

Characteristics of Programs That Maximize Psychology Major Success

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Abstract

We conducted a national survey of psychology department chairs, and, based on their responses, we concluded that psychology programs differ in the number of students enrolled in various types of classes; the degree of focus on each of the goals recommended by the *American Psychological Association (APA) Guidelines for an Undergraduate Psychology Education*; the frequency of student participation in research, study abroad, and field placement; and the frequency of student–faculty interactions. We describe the percentage of psychology majors who have these program-relevant experiences. We also demonstrate that there are relationships between key high-impact activities and graduate school attendance, assessment test scores, and program completion rate. Based on the findings, we suggest how psychology programs may be able to help students to maximize their success.

Keywords

undergraduate psychology curriculum, faculty engagement, student engagement, student learning, student success

What experiences and activities, in addition to the psychology curriculum itself, help psychology students to achieve the highest level of success? Certainly the curriculum is critical (Brewer et al., 1993; Buxton et al., 1952; McKeachie & Millholland, 1961), but it is similar across many programs (Stoloff et al., 2010). Thus, differences in student success among programs are not likely to be solely attributable to the curriculum. Our previous study demonstrated that programs vary in a variety of ways beyond course requirements, and these factors correlate with some measures of student success (Stoloff, Curtis, Rodgers, Brewster, & McCarthy, 2012). In that study, we did not find any relationship between the frequency with which students completed particular courses and the percentage of students attending graduate school. In contrast, we found that more students attended graduate school from programs that (1) focused greater faculty attention on undergraduates, (2) had more experiential learning opportunities, including opportunities for students and faculty to collaborate on research projects, (3) had more academic advising, and (4) had more frequent informal student–faculty interactions. This study had two purposes, that is, to develop national benchmarks for the percentage of psychology majors who have various experiences within or outside of courses and to demonstrate that there are significant relationships between the intensity of these experiences and several indicators of student success.

There is a wealth of literature regarding activities that faculty members believe should be promoted within the

psychology curriculum. We chose to focus on several skill domains that have been addressed in the literature. The perceived importance of activities that promote skill development is clear in the *American Psychological Association (APA) Guidelines (2007)*, which suggested that psychology students should develop specific skills in scientific and critical reasoning, oral and written communication, information literacy, technology, and career preparation. In addition to developing specific skills, the *APA Guidelines* also emphasized values, ethics, sociocultural awareness, personal development, and application of psychology. The literature on the psychology of teaching and learning includes extensive discussion of instructional strategies to effectively teach writing (Fallahi, Wood, Austad, & Fallahi, 2009; Levine, 1990), oral communication (Goodwin, 1994), research skills (Elliott, Rice, Trafimow, Madson, & Hipshur, 2010; Marek, Christopher, & Walker, 2004), and the application of psychology to professional settings (Adler & Matthews, 2009; Larkin, Pines, & Bechtel, 2002). All of these studies examined the effectiveness of various instructional techniques in individual classrooms, but we do not know how many students actually

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have these experiences. Authors have also suggested that students should be engaged in academic activities outside of the classroom (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006; Pascarella & Terenzini, 2005), including interactions with faculty (Chickering & Gamson, 1987). Many psychology students have the opportunity to participate in student organizations, research experiences, service learning, study abroad, and alternative spring break programs. All of these activities are presumed to enhance the college experience. In this study, we measure the frequency with which these activities occur across programs.

Another goal of our study is to relate the frequency of skill development activities to measures of student success, including graduate school attendance. Stoloff and colleagues (2012) explained 28.4% of the variance in graduate school attendance using institutional emphasis on undergraduate education; frequency of lab usage; and student–faculty interaction through academic advising, research supervision, and student events. One very encouraging finding was that student–faculty interaction (a variable that can be largely under faculty control) explained unique variance after controlling for institutional factors and lab usage. This study builds upon the previous research by examining several key variables that may enhance skill development and relates these experiences to student success, as measured by graduate school attendance, standardized test scores, and program completion rate. We expected that our findings would be consistent with Stoloff, Curtis, Rodgers, Brewster, and McCarthy (2012), but by asking more precise questions, and by sampling more programs, we would be better able to identify program characteristics that predict student success.

Method

Participants

We identified 976 psychology departments, using Carnegie Basic Classifications, that reflect doctoral, master's, and bachelor's colleges and universities in the United States (Classifications 15–17, 18–20, and 21–23, respectively; Carnegie Foundation for the Advancement of Teaching, 2010). We identified the chairs of the departments by searching websites and we asked them to complete our survey.

Our final sample included responses from 278 chairs (28.5%), from 62 institutions granting doctoral degrees (22.3%), 144 institutions granting master's degrees (51.8%), and 72 institutions granting bachelor's degrees (25.9%), which is consistent with the population we sampled, $\chi^2(2, n = 278) = 1.10, p = .576$. The sample included 115 publicly supported institutions (41.4%). The total student enrollment at the institutions varied greatly ($M = 8,974$, median [Mdn] = 4,680, $SD = 10,130$, $Min = 105$, $Max = 70,440$). The average 75th percentile Scholastic Aptitude Test (SAT) score in our sample was 1,200 ($SD = 121.68$, $Min = 900$, $Max = 1,590$, $n = 247$). Finally, the average student to faculty ratio was 15:1 ($SD = 5$, $Min = 7$, $Max = 35$, $n = 278$).

Procedure and Data Sources

Our survey was conducted online using Qualtrics. Chairs received up to five email messages about our survey, including a prenotification, the survey itself, and up to three reminders. We also sent a postcard reminder to all chairs and, as time permitted, telephoned a random sample of department chairs.

One of our goals was to determine the frequency with which students had experiences that we believed might be important to the success of psychology majors. To address this, most of our questions asked chairs to estimate how many courses that emphasized a certain experience were completed by 80% or more of their students. We assumed that classes taken by 80% or more of students were either required, fulfill a requirement, or are extremely popular topics. They were also asked to estimate the percentage of their students who participated in certain activities. Additional descriptive information, such as average class size, was also requested.

A second goal of our study was to relate the frequency of these experiences to measures of success. We asked chairs to report the percentage of students attending graduate school within 5 years of graduation, the mean departmental score on the Major Field Test for Psychology (MFT) or Area Concentration Achievement Test (ACAT) if available, and the percentage of majors who completed their program.

In addition to our survey data, we gathered institution-specific information, such as student–faculty ratio and institution type, from the National Center for Educational Statistics website (<http://nces.ed.gov>) and the Carnegie database (Carnegie Foundation for the Advancement of Teaching, 2010).

Results

Current Practices

The results of our study allow us to describe the type and number of experiences that department chairs estimate that students are encountering in a sample of psychology programs across the United States. We discuss the results in the context of the APA goals, class size, and various skills and experiences.

APA goals. At the time that we conducted the survey, the APA had identified 10 learning objectives for the undergraduate psychology major (APA, 2007). Using a scale that ranged from 0 courses to “6 or more,” we asked chairs how many courses emphasizing each of these goals were completed by 80% or more of their students. These data are presented in Figure 1. For most of the 10 goals, the extent to which each was emphasized varied tremendously among schools. The Knowledge Base of Psychology (Goal 1) and Critical Thinking (Goal 3) were emphasized in six or more courses taken by 80% of the students at most schools. In contrast, Career Planning (Goal 10) was rarely emphasized in more than two courses, and at some schools, it was not emphasized in any courses.

Class size. We asked chairs to report the typical number of students in their program's introductory, methodology, core

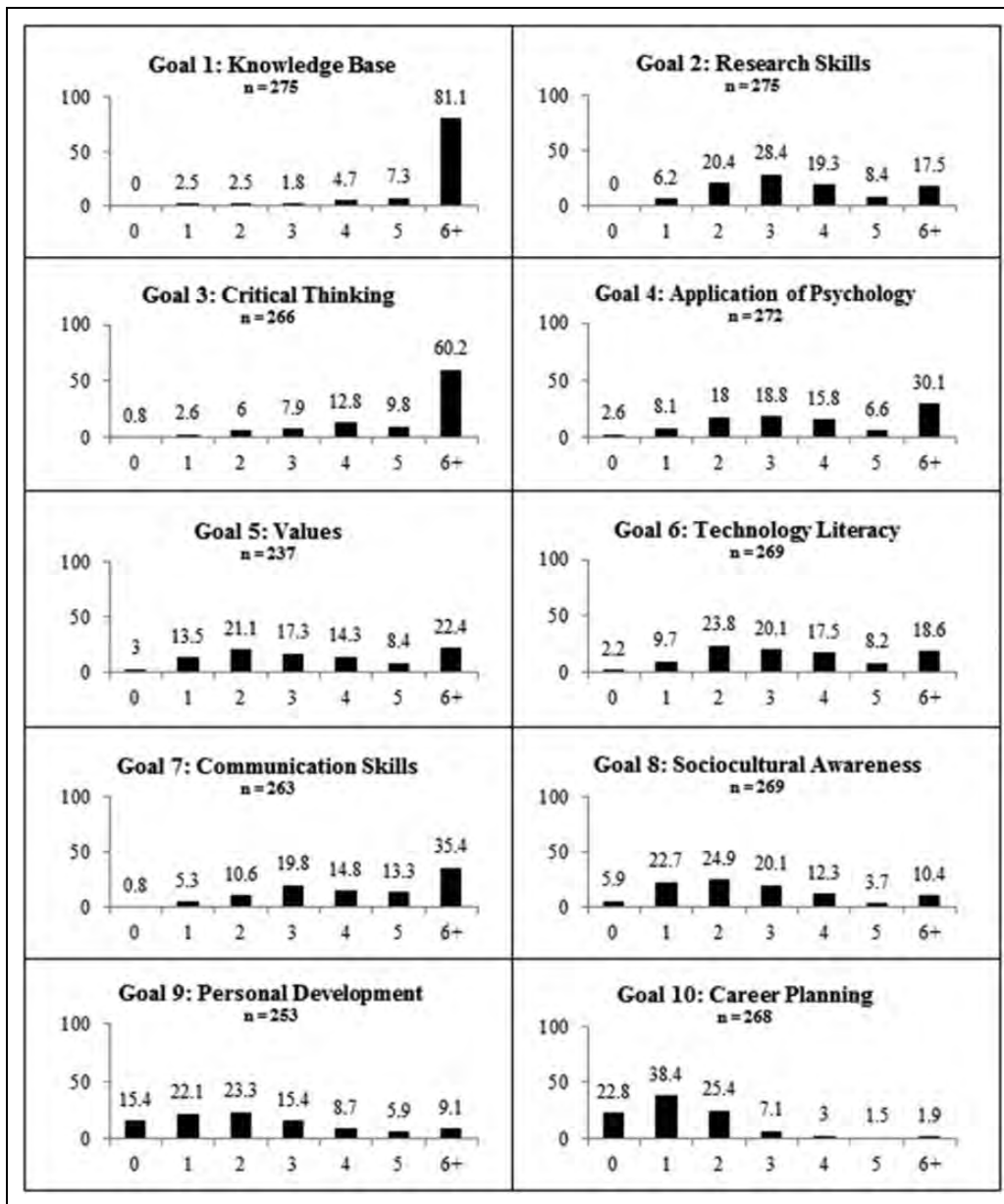


Figure 1. Number of courses emphasizing each of the ten American Psychological Association (APA) goals. The vertical axis on each graph represents the percent of department heads who reported each of the class options. The horizontal axis represents the number of courses that the majority of students take. This horizontal axis ranges from 0 to 6 or more.

content, advanced, and capstone classes. There was substantial variability in class size within this sample. As expected, introductory psychology had the largest and most variable class size ($M = 73.85$, $SD = 78.43$, $n = 272$). Core content area classes were smaller ($M = 37.31$, $SD = 28.40$, $n = 272$). Methodology class sizes were even smaller ($M = 29.39$, $SD = 26.8$, $n = 274$). Advanced content classes ($M = 25.35$, $SD = 12.72$, $n = 273$) and capstone courses ($M = 19.43$, $SD = 10.75$, $n = 239$) had the smallest class size and were the least variable in size.

Student experiences. Stoloff and colleagues (2010, 2012) determined which courses were frequently taken by psychology

majors; however, in the previous studies, we did not assess how often students experienced important activities, both within and outside of courses. Therefore, we asked chairs to help us to assess the extent to which students participate in research, practice communication skills, use technology, engage in field placement, study abroad, participate in cocurricular activities, engage in career preparation activities, and interact with faculty. There is likely to be variation in these activities across programs even when those programs require similar courses.

Development of research skills. Preparing students to think scientifically about behavior is one of the fundamental goals of the

Table 1. Percentage of Institutions With Various Numbers of Courses That Emphasize Specific Skills.

	<i>n</i>	0	1	2	3	4	5	6 or more
Research skills								
Critically reviewing psychological literature	273	0	3.7	17.9	22.3	20.9	9.2	26.0
Designing and carrying out an experiment	272	0.7	21.7	38.6	22.8	11.0	2.9	2.2
Collecting data	274	0.4	18.2	32.5	25.2	16.8	2.2	4.7
Interpreting data	274	0	9.1	26.3	29.9	19.7	8.0	6.9
Analyzing data	273	0	9.5	31.5	31.5	18.3	4.0	5.1
Ethics	268	1.1	16.0	29.1	25.0	11.6	4.1	13.1
Communication skills								
Writing APA style papers	270	0.4	3.7	17.4	20.0	17.4	11.5	29.6
Writing in other forms	265	1.1	4.2	12.8	14.0	19.2	10.6	38.1
Rewriting or revising papers	254	0	11.0	27.2	25.6	15.0	7.5	13.8
Public speaking	257	3.9	15.2	25.3	16.3	19.8	6.6	12.8
Listening skills	229	14.8	19.7	19.2	13.5	7.0	3.5	22.3
Group discussion	247	4.0	7.7	17.8	22.7	17.0	8.1	22.7
A project-based learning experience	251	5.2	13.1	30.7	19.1	13.5	4.4	13.9

Note. APA = American Psychological Association. Values in the table are percentages.

psychology major program (APA, 2007). Virtually all psychology programs include at least one course in statistics or research methodology (Stoloff et al., 2010), but it is not clear how well these principles are reinforced and applied throughout the curriculum, or which elements of the scientific process are emphasized. We broke down the scientific method into stages, and asked chairs to estimate the number of courses, taken by most students, that emphasize the different stages. Our findings are presented in Table 1. The most emphasized aspect of the research process was the critical review of literature. Twenty-six percent of programs emphasized literature review in six or more courses that are taken by 80% or more students, although there was tremendous variability among programs. The remaining aspects of the research process (experimental design, data collection, data analysis, data interpretation, and ethics) were emphasized in two to four courses in the majority of programs.

Overall, chairs reported that half of psychology majors participated on a research team ($M = 50.4$, $SD = 36.77$, $n = 267$), and a similar percentage conducted individual research ($M = 45.7$, $SD = 36.60$, $n = 272$). These numbers include schools that require such participation of all psychology majors. Specifically, 26% of chairs reported that every psychology major participated on a research team, and 25% reported that every student conducted individual research; it is likely that many of these experiences occurred within required methodology courses.

Development of communication skills. Students who complete the psychology major should be able to communicate in a variety of formats (APA, 2007). As shown in Table 1, communication skill development activities were emphasized in at least one course and typically in several courses, although there was considerable variability among programs. To determine which skill development activities were most emphasized, we computed the percentage of programs that included various

activities in four or more courses. For example, writing APA style articles and writing in other forms was emphasized in four or more courses in 59–68% of the programs, respectively. It is not surprising that fewer programs emphasized rewriting papers in four or more courses (37%). The rewriting process contributes to improvements in student writing (Fitzgerald, 1987); however, this can be time consuming for faculty. Oral communication was emphasized in four or more courses in the form of group discussion (48%) and public speaking (40%). We also found that, on average, 40% of psychology majors made a presentation at an on-campus conference or symposium ($SD = 35.48$, $n = 263$), and 14% presented at professional conferences ($SD = 17.3$, $n = 260$).

Development of technology skills. Students who complete the psychology major should be able to use computers and other technology for a variety of purposes (APA, 2007). Almost half of the programs (44%) emphasized technology skills in four or more courses (see Figure 1).

Chairs were also asked to report the percentage of psychology majors who experienced “no practice,” “some practice,” “frequent practice,” or “proficient practice” with statistical, word processing, presentation, and spreadsheet software. Responses were converted to a single number for each software skill by weighting the percentage of students reported to have each level of practice with each type of software. The resulting weighted scores ranged from 0 to 300, where 0 represents *all students having no practice with that type of software* and 300 represents *all students having proficient practice with that type of software*. For example, if a chair reported that 25% of majors had no practice, 25% had some practice, 25% had frequent practice, and 25% had proficient practice, the resulting score would be 150 ($[(.25 \times 0) + (.25 \times 100) + (.25 \times 200) + (.25 \times 300)]$). Chairs reported that students had fairly extensive practice in their use of word processing software ($M = 253.2$, $SD = 58.68$, $n = 267$) but less practice using statistical

software ($M = 190.8$, $SD = 71.41$, $n = 254$) and presentation software ($M = 183.8$, $SD = 81.23$, $n = 255$). We were surprised to see how little practice chairs perceived that students were getting using spreadsheet software ($M = 153.9$, $SD = 83.50$, $n = 239$).

Participation in field placement. Field placement and service learning activities allow students to apply their knowledge in a practical setting. Although there was great variability among programs, chairs reported that, on average, almost half of their students participated in field placement or service learning experiences ($M = 45.7$, $SD = 32.99$, $n = 253$). Because these experiences can vary, we wanted to gauge their intensity. We asked chairs to estimate the percentage of students who participated in various numbers of hours of field placement or service-learning activities. On average, they reported that students participated in 38 clock hours of these activities as part of their program ($M = 38.29$, $SD = 40.44$, $n = 249$).

Participation in study abroad. Psychology majors should also develop sociocultural competencies (APA, 2007). There may be no better way to enhance students' worldview than to promote study abroad experiences as part of the curriculum. Unfortunately, according to chairs, most psychology majors did not study abroad. Half of the chairs in our sample reported that 10% or fewer of their students studied abroad. Study abroad experiences were only commonplace at selected schools. Considering the entire sample, on average 16.6% of students studied abroad ($SD = 18.51$, $n = 252$).

Participation in co-curricular activities. Students may benefit from opportunities outside of the curriculum that are typically available on college campuses. Chairs reported that, on average, 31% of psychology majors participated in student organizations related to psychology ($M = 30.7$, $SD = 19.39$, $n = 256$). We also learned that 9% of students participated in alternative break programs ($M = 8.6$, $SD = 11.41$, $n = 172$); however, this number might not be completely accurate. Fewer chairs provided data about participation in these programs, perhaps because they were not as aware of student activities that occur outside of the psychology department.

Career preparation. APA Goal 10 recommends that psychology majors engage in activities that prepare them for life after graduation. We asked chairs to report the number of students participating in various career preparation activities. On average, they reported that 53% of their students practiced creating resumes ($SD = 38.20$, $n = 230$), 27% engaged in networking ($SD = 29.38$, $n = 194$), 26% practiced interviewing ($SD = 29.85$, $n = 207$), and 41% visited a career resource center ($SD = 30.68$, $n = 216$). About 30% of students completed a graduate school preparation class ($M = 29.4$, $SD = 34.12$, $n = 183$) or career preparation class ($M = 28.3$, $SD = 38.35$, $n = 167$).

Interaction with faculty. Our previous study showed that interaction with faculty outside of the classroom was important to student success (Stoloff et al., 2012), so we wanted to confirm and expand upon the previous findings. In this larger sample, chairs reported that, on average, 83% of students interacted with faculty outside of the classroom through academic advising ($SD = 27.6$, $n = 271$). Almost half of students received class help from faculty ($M = 46.5\%$, $SD = 25.0$, $n = 263$). Students also interacted with faculty in the context of internships, field placements, or teaching assistantships ($M = 35.3\%$, $SD = 31.1$, $n = 264$) or through their participation in student organization events ($M = 35.5\%$, $SD = 23.2$, $n = 264$). Students also collaborated with faculty on research projects ($M = 27.3\%$, $SD = 23.16$, $n = 270$). Overall, there was considerable student–faculty interaction outside of the classroom, with variability among programs and in types of student–faculty interactions.

Relating Student Experiences to Measures of Student Success

As described previously, there was substantial variability among programs in the number of courses emphasizing certain activities and the percentage of students participating in certain experiences. We related the frequency of these experiences to measures of student success used by Stoloff et al. (2012), including (a) the percentage of students entering graduate school, (b) overall program standardized MFT or ACAT test scores, and (c) program completion rate.

Graduate school attendance. We asked chairs to report the average percentage of students entering graduate school within 5 years of completing their undergraduate program. Responses varied among programs, ranging from 1% to 95% ($M = 38.5$, $SD = 20.87$, $n = 236$), and were similar to our previous findings (Stoloff et al., 2012). As shown in Table 2, many of the chairs' perceptions of the students' experiences were significantly correlated with graduate school attendance. Note that only significant correlations are shown in this table; we highlight selected findings subsequently.

Class size was related to graduate school attendance but only for advanced courses. In addition, more students attended graduate school from programs where department chairs perceived that:

- a higher percentage of students applied knowledge through research, teaching, and presentation experiences;
- students had more practice using various types of software;
- more students were involved in academic activities external to the traditional classroom, such as field placement or service learning, study abroad, or participation in student organizations; and
- more frequent student–faculty interaction occurred.

Four institutional characteristics were correlated with graduate school attendance. More students attended graduate school

Table 2. Variables Significantly Correlated With Graduate School Attendance.

Variable	<i>n</i>	<i>M</i> (<i>SD</i>)	<i>Mdn</i>	Graduate School Correlation
Class size				
Advanced content	232	24.7 (12.3)	20	-.25**
Capstone	207	19.1 (10.6)	16	-.24**
Student experiences				
Research team	228	52.7% (36.4)	46.5%	.26**
Teaching assistantship	172	10.6% (15.9)	6%	.16*
Present research on-campus	225	42.8% (36.2)	29%	.29**
Present research at professional conference	221	15.5% (18.2)	10%	.24**
Word processing practice	230	254 (60)	293	.22*
Spreadsheet practice	208	152 (85)	145	.14*
Presentation software practice	221	183 (81)	190	.27**
Statistical software practice	217	192 (73)	200	.24**
Any field placement or service learning	222	47.1% (32.7)	40%	.28**
Average hours per student	213	40.2% (40.6)	24%	.14*
Study abroad programs	217	17.3% (18.2)	10%	.31**
Student organizations	221	32.4% (19.9)	30%	.19*
Faculty interaction				
Academic advising	232	84.0% (26.7)	100%	.21*
Class help	229	46.8% (24.5)	41%	.25**
Research collaboration	231	28.6% (23.4)	20%	.25**
Internships, field placements, and teaching assistantships	229	36.8% (31.2)	28%	.27**
Student organization events	229	36.9% (22.7)	30%	.17*
Institutional characteristics				
Institutional mean 75th percentile SAT	207	1200 (119)	1,190	.34**
Student–faculty ratio	236	15.3 (4.5)	15	-.31**
Bachelor versus masters/doctoral	236	—	—	-.28**
Public versus private	236	—	—	.38**

Note. Values shown are limited to cases for which we had data for both graduate school attendance and the relevant variable.

* $p < .05$. ** $p < .001$.

from institutions where students had higher 75th percentile SAT scores and from schools with smaller student to faculty ratios. More students attended graduate school from Carnegie-classified bachelor's institutions, compared to institutions with either master's or doctoral classifications. Fewer students attended graduate school from public institutions compared to private institutions.

In Stoloff et al. (2012), we demonstrated that the combination of experiential learning, certain institutional characteristics, and student–faculty interaction explained 28.4% of the variance in graduate school attendance. We also found that student experiences matter; that is, frequent experiential learning and student–faculty interaction predicted graduate school attendance, after controlling for institutional characteristics. In this study, we sought to identify the most parsimonious model to predict graduate school attendance using the smallest number of variables from Table 2. Using multiple regression, we determined that 26.4% of the variance in graduate school attendance was explained by 75th percentile SAT scores, the percentage of majors presenting at a professional conference, and a composite student–faculty interaction variable (academic advising; class help; research collaboration; faculty supervision of internships, field placements, and teaching assistantships; and faculty attendance at student organization events), $R^2 = .264$, $F(3, 189) = 22.22$, $p < .001$, 95% CI: [.15, .37]. All three

factors were significant. Institutional SAT scores uniquely explained 9% of the variance, $b = .055$, $p < .001$, $sr^2 = .09$. An additional 3% of the variance was explained by the percentage of students presenting at a professional conference, $b = .177$, $p = .010$, $sr^2 = .027$. Finally, 7% of the variance was explained by student–faculty interaction, $b = .275$, $p < .001$, $sr^2 = .065$. The percentage of overall variance explained could not be significantly increased by adding any additional variables. It is encouraging that regardless of students' entering SAT scores, psychology departments that have more students presenting at professional conferences and interacting with faculty have more students attending graduate school. This finding is consistent with other research (Briehl & Wasieleski, 2004; Hagedorn & Nora, 1996; Landrum & Clark, 2005; Landrum & Harrold, 2003).

MFT/ACAT standardized test scores. We asked chairs to report the most recent departmental mean test scores on the MFT or ACAT. To create a single scale of measurement, these scores were converted into *z* scores. Scores varied widely across programs (range: -0.48 to 1.76) and the average standardized *z* score was above 0 ($M = .39$, $SD = .50$, $n = 50$). Similar to the findings of Stoloff et al. (2012), the average program in this sample was comprised of students who had above average knowledge of psychology. Only 50 (18%) of 278 programs

reported test scores, suggesting that many programs do not administer either the MFT or ACAT. Nevertheless, this was a sufficient number of schools for us to identify several interesting correlates of standardized test scores.

Several variables were significantly correlated with MFT/ACAT test scores. Programs in which more students participated in student organizations related to psychology, $r(50) = .30$, $p = .036$, $sr^2 = .09$, alternative break programs, $r(33) = .38$, $p = .031$, $sr^2 = .14$, and study abroad programs, $r(48) = .32$, $p = .025$, $sr^2 = .10$, had higher test scores. Student–faculty interaction was also related to standardized test scores. Test scores were positively correlated with the percentage of students interacting with faculty through research collaboration, $r(49) = .40$, $p = .005$, $sr^2 = .16$; internships, field placements, or teaching assistantships, $r(50) = .34$, $p = .016$, $sr^2 = .12$; and student organization events, $r(50) = .36$, $p = .009$, $sr^2 = .13$. Finally, institutional 75th percentile SAT scores were significantly correlated with MFT/ACAT test scores, $r(44) = .56$, $p < .001$, $sr^2 = .31$. This result is not surprising, since these tests all require similar test-taking skills.

We were able to predict 55% of the variance in program MFT/ACAT scores using just three factors. Students earned higher scores at institutions that had higher institutional 75th percentile SAT scores, $b = .002$, $p = .007$, $sr^2 = .092$, smaller sized methodology classes, $b = -0.019$, $p = .008$, $sr^2 = .087$, and more frequent student participation on research teams, $b = .006$, $p < .001$, $sr^2 = .181$; $R^2 = .552$, $F(3, 40) = 16.442$, $p < .001$, 95% CI: [.285, .708]. The percentage of student participation on research teams uniquely explained 18% of the variance in MFT/ACAT scores, after controlling for SAT scores and size of methodology classes.

Completion rate. We asked chairs, “Of the students who begin the psychology major, what percentage complete the program?” There was substantial variability in this measure of program success ($M = 79.1$, $SD = 16.6$, $Min = 7$, $Max = 100$). We correlated all variables with completion rate, but we were only able to identify a few significant correlations. There was a higher completion rate at schools where students had more practice using spreadsheet software, $r(202) = .182$, $p = .009$, $sr^2 = .03$, where students had higher rates of participation in study abroad programs, $r(213) = .24$, $p = .001$, $sr^2 = .06$, and where student–faculty ratios were smaller, $r(232) = -.324$, $p < .001$, $sr^2 = .10$. We also found that students were more likely to complete their program when they had to write fewer APA style articles, $r(227) = -.144$, $p = .030$, $sr^2 = .02$, but we do not recommend this as a curricular adjustment. Completion rates were higher for bachelor’s institutions, $r(232) = -.147$, $p = .026$, $sr^2 = .02$, private institutions, $r(232) = .245$, $p < .001$, $sr^2 = .06$, and institutions with higher 75th percentile SAT scores, $r(203) = .31$, $p < .001$, $sr^2 = .10$.

We identified three factors that significantly predicted completion rate in our regression model, $R^2 = .161$, $F(3, 194) = 12.381$, $p < .001$, 95% CI: [.068, .253]. These factors included higher institutional 75th percentile SAT scores, $b = .025$, $p =$

$.010$, $sr^2 = .030$, lower student–faculty ratio, $b = -0.866$, $p = .003$, $sr^2 = .039$, and fewer courses that require APA-style articles, $b = -1.91$, $p = .004$, $sr^2 = .037$. Together, these three factors explained 16% of the variance in completion rates.

Discussion

It is common for academic programs to periodically go through both internal and external review processes in an attempt to improve their programs in ways that enhance student outcomes. A common question that arises as part of this process is, “What are other programs doing and how does our program compare?” Our previous work (Stoloff et al., 2012) and this study present data that demonstrate that there is tremendous variability in student experiences within the curriculum, in spite of similar course work (Stoloff et al., 2010). There are a few studies on the frequency with which psychology programs offer specific activities (Friedrich, Buday, & Kerr, 2000; Messer, Griggs, & Jackson, 1999; Perlman & McCann, 2005; Stache, Perlman, McCann, & McFadden, 1994); however, except our own previous study (Stoloff et al., 2012), we are not aware of any previous research that has explored the relationship between these activities and measures of student success. In this study, we presented national data on the frequency with which students engaged in a broad range of activities that are often embedded in courses within the undergraduate psychology major curriculum. We also found that several activities and experiences predicted greater student success, as measured by graduate school attendance, assessment test scores, and program completion. In fact, we found that students can excel beyond their predicted potential, as suggested by SAT scores, at programs where more students have excellent college experiences that include high-impact activities of the type recommended by Kuh (Kuh, 2009; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008; Kuh & O’Donnell, 2013), and by the Association of American Colleges and Universities (AAC&U) Liberal Education America’s Promise (LEAP) Initiative (AAC&U, n.d.).

One of the ways in which programs attempt to ensure excellence is to use the APA goals (APA, 2007) to guide what is included in the curriculum; if these goals are met, the assumption is that the program will accomplish what is needed to provide a comprehensive education in psychology. We asked department chairs how many courses in their programs focused on each of the APA goals. For many of the 10 goals, the variability among programs is surprising. We found that department chairs identified a relatively large number of classes that include critical thinking, communication skills, or applications of psychology. Fewer classes include information on career planning or personal development. However, there was no significant relationship between the number of classes focusing on any of these goals and any of our measures of student success. Even though we could not demonstrate relationships with our measures of success, we still believe that institutions should design programs that accomplish what our profession considers to be the essential goals of a psychology education. The proper structure for the program is undoubtedly important. For

example, if students had not taken a number of classes that focused on the development of research skills, as prescribed by one of the APA goals, they would not be ready to participate on research teams; in our study, research participation was related to student success. As this article was being prepared, APA released a new version of the guidelines document (APA, 2013). The revised guidelines encourage programs to increase their focus on skill-development activities in ways that are consistent with the AAC&U LEAP Initiative (AAC&U, n.d.) and with our findings. The data presented in this article can serve as benchmarks, as the impact of the new APA guidelines is assessed in the future.

Class size is a topic that is often hotly debated among faculty and in program reviews; many faculty members firmly believe that smaller classes are always better. However, psychology departments often need to serve a large number of majors and nonmajors with a relatively small number of faculty members. At many schools, particularly large schools, it is not possible for all classes to be small. Can psychology departments strategically allocate faculty resources to selected curricular domains and allow some classes to be large without sacrificing program quality and student success? In our study, the size of introductory psychology and content classes did not relate to our measures of student success. However, schools that had smaller advanced-level and capstone courses had more students attending graduate school. We also learned that at schools where methodology classes were small, students earned higher MFT/ACAT scores. These findings suggest that if it is not possible for all classes to be small, it is a better allocation of faculty resources to allow introductory classes to be relatively large, if that ensures that sufficient faculty are available to staff small advanced courses.

The development of research and quantitative skills is a vital component of the psychology major (APA, 2007, 2013). We previously found that almost every program offers some courses that focus on methodology (Stoloff et al., 2010). In this study, we found tremendous variability in the extent to which programs emphasize research and quantitative skills, in the percentage of psychology majors who completed independent research and thesis projects, and in the percentage of majors who presented their work at on-campus and off-campus events. Our current data also show that the programs in which students participate on research teams, and/or present their research, attend graduate school more frequently. These findings are perhaps not surprising, given that graduate school admissions committees favor students who have had research experiences (Landrum, Jeglum, & Cashin, 1994; Landrum & Clark, 2005; Purdy, Reinehr, & Swartz, 1989) and who have presented their work (Karazsia & McMurtry, 2012). In addition, at schools where more students interact with faculty through research, students earn higher MFT/ACAT scores, suggesting that they have a better understanding of both content and methodology.

We believe that ideally students should first get a good basic grounding in research methodology through their course work. This should be reinforced in intermediate and advanced content courses and through participation in collaborative research

projects with faculty. These collaborative projects should aim to produce scholarship at a level that could be presented as a poster or paper. We recognize that conference attendance is expensive for both students and faculty, so it is not always practical for student work to be presented at professional conferences, but even on-campus presentations are positively correlated with graduate school attendance.

Our data suggest that other activities outside of the traditional classroom also have a positive impact. Programs in which more students were active in student organizations related to psychology reported higher MFT/ACAT scores and more students attending graduate school. The frequency of student participation in field or service learning activities was also positively related to student satisfaction and graduate school attendance. Study abroad also appeared to be a very valuable experience for students. In those programs where more students studied abroad, students earned higher MFT/ACAT scores, had higher program completion rates, and had higher rates of graduate school attendance. All of these experiences clearly are consistent with the current conceptualization of high-impact activities (Kuh et al., 2008, 2009), and they align with the educational practices endorsed by employers (AAC&U, 2013).

Student–faculty interaction is also an important predictor of graduate school attendance and MFT/ACAT scores. Interaction between students and faculty can take place in many contexts outside of the classroom, namely, academic advising; class help; research collaboration; student organization events; and supervision of internships, field placement, and teaching assistantships. All of these activities are individually correlated with graduate school attendance, and the combined frequency of these activities uniquely predicts graduate school attendance, after accounting for SAT scores and student conference presentations. It is gratifying to demonstrate that interaction with faculty is an important factor in student success, as so many faculty members have long suspected. It is also fortunate that faculty members have a significant degree of control over this activity. We hope that these findings will inspire psychology departments to promote a culture that values and supports frequent student–faculty interaction. We suspect that many faculty feel that time spent interacting with students is unproductive relative to other activities, because it rarely results in an identifiable product. We encourage departments to consider increasing the extent to which faculty are rewarded for dedicating substantial time to their interactions with students outside of the traditional classroom.

The chairs who participated in our study estimated that 61.5% of their majors do not attend graduate school within 5 years of their graduation, suggesting that most psychology majors seek employment after graduation. Unfortunately, we found that many psychology programs have no courses that include a focus on career planning (Goal 10), and of those programs that do, this focus is limited to one or two courses. This is far fewer than the average number of courses that include a focus on the other nine APA goals. When chairs were asked how often students practice creating resumes, engage in

networking, practice interviewing, or visit a career resource center, many chairs did not respond, suggesting that they did not know. These data suggest that psychology programs often do not engage in explicit career preparation activities, and chairs are uncertain as to whether their students are accessing career planning resources elsewhere on campus. We suggest that psychology departments either focus more on career preparation within the context of their programs or more intentionally direct students to other campus resources. This suggestion is consistent with the revised *APA Guidelines* (APA, 2013).

Psychology programs already teach students a number of skills that are valued by employers, for example, skills in communication, technology, problem solving, teamwork, and ethical reasoning (AAC&U, 2013; Casner-Lotto & Barrington, 2006; Rodgers, 2012; U.S. Department of Labor, 1991). But, because of the apparent lack of focus on Goal 10, we may not be doing a very good job of helping our students to recognize that they are developing skills that are applicable to a number of career paths. Psychology departments should take responsibility for helping students to explicitly think about and describe their experiences in terms of these marketable skills.

What are the take-home points from this study for psychology departments? We believe that psychology programs should be judged on the success of their graduates. To evaluate the quality of a psychology program, consider not only required courses but also the activities that students experience within those courses. Within the psychology program, maximize the number of students who experience activities that have a high impact. Keep methodology and advanced courses small. Bring students to a high level of research skill. Encourage participation in psychology-related activities. Maximize student–faculty interaction outside of the classroom. Help students to recognize the valuable skills that they have learned. Be strategic in your efforts; devote resources to activities that are likely to have the highest impact. The findings of this study can be used to inform data-driven decisions in psychology departments.

Although our study focused on the psychology major, the results can contribute to the ongoing national conversation regarding what should be included in a liberal arts education. The AAC&U LEAP Initiative (n.d.) promotes the implementation of high-impact practices, based on data suggesting that students who have more frequent experiences with these activities earn better grades and are more persistent (Kuh et al., 2008) and experience deeper learning and greater college gains (Kuh et al., 2008; Laird, Shoup, Kuh, & Schwarz, 2008). Our study is consistent with these findings for liberal arts programs and goes a step further by demonstrating that some high-impact practices are correlated with postgraduation success in psychology majors.

Our findings are primarily based on chair perceptions. We encourage future research that examines student experiences and success more directly, by surveying alumni.

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