

Psychology's Core Knowledge, Scientific Subfields, and Health Service Specialization: Preparing a Competent Workforce—Recommendations From the *Opening Doors Summit*

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Even though those earning graduate degrees in psychology have high employment rates in both traditional and emerging careers, early career psychologists often note the transition from doctoral education to attainment of first job as the segment of the education and training pipeline during which they faced the most barriers and challenges. To address these issues, the American Psychological Association (APA) presidential initiative that culminated in the *Opening Doors Summit* identified shared steps that students and postdoctoral trainees, training communities, and the discipline of psychology can take to facilitate pipeline transitions and entry into a satisfying first job. This article describes how an education in the field of psychology should combine instruction in core knowledge of the discipline with a focus on scientific subfields or applied specialization in order to prepare a competent workforce. This approach to education and training is presented within a competency framework aimed at helping graduate students and postdoctoral trainees advance their knowledge, skills, and attitudes. Because these competencies should be fostered in a developmentally appropriate manner, we separately focus on the transition into graduate school and the transition into an internship/postdoctoral training/first job. Specific recommendations for students, training communities, and the discipline of psychology are detailed which, when followed, can facilitate career attainment and success.

Keywords: competency, education pipeline, core curriculum, research and applied psychology, health service psychology

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Psychology is a broad discipline encompassing both basic research fields and applied specialties, including applied (e.g., Industrial and Organizational Psychology) and applied health service specialties as recognized by the American Psychological Association (APA). To further illustrate the complex nature of the structure of psychology, both basic and applied research occur in each of these recognized specialties. The reciprocity between psychological science and applied or practice-focused psychology is a defining tenet of the field and one of its greatest strengths (e.g., Belar & Perry, 1991; Health Service Psychology Education Collaborative, 2013). A core knowledge set defines the education and training of anyone with the generic title of “psychologist,” regardless of where they fall on the science-practice continuum. Beyond that core education, training differs based on one’s chosen scientific subfield or applied specialty. This article examines balancing education and training in core psychology competencies with scientific subfield or applied specialization to prepare a competent workforce of psychologists. It also addresses how education can facilitate pipeline transitions. This is critical because moving from doctoral education to first job as an early career psychologist is challenging, with stressful transitions for psychology’s workforce in general and for each individual (Myers et al., 2012), even though the majority (94%) of new graduates of psychology doctoral education are employed (Michalski, Kohout, Wicherski, & Hart, 2011).

Pipeline obstacles depend on the scientific subfield or applied specialty. Students in areas such as clinical, counseling, and school psychology face challenges with the internship imbalance (Association of Psychology Postdoctoral and Internship Centers, 2015) and many states require additional postdoctoral training for licensure. Psychologists wishing to establish an independent research career commonly must complete postdoctoral training. Yet the number and duration of postdoctoral research positions have increased with some individuals spending upward of five years in two postdoctoral positions before securing their first ‘permanent’ position (National Academy of Sciences, 2014).

An APA presidential initiative was established to look at these challenges. The initiative culminated in the *Opening Doors Summit*, which brought together participants from diverse backgrounds (e.g., training directors, graduate school faculty, basic science postdoctoral fellows, health service psychology graduate students) to address the segment of the employment pipeline from doctoral education to first job (Kaslow, Bangasser, Grus, McCutcheon, & Fowler, 2016). The overarching article on the *Summit* (Kaslow et al., 2016) identified steps trainees, education and training communities, and the discipline can take to facilitate transitions through the pipeline to maximize career success for all students in psychology. The current paper expands upon the work of Kaslow et al. (2016) and highlights recommendations focused on core psychological education and training and its contribution to career trajectory-specific competencies that maximize successful employment opportunities for students and trainees in all parts of the discipline psychology. We discuss career choices and employment targets for those moving through the education and training pipeline and review the competencies and personal characteristics needed to make the transitions into successful employment.

Employment Targets in Psychology

Although a robust approach to workforce analysis is needed to understand the current range of careers and predict future employment trends and opportunities in psychology (Rozensky, Grus, Belar, Nelson, & Kohout, 2007), there has been an increasing tendency for individuals with doctoral degrees in psychology to pursue positions outside the academy. As graduate students progress through their education, their interest in academic and research careers decrease (Fuhrmann, Halme, O’Sullivan, & Lindsaetdt, 2011; Sauermann & Roach, 2012), and many investigate other career options before completing their degrees (Gibbs & Griffin, 2013). This may reflect changing personal interests, generational changes in reasons for pursuing graduate training, and changing career opportunities. In fact, according to the most recent APA doctoral employment survey, only 32% of full time positions in psychology were in academia. Of the nonacademic positions, more than half are in institutional or organizational settings rather than independent or independent practice settings (Michalski et al., 2011).

Although most graduates follow a trajectory into a first professional position that reflects the focus of their education and training, *Summit* participants recognized that there are diverse career paths in psychology. These paths often illustrate a stark contrast between professional ideals, identity, and the reality of graduate and postdoctoral education and training, on the one hand, and the careers psychology students want to pursue or have available to them, on the other. The current graduate and postgraduate education and training model features a highly motivated, highly competent workforce that can provide low-cost labor and services in the laboratory or clinic during their training in exchange for crucial experiences, learning opportunities, and access to steps leading to an independent career as a research-focused faculty member or provider of direct psychological services. However, many students become interested in a broader career path (Gibbs & Griffin, 2013; Sauermann & Roach, 2012) and desire the training and experience necessary to apply their research and scientific or clinical competencies in settings other than those they had in mind when they began their graduate education. Most education and training programs focus on career preparation for a limited number of settings (e.g., academia or the health services), and indeed many students take those common paths. However, programs often fail to provide formal training on how to transfer core psychology competencies to a broader range of emerging career pathways (Fuhrmann et al., 2011). Consistent with this, graduates have reported that they find the job market daunting or often are unsure how to market their skills for the careers they might desire (Fuhrmann et al., 2011; Sauermann & Roach, 2012). This combination of issues can slow the identification of, and preparation for a rewarding career.

The challenge for educators is to develop programs that prepare students academically for their careers and help them develop the requisite personal characteristics for successful entry into diverse professional environments (e.g., Rozensky, 2014a). Traditional education has provided students with foundational knowledge of the discipline. However, consistent with calls for a “culture of competence” and the articulation of a full range of competencies (Fouad & Grus, 2014; Roberts, Borden, Christiansen, & Lopez, 2005, p. 355), education must go beyond solely imparting knowledge related to the theory and major principles of psychology and

include an additional emphasis on developing skills and attitudes. In keeping with this broader objective, recent guidelines for the undergraduate psychology major contain five goals, only one of which focuses on knowledge (APA, 2013). The others relate to skills and attitudes, including scientific inquiry and critical thinking, ethical and social responsibility in a diverse world, communication skills, and professional development. *Summit* attendees acknowledged that a competency-based framework facilitates successful pipeline transitions to first job. Moreover, this framework can promote lifelong learning, which is critical because the knowledge base in psychology has a short half-life that is becoming shorter in many specialties (Neimeyer et al., 2014).

Core Competencies at Critical Transitions in the Pipeline

The knowledge, skills, and attitudes that facilitate transitions into graduate school can differ from those that smooth transitions into an internship, postdoctoral training, or first job. These then should be fostered in a developmentally appropriate way. There often is a shift across the curriculum from survey courses taught at the undergraduate level, to highly specialized education and training, typically obtained at the graduate, internship, and postdoctoral levels. Thus, our discussion of a competency framework first focuses on the transition into graduate school and then on the transition to internship, postdoctoral training, or first job.

Undergraduate Competencies Leading to Successful Transition into Graduate School

To ensure that students learn core knowledge that provides a unified identity for them as a member of the discipline, the undergraduate curriculum should teach the core topics in psychology. Consistent with this, the recently updated APA (2013) guidelines for the undergraduate psychology major suggest that students with an undergraduate degree in psychology should be able to describe key principles and themes in psychology, have a working knowledge of psychology's content domains, and understand applications of psychology.

An undergraduate education should foster the development of the skills and attitudes that increase success in the classroom and beyond. Ethics and self-reflection are critical attitudes to develop at the undergraduate level (APA, 2013) because they translate into integrity, professionalism, and metacognitive capacities, which increase employability (Knight & Yorke, 2003; Robles, 2012). Explicit training in diversity and multiculturalism also is recommended (APA, 2013), because diversity is increasing in the workforce and in the workplace (e.g., those receiving health care services). This increase in diversity requires that effective employees have nuanced cultural sensitivity (Toossi, 2012; Rozensky, 2014b). Undergraduate education also should develop scientific inquiry and critical thinking (APA, 2013), skills highly sought after by employers (Hansen & Hansen, 2010; Robles, 2012).

Although *Summit* participants recognized the complications of adding material to any curriculum, they suggested a deliberate focus on professional development at the undergraduate level. This emphasis is consistent with the undergraduate guidelines' focus on developing competencies in communication, project-management, and teamwork (APA, 2013). Working productively in groups is a

critical core competency whether in a science career where team science is key to success or in health services where integrated, interprofessional, team-based care is a major driver of quality care (Rozensky, 2014b).

The *Summit* also highlighted formal training in advocacy. Competent self-advocacy helps students progress through the educational system (Astramovich & Harris, 2007), find jobs, and obtain resources to succeed in the workplace (Lent & Brown, 2013). Local, state, and federal advocacy for the discipline should be promoted because funding, whether for training programs, research, or clinical or community services, depends on the ability to receive dollars through advocacy.

Graduate Competencies Leading to Successful Transition into Internship, Postdoctoral Training, or First Job

The graduate curriculum in psychology should further develop knowledge, skills, and attitudes attained at the undergraduate level to prepare students for transitions into internship, postdoctoral training, or first job (Mervis, 2011; Parker, 2012). Although broad and general training is required in preparation for the focused training for health service specialties, the specialization required for success in scientific subfields and other applied specialties requires that the graduate curriculum shift from providing mainly foundational knowledge to a focus on subfield or specialty-specific competencies. This shift can occur through specialty graduate courses and in applied settings (e.g., laboratory or clinic). The goal should be to provide content to develop expertise within a subfield that can foster a successful transition into the next career stage.

As students advance through the pipeline, they often shift their career aspirations away from academia (Fuhrmann et al., 2011; Sauermann & Roach, 2012). Also, market pressures are such that while the number of doctoral degrees awarded keeps increasing, the number of full-time academic positions decreases (National Academy of Sciences, 2014). Thus, during graduate school, students need to develop the competencies to pursue a variety of career options. Otherwise students may not have the proper preparation to learn about other career opportunities and could find themselves moving from having a defined goal (i.e., becoming a professor) to just wanting to find a job. Several national initiatives are being implemented to facilitate such broader career exploration. The National Institutes of Health (NIH) have funded the Broadening Experience in Scientific Training (BEST) awards that support approaches to increase student exposure to multiple research-related careers through innovative coursework, workshops, and hands-on training experiences. The NIH requires BEST awardees to evaluate if these novel approaches are successful so they can share information about effective approaches with the graduate training community. Additionally, recent changes to federal policies regulating research awards now stipulate that trainees supported by research funds engage in activities that support careers as "independent investigators or other related careers" (Grants and Agreements, 2014).

Summit participants found these efforts encouraging in supporting a broadening of career opportunities for early career psychologists. They believed these trends represent an exciting challenge for research mentors to help their mentees explore options within their field of study and beyond. This cultural shift highlights for

graduate and postdoctoral programs the value of including workshops, seminars, and other programs that encourage trainees to identify career options and develop the necessary competencies to pursue them, no matter the source of funding.

Preparing a Competent Workforce: Recommendations for Students and Trainees

Faculty Across Training Communities and the Field of Psychology

Preparing psychology students to succeed in their originally chosen areas of study or in a variety of career options outside those areas requires those invested in psychology education and training to utilize strategies to help students more rapidly and smoothly transition into their first job. The following recommendations are designed to build a competent workforce, facile enough to meet the demands of a rapidly changing educational environment and a diverse employment marketplace. These recommendations from the *Summit* are for students and trainees, training communities, and the discipline of psychology in general.

Recommendations for Students and Trainees

1. Prospective undergraduate psychology majors should look for departments with curricula that focus on teaching psychology's core knowledge, while developing important skills and attitudes.
 - a. Prospective undergraduate psychology majors should look for programs that incorporate a curriculum consistent with the APA undergraduate guidelines that includes survey courses, training in statistics and methodology, ethics education, and upper-division courses in the range of scientific subfields and applied specialties of psychology.
 - b. Prospective undergraduate psychology majors should seek out programs that fit their interests and anticipated needs (e.g., undergraduate research, internships, and capstone experiences) and avail themselves of these undergraduate opportunities to ensure they attain marketable workplace skills and/or the requisite training to pursue graduate education.
2. Prospective doctoral students should look for graduate programs that develop competencies that lead to successful transition into internship, postdoctoral training, and first job.
 - a. Prospective doctoral students should look for programs with rigorous education and training in their preferred scientific subfield or applied specialty, as demonstrated by specialty courses; faculty accomplished in research, teaching, and/or mentoring; and opportunities for hands-on experiences in the laboratory, clinic, or other relevant setting. Those interested in pursuing cross-disciplinary research should look for flexible programs that encourage and have the infrastructure to support interdisciplinary collaboration and team science. Where students are seeking health service education, only programs accredited by the APA or the Canadian Psychological Association should be considered on the pathway to licensure.
 - b. Prospective doctoral students should find programs and institutions that value professional development. At the program level, they should look for courses in ethics, writing, and teaching, for example. Such courses may reflect a curriculum that promotes professional development and reinforces a broader range of career options (Mervis, 2011; Parker, 2012). At the institutional level, they should look for amenities, such as career services centers and postdoctoral offices, which support trainees as they transition into their first job. Reviewing the job histories of program graduates and the faculty philosophy of mentoring are also key steps that can help prospective students choose a doctoral program.
 - c. Prospective doctoral students hoping to be involved in research should look at whether current trainees are publishing and going to conferences, which are critical activities for success. They should ask current trainees in programs they are considering about the effectiveness of the mentoring experiences, including specifics, to better evaluate each program.
 - d. Prospective doctoral students should review information about the variables associated with a productive graduate career and later career success (e.g., Rozen-sky, 2014a), so they can self-reflect as they move through the pipeline in preparation for each next step in their career.

Recommendations for Education and Training Programs

1. All undergraduate psychology programs should adopt the APA (2013) guidelines for the undergraduate psychology major, which provide targets for achievement to help psychology departments design a strong undergraduate curriculum. The *Summit* recognized the importance of local academic freedom issues in adopting and adapting the curriculum, but also noted the importance of a consistent core across the field.
 - a. To ensure that students obtain foundational knowledge, the curricular structure should include introductory psychology courses, followed by research methods/statistics, courses related to other core competencies, and topic-specific electives (Stoloff et al., 2010).
 - b. Programs should integrate state-of-the-art teaching approaches including experiential learning, capstone experiences, and metacognitive exercises, to promote the skills and attitudes essential to the discipline. Experiential learning exercises can be integrated into

- the classroom using scenarios, simulations, laboratory assignments, and so forth (Knott, Mak, & Neill, 2013; Kolb & Kolb, 2005). Experiences outside of the classroom, such as working in a laboratory or in the community, can provide other experiential learning opportunities (Abdulwahed & Nagy, 2009; Downey, 2013) and were considered by *Summit* participants as examples of programs providing opportunities to enhance student competencies and success.
- c. The undergraduate capstone course should be used to build competency. Typically, this is the last course for psychology majors that should help them integrate important aspects of the discipline. Roughly 40% of schools offer a capstone course and these take many forms, ranging from integrative courses to field placement activities to honors theses (Stoloff et al., 2010). Often, capstone courses include experiential learning exercises combining approaches to enhance knowledge, skills, and attitudes in a specific area of study.
 - d. To further develop an understanding of the value of self-reflection, which will promote success in the workplace, instructors must help students use metacognitive strategies (e.g., train students how to plan, monitor, and evaluate their own learning processes) via classroom assignments and discussions (Tanner, 2012).
 - e. Undergraduate programs should provide specific training in professional development, such as teaching psychology majors how the competencies they develop transfer to a variety of work environments. This could be achieved by offering professional development seminars or even requiring a professional development course for all psychology majors.
2. Programs must offer alternative ways for students who do not have strong undergraduate training as a psychology major to demonstrate that they have attained the core psychology competencies or to augment their education at the postbaccalaureate level prior to entry into doctoral programs. This recommendation is relevant for prospective doctoral students who majored in other fields; received less than optimal undergraduate training; or have broad, cross-disciplinary interests.
 - a. Institutions can offer postbaccalaureate programs in psychology to prepare trainees for further study. In other fields (e.g., nursing, medicine), these programs have been very successful (Goode, Lynn, McElroy, Bednash, & Murray, 2013; Reeves, Vishwanatha, Yorio, Budd, & Sheedlo, 2008). There is evidence that students who completed postbaccalaureate programs perform at higher level than their peers without such training (Reeves et al., 2008).
 - b. Institutions can offer more general master's programs to provide trainees with broad training in psychology. These programs will be most effective in preparing students for pipeline transitions if they provide education and training in the competencies detailed above to prepare students for doctoral level studies in psychology.
 3. Doctoral programs should help students develop competencies required to facilitate their transition into the workforce.
 - a. Formal professional development courses should be offered and cover a number of topics including professionalism, grant writing, teaching, ethics and ethical decision making, team science, and personal and discipline-based advocacy, and so forth.
 - b. Efforts should be made to expose students and trainees to the variety of career options, perhaps through seminars with speakers employed in a variety of work settings within psychology, in related fields, or in fields outside psychology.
 - c. Training in team science is critical and is consistent with efforts by NIH and the biomedical fields to promote team science, which involves collaborations among industry, academia, government, and the non-profit sector to solve complex health problems (Disis & Slattery, 2010; Portilla & Alving, 2010). Professional development courses or opportunities related to team science should focus on developing skills, such as translating technical domain-specific concepts to a broad audience and advocating for the importance of the psychology perspective. These skills will enhance functioning in a team science environment and help psychologists communicate and advocate in a variety of employment settings.
 - d. Doctoral students must be assisted in developing a network of colleagues beyond the university, as many jobs are found through networking (Villar, Juan, Corominas, & Capell, 2000). Programs can offer networking seminars; fund professional development activities that occur outside of the university such as conference and specialty training course attendance; encourage trainees to engage in such activities; and directly recognize (e.g., performance reviews) faculty/supervisors who support trainees in these endeavors.
 4. To successfully prepare psychology graduate students and trainees for careers, both traditional and emerging, it is necessary to rethink the education and training outcomes at each stage of the pipeline. With this in mind, the *Summit* recommends that graduate students and postdoctoral trainees develop and implement individual development plans (IDPs). IDPs help students and trainees identify their career goals, seek out resources, and access relevant training. IDPs offer a structure that supports conversations between students/trainees and their faculty/supervisor/mentors about ca-

reer aspirations and ways success can be facilitated when it comes to transition to a first job (Davis, 2005; National Academy of Sciences, 2000; National Academy of Sciences, 2014).

- a. Programs can support the use of currently existing IDPs, such as the four-step program from the Federation of American Societies for Experimental Biology, that helps postdoctoral trainees align their skills, values, and abilities with a broad range of career pathways; the online IDP called myIDP from the American Association for the Advancement of Science (<http://myidp.sciencecareers.org/>), which is designed for biomedical/life-science postdoctoral trainees; or university-specific IDPs, from the graduate school or an existing postdoctoral office. Graduate students and postdoctoral trainees should be encouraged to avail themselves of the new APA resource on creating and implementing IDPs (<http://www.apa.org/education/grad/individual-development-plan.aspx>).
- b. Programs should follow the federal rules and policies requiring career-development training and the use of IDPs for trainees receiving federal funding (Grants and Agreements, 2014; NIH, 2014). The development of a formal IDP policy and support by psychology training programs would meet federal requirements.

Recommendations for the Broader Discipline of Psychology

1. Systematic workforce analyses are a necessity for successful planning and building for the future of psychology in all scientific subfields and applied areas and health service specialties (Rozenky et al., 2007). *Summit* participants acknowledged the importance of workforce study in strategic planning for the field and determining what further opportunities must be addressed to provide meaningful workforce data. They discussed what is needed to ensure a useful collection of data to help plan curriculum and help students know where employment opportunities will exist both in actual physical settings and in the scientific subfields and applied specialty areas. These discussions were built upon existing documents (APA Policy and Planning Board, 2012).
 - a. As part of a comprehensive, national workforce study program, an initiative should be undertaken to track students and trainees from entry (e.g., undergraduate major) through graduate education, internship, postdoctoral training, and then on into careers in psychology and other occupations. Each psychology student would have a unique identifier that could be utilized to track their progress throughout the education and training pipeline and beyond (e.g., first job, licensure, employment, workforce sites, and salaries). It would provide data for the field in general and within scientific subfields and applied specialty areas. Collaboration across organizations in psychology would be key to building such a system and tracking data from matriculation to retirement. Although *Summit* participants asked if such a system might be viewed as intrusive, it was noted that such discipline-wide tracking is common. A similar system has been used successfully by the Association of American Medical Colleges (2015) and the American Medical Association (2015) and provides data used to track workforce needs and advocate for funding for training, research, and practice.
 - b. The tracking system must be used to answer broader questions about variables that predict success at various stages along the career pipeline (e.g., do master's programs promote successful pipeline transitions). Career trajectory studies (e.g., Callahan, Collins, & Klonoff, 2010) done routinely could inform trainees and training programs about the personal characteristics, academic and applied experiences, and key competencies that ensure success across the pipeline. This would include ongoing study of best practices in training programs and mentoring that help predict student outcomes, with attention to such variables as debt load, salary, job satisfaction, and mobility. Studies investigating the financial and personal consequences of obtaining graduate training in psychology (e.g., Doran, Kraha, Reid Marks, Ameen, & El-Ghoroury, 2016) are needed to educate prospective trainees and the training community.
 - c. For individuals educated in psychology but who selected emerging or nontraditional careers, we recommend that workforce analysis address the following questions: What is it about education and training in psychology that allowed them to succeed in their career? Which aspects of training were more or less helpful? How were such emerging or nontraditional careers chosen? Answers to these questions would help programs identify curricular issues that could help to prepare a flexible workforce. Answers would help students learn about emerging career opportunities and thus develop an education and training plan that would enable them to be prepared for a wider range of job options.
2. The field should streamline the graduate application process so students could complete universal applications for all areas of graduate education in psychology and then provide tailored, target information for those programs offering education and training in a specific scientific subfield or in one of the recognized, applied specialties. A centralized application would better highlight the attainment of psychology core competencies expected of all students seeking graduate education. To this end, we suggest several strategies.

- a. We support efforts to revise the Psychology Graduate Record Examination to better capture the current state of knowledge in the discipline.
- b. We encourage a standardized application process for graduate admissions similar to that used by Association of Psychology Postdoctoral and Internship Centers in the selection of interns ([Association of Psychology Postdoctoral and Internship Centers, 2015](#)).
- c. The APA website should be available as a useful platform through which critical information about the discipline can be disseminated. More web resources on the APA website must be developed for students and trainees. Currently, students and trainees use a variety of websites to research careers and develop job search strategies, such as *The Psychology Job Wiki* (<http://psychjobsearch.wikidot.com/>), which lists and updates job searches in real time and provides forums for advice and discussion; and the career advice blog *The Professor Is In* (<http://theprofessorisin.com/>). We recommend that the APA curate and vet these resources, so students can easily find credible information on transitioning to their first job.
- d. APA should augment its current feature on *Interesting Careers in Psychological Science* (<http://www.apa.org/science/resources/careers/>) to include details regarding how psychologists in unique jobs actually marketed their training to obtain their current position.
- e. The APA website should provide resources for training communities. For example, to help undergraduate psychology programs develop capstone experiences and experiential learning opportunities, the website could list examples of capstone projects at different universities. Examples of successful experiential learning exercises and online laboratories should be collated on the website so that educators can easily integrate these assignments into the classroom and be consistent with colleagues across the field. APA Divisions could be essential partners in this work as venues/communities with targeted assignments and opportunities.
- f. The website should provide examples of useful professional development seminars at the undergraduate, graduate, and postgraduate levels so that training communities can easily find resources for improving their curriculum.

Summary

It would be a misnomer to call this final section a “Conclusion” as it was the strong consensus of the *Summit* that discussions of a common core for the education and training of all psychologists and the recommendations for facilitating transitions through the

education, training, and career pipeline are just beginning. The transition from undergraduate education to doctoral education to first job remains a fascinating, yet complex experience for those traveling through that pipeline. *Summit* participants believe that defining core content and combining core psychology competencies within recognized applied specialty or scientific subfield-specific education and training can facilitate successful transitions throughout people’s career in psychology. Additionally, as reinforced throughout, core content and competencies for success in combining scientific training and health service careers are equally important.

Stated the other way—disparate and ill-defined progression of education through the pipeline can pose barriers to psychology trainees and graduates seeking employment and to employers/sectors understanding what psychology can offer. Carrying out the proposed recommendations for students and trainees, education and training communities, and the field in general, should help break down barriers and blockages in the pipeline while enhancing successful entry into the profession.

As a scientific and applied discipline, psychology has been very successful with a high employment rate for graduates who have chosen both traditional and emerging careers. That high rate suggests that the content of psychology and the competencies of those trained in the field have a strong utility for society. The *Summit* recommendations focused on the core curriculum and specialized training that enable smooth movement through the career pipeline. The recommendations are designed to build upon and support the strengths of the field, while enhancing the competence and flexibility of the psychology workforce.

References

- Abdulwahed, M., & Nagy, Z. K. (2009). Applying Kolb’s Experiential Learning Cycle for Laboratory Education. *The Journal of Engineering Education*, 98, 283–294. <http://dx.doi.org/10.1002/j.2168-9830.2009.tb01025.x>
- American Medical Association. (2015). *The right data makes all the difference*. Retrieved from <http://www.mmslists.com/mailling-lists/physicians/data-cards/ama-physician-list.asp>
- American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: Author.
- APA Policy and Planning Board. (2012). Making APA into a data-driven organization: 2011. *Report of the Policy and Planning Board*, 67, 391–397. <http://dx.doi.org/10.1037/a0028388>
- Association of American Medical Colleges. (2015). *GME Track*. Retrieved from <http://www.aamc.org/services/gmetrack/>
- Association of Psychology Postdoctoral and Internship Centers. (2015). *Match statistics–2015: Combined*. Retrieved from <https://appic.org/Match/MatchStatistics/MatchStatistics2015Combined.aspx>
- Astramovich, R. L., & Harris, K. R. (2007). Promoting self-advocacy among minority students in school counseling. *Journal of Counseling and Development*, 85, 269–276. <http://dx.doi.org/10.1002/j.1556-6678.2007.tb00474.x>
- Belar, C. D., & Perry, N. W. (1991, December). The National Conference on Scientist-Practitioner Education and Training for the Professional Practice of Psychology. *American Psychologist*, 47, 71–75.
- Callahan, J. L., Collins, F. L., Jr., & Klonoff, E. A. (2010). An examination of applicant characteristics of successfully matched interns: Is the glass half full or half empty and leaking miserably? *Journal of Clinical Psychology*, 66, 1–16.

- Dallimore, E., Rochefort, D. A., & Simonelli, K. (2010). Community-based learning and research. *Directions for Teaching and Learning*, 2010, 15–22. <http://dx.doi.org/10.1002/tl.416>
- Davis, G. (2005). Doctors without orders: Highlights of the Sigma Xi Postdoc Survey. *American Scientist*, 93(3), S1.
- Disis, M. L., & Slattery, J. T. (2010). The road we must take: Multidisciplinary team science. *Science Translational Medicine*, 2, 22cm9. <http://dx.doi.org/10.1126/scitranslmed.3000421>
- Doran, J. M., Kraha, A., Reid Marks, L., Ameen, E., & El-Ghoroury, N. H. (2016). Graduate debt in psychology: A quantitative analysis. *Training and Education in Professional Psychology*, 10, 3–13. <http://dx.doi.org/10.1037/tep0000112>
- Downey, C. A. (2013). Student research in an introductory psychology course: Outcomes of two experiential learning projects and implications for instruction of human subjects research. *The Journal of Effective Teaching*, 13, 21–37.
- Fouad, N. A., & Grus, C. L. (2014). *Competency-based education and training in professional psychology*. New York, NY: Oxford University Press.
- Fuhrmann, C. N., Halme, D. G., O'Sullivan, P. S., & Lindstaedt, B. (2011). Improving graduate education to support a branching career pipeline: Recommendations based on a survey of doctoral students in the basic biomedical sciences. *CBE Life Sciences Education*, 10, 239–249. <http://dx.doi.org/10.1187/cbe.11-02-0013>
- Grants and Agreements*, 2 e-C.F.R. § 200 (2014).
- Gibbs, K. D., Jr., & Griffin, K. A. (2013). What do I want to be with my PhD? The roles of personal values and structural dynamics in shaping the career interests of recent biomedical science PhD graduates. *CBE Life Sciences Education*, 12, 711–723. <http://dx.doi.org/10.1187/cbe.13-02-0021>
- Good, J. J., Keeley, J. W., Leder, S., Afful, S. E., & Stiegler-Balfour, J. J. (2013). Supporting our junior faculty assessing the concerns and needs of early career psychologists. *Teaching of Psychology*, 40, 340–345. <http://dx.doi.org/10.1177/0098628313501048>
- Goode, C. J., Lynn, M. R., McElroy, D., Bednash, G. D., & Murray, B. (2013). Lessons learned from 10 years of research on a post-baccalaureate nurse residency program. *The Journal of Nursing Administration*, 43, 73–79. <http://dx.doi.org/10.1097/NNA.0b013e31827f205c>
- Hansen, R. S., & Hansen, K. (2010). *What do employers really want? Top skills and values employers seek from job-seekers*. Retrieved from <https://www.quintcareers.com/job-skills-values/>
- Health Service Psychology Education Collaborative. (2013). Professional psychology in health care services: A blueprint for education and training. *American Psychologist*, 68, 411–426. <http://dx.doi.org/10.1037/a0033265>
- Kaslow, N. J., Bangasser, D. A., Grus, C. L., McCutcheon, S. R., & Fowler, G. A. (2016). *Facilitating Pipeline Progress from Doctoral Degree to First Job*. Manuscript submitted for publication.
- Knight, P. T., & Yorke, M. (2003). Employability and good learning in higher education. *Teaching in Higher Education*, 8, 3–16. <http://dx.doi.org/10.1080/1356251032000052294>
- Knott, V. E., Mak, A. S., & Neill, J. T. (2013). Teaching intercultural competencies in introductory psychology via application of the Excellence in Cultural Experiential Learning and Leadership model. *Australian Journal of Psychology*, 65, 46–53. <http://dx.doi.org/10.1111/ajpy.12008>
- Kolb, A. Y., & Kolb, D. A. (2005). Learning styles and learning spaces: Enhancing experiential learning in higher education. *Academy of Management Learning & Education*, 4, 193–212. <http://dx.doi.org/10.5465/AMLE.2005.17268566>
- Lent, R. W., & Brown, S. D. (2013). Social cognitive model of career self-management: Toward a unifying view of adaptive career behavior across the life span. *Journal of Counseling Psychology*, 60, 557–568. <http://dx.doi.org/10.1037/a0033446>
- Mervis, J. (2011). Professional development. NIH report urges greater emphasis on training for all graduate students. *Science*, 331, 525. <http://dx.doi.org/10.1126/science.331.6017.525>
- Michalski, D. S., Kohout, J. L., Wicherski, M., & Hart, B. (2011). *2009: Doctorate Employment Survey*. Washington, DC: American Psychological Association.
- Myers, S. B., Sweeney, A. C., Popick, V., Wesley, K., Bordfeld, A., & Fingerhut, R. (2012). Self-care practices and perceived stress levels among psychology graduate students. *Training and Education in Professional Psychology*, 6, 55. <http://dx.doi.org/10.1037/a0026534>
- National Academy of Sciences. (2000). *Enhancing the postdoctoral experience for scientists and engineers: A guide for postdoctoral scholars, advisers, institutions, funding organizations, and disciplinary societies*. Washington, DC: The National Academies Press.
- National Academy of Sciences. (2014). *The postdoctoral experience revisited*. Washington, DC: The National Academies Press.
- National Institutes of Health. (2014). *Revised policy: Descriptions on the use of individual development plans (IDPs) for graduate students and postdoctoral researchers required in annual progress reports beginning October 1, 2014*. Retrieved from <http://grants.nih.gov/grants/guide/notice-files/NOT-OD-114-113.html>
- Neimeyer, G. J., Taylor, J. M., Rozensky, R. H., & Cox, D. R. (2014). The diminishing durability of knowledge in professional psychology: A second look at specializations. *Professional Psychology, Research and Practice*, 45, 92–98. <http://dx.doi.org/10.1037/a0036176>
- NIH Biomedical Research Workforce Task Force. (2012). *Biomedical Research Workforce Working Group Report*. Retrieved from http://acd.od.nih.gov/Biomedical_research_wgreport.pdf
- Parker, R. (2012). Skill development in graduate education. *Molecular Cell*, 46, 377–381. <http://dx.doi.org/10.1016/j.molcel.2012.05.003>
- Portilla, L. M., & Alving, B. (2010). Reaping the benefits of biomedical research: Partnerships required. *Science Translational Medicine*, 2, 35cm17. <http://dx.doi.org/10.1126/scitranslmed.3001137>
- Reeves, R. E., Vishwanatha, J. K., Yorio, T., Budd, M., & Sheedlo, H. J. (2008). The post-baccalaureate premedical certification program at the University of North Texas Health Science Center strengthens admission qualifications for entrance into medical school. *Academic Medicine*, 83, 45–51. <http://dx.doi.org/10.1097/ACM.0b013e31815c641c>
- Roberts, M. C., Borden, K. A., Christiansen, M. D., & Lopez, S. J. (2005). Fostering a culture shift: Assessment of competence in the education and careers of professional psychologists. *Professional Psychology, Research and Practice*, 36, 355–361. <http://dx.doi.org/10.1037/0735-7028.36.4.355>
- Robles, M. M. (2012). Executive perceptions of the top 10 soft skills needed in today's workplace. *Business Communication Quarterly*, 75, 453–465. <http://dx.doi.org/10.1177/1080569912460400>
- Rozensky, R. H. (2014a). Employment trends for early career psychologists: Implications for education and training programs in professional psychology and for those who wish to become successful early career psychologists. In W. B. Johnson & N. J. Kaslow (Eds.), *The Oxford handbook of education and training in professional psychology* (pp. 548–566). New York, NY: Oxford University Press.
- Rozensky, R. H. (2014b). Implications of the Affordable Care Act for education and training in professional psychology. *Training and Education in Professional Psychology*, 8, 83–94. <http://dx.doi.org/10.1037/tep0000021>
- Rozensky, R. H., Grus, C. L., Belar, C. D., Nelson, P. D., & Kohout, J. L. (2007). Using workforce analysis to answer questions related to the internship imbalance and career pipeline in professional psychology. *Training and Education in Professional Psychology*, 1, 238–248. <http://dx.doi.org/10.1037/1931-3918.1.4.238>
- Sauermaun, H., & Roach, M. (2012). Science PhD career preferences: Levels, changes, and advisor encouragement. *PLoS ONE*, 7(5), e36307. <http://dx.doi.org/10.1371/journal.pone.0036307>

- Stoloff, M., McCarthy, M., Keller, L., Varfolomeeva, V., Lynch, J., Makara, K., . . . Smiley, W. (2010). The undergraduate psychology major: An examination of structure and sequence. *Teaching of Psychology, 37*, 4–15. <http://dx.doi.org/10.1080/00986280903426274>
- Tanner, K. D. (2012). Promoting student metacognition. *CBE Life Sciences Education, 11*, 113–120. <http://dx.doi.org/10.1187/cbe.12-03-0033>
- Toossi, M. (2012). Labor force projections to 2020: A more slowly growing workforce. *Monthly Labor Review, 135*, 43–64.
- Villar, E., Juan, J., Corominas, E., & Capell, D. (2000). What kind of networking strategy advice should career counsellors offer university graduates searching for a job? *British Journal of Guidance & Counseling, 28*, 389–409. <http://dx.doi.org/10.1080/713652298>

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