college context norms may influence their engagement and persistence. The presentation also explores specific competencies and contexts that may be more important for first generation and underrepresent minority students than others. For example, sense of belonging to social and academic environments may be more strongly predictive of persistence and achievement for underrepresented minority students in STEM than for other student populations (e.g., Darling, Molina, Sanders, Lee, and Zhao, 2008) and some of the intervention studies reviewed by the committee showed statistically significant effects only for certain racial/ethnic groups.

4. The Nature and Quality of Available Assessments of the Identified Competencies. The committee reviewed current research on the identified competencies to examine the nature and quality of existing measures. The quality criteria featured key standards in educational measurement: reliability, validity, and fairness of scores (AERA, APA, NCME, 2014). The committee also considered the existing measures against a broader set of measurement options, such as behavioral measures, performance assessments, situational judgment tests, and evaluated the strengths and weaknesses of each. This presentation summarizes study findings in each of these areas and suggests how existing methods may be strengthened and new measurement options adopted for some of the competencies, depending on the intended use(s) of the measures.

Conclusions and Recommendations

The Committee report includes primary conclusions and recommendations for future work in each of these areas. The recommendations are aimed at specific audiences, including researchers, practitioners and policymakers in higher education, funding agencies, and the broader research and measurement communities. Like study findings, these must remain confidential until publication of the study report.

References


