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Cathy Wendler

Educational Testing Service, cwendler@ets.org

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**Perceptions of Graduate Deans and Graduate Students About Career Knowledge and
Opportunities**

Cathy Wendler

Educational Testing Service

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Abstract

Little is known about what graduate students know about career options or how they gain this knowledge. In this study we examined responses of graduate deans and graduate students regarding the level of knowledge students have about career options before, during, and following graduate school. Results indicate that, in general, graduate deans believe students have limited knowledge of career options. Students report that they receive insufficient, unhelpful, and inaccurate information about possible careers. In addition, the source of career information and types of careers encouraged by faculty are somewhat different depending upon students' gender, race/ethnicity, and field of study.

Graduate education in the United States plays a critical role in the success of the U.S. economy, attracting and producing influential researchers, innovators, and leaders. Graduate schools provide the environment in which students acquire the knowledge and skills necessary to be successful in the workforce (Council of Graduate Schools [CGS], 2009b; Wendler et al., 2010).

The value of higher education, including graduate education, has become the subject of some debate. Graduate education requires considerable financial and personal commitment for students. A report by CGS (2008) revealed how long this time commitment may be. The report found that less than one quarter of students enrolled in doctoral programs in the humanities, mathematics and physical sciences, social sciences, and life sciences complete their degree within 5 years. Even in the best case – engineering programs – only 57% of students complete their degree within 7 years.

However, despite this level of personal and financial cost, the positive economic benefits of obtaining advanced degrees include higher annual salaries, greater life-long earnings, and lower rates of unemployment. Studies have shown that advanced degrees are correlated positively with higher salaries and those with advanced degrees earn up to 38% more than those with just a bachelors degree, irrespective of the field they are in (Carnevale, Rose, & Cheah, 2011; Carnevale, Strohl, & Melton, 2011). In addition, the unemployment rate historically has been lower for individuals with an advanced degree compared to those with a bachelor's degree or less (Bureau of Labor Statistics [BLS], 2011).

In addition to economic benefits, there are professional and career benefits of a graduate degree. For example, while currently only about 9% of the population holds a master's or a

doctoral degree (National Center for Education Statistics [NCES], 2011), the number of jobs requiring a master's degree is expected to increase 22% and the number requiring a doctorate or professional degree is expected to increase 20% over the next 10 years (BLS, 2012).

Wendler et al. (2010) reviewed the trends, challenges, and vulnerabilities existing in the current U.S. graduate education system and identified a number of pressing issues facing graduate schools. These issues include:

- Changes in population demographics. The population in the United States continues to grow in diversity. These demographic shifts are likely to result in a population with less education than today and lower math and reading skill levels which will impact access to higher education (Kirsch, Braun, Yamamoto, & Sum, 2007).
- Retention issues at the high school and college level. Growth in graduate school enrollment is complicated by the dropout problem seen at the high school and undergraduate levels. Dropout rates for individuals aged 16–24 are still higher for underrepresented populations of students (NCES, 2011) and the number of high school students not enrolling in post-secondary education is significant (BLS, 2011).
- Growth in international education. The growing availability and increasing reputation of international graduate schools may impact the ability of U.S.-based graduate schools to attract and retain the best and brightest international students (Welch, 2008).
- Failure to complete the graduate degree. The attrition rate in doctoral programs is one of the most vexing problems that U.S. graduate education faces. Some studies indicate the attrition rate in doctoral programs to be as high as 40% to 50% (Nettles & Millett, 2006).

- Accumulated debt. Appropriate financial support for graduate students is consistently identified as one of the most important concerns of graduate deans (CGS, 2009a). In addition, adequate financial support is cited by graduate students as the most significant factor contributing to their ability to complete the doctoral degree (CGS, 2009c).
- Lack of career path transparency. Lack of knowledge of career options for graduate degree holders may impact an individual's decision to apply to or attend graduate school (Wendler et al., 2010).

Among these challenges, the issue of career transparency presents the biggest gap in data. Little is known about what students know or believe about graduate school, how they value advanced degrees, what they know about careers available to them by obtaining a graduate degree, and how well graduate education prepares them for the careers they pursue. In addition, graduate school administrators may have preconceived ideas of what students know and don't know about graduate education. The current study further examines the issue of career transparency by examining responses of graduate deans and graduate students on survey questions regarding the level of knowledge students have about career options before, during, and following graduate school; the source and perceived level of accuracy and helpfulness of information provided to students about career possibilities; and the types of careers encouraged by faculty.

Data Source

The data used in this study come from a larger project that examined the pathways through graduate school into the world of professional occupations from the perspective of students, graduate deans, and employers (Wendler et al., 2012; Wendler, Cline, Kent, &

Mageean, 2012; Wendler, Cline, Kotloff, & Mageean, 2013a, 2013b). The authors conducted two surveys, one with graduate deans and one with students, as a way of obtaining information related to knowledge and attitudes about graduate school and careers. Responses to both surveys provide interesting perspectives, but it is acknowledged that because both are samples of convenience, the results may not generalize to all graduate institutions or students.

The student survey was administered to students who were at different points in their school-to-career path: (a) those who did not plan to enroll in graduate school ($N = 106$), (b) those who planned to but had not yet enrolled in graduate school ($N = 693$), (c) those who were currently enrolled in graduate school ($N = 2,683$), (d) those who had been enrolled but did not complete their degree ($N = 133$), and (e) those who had been enrolled and had completed their degree ($N = 2,140$). Participants were students who took the GRE® General Test between 2002 and 2011 and provided an email address at the time they registered to take the test. They were invited to respond to the survey using an internet link. Responses to the survey were voluntary; that is, students were not given an incentive to respond. More than 5,700 students provided responses to the survey. Table 1 provides a breakdown of the number of respondents by gender and race/ethnicity.

Table 1

Students Responding to Survey

Gender*		Race/Ethnicity*				
Female	Male	American Indian	Asian	Black	Hispanic	White
3,380	2,279	34	398	324	578	3,393

*Counts include only respondents who provided their gender or race/ethnicity.

In order to ensure equal numbers of respondents across all years, a greater number of test takers were contacted from the years 2002 to 2006 than from the years 2010 and 2011. Approximately 500 to 600 responses were received from students from each testing year cohort. Overall, the response rate was around 5%, with slightly over 10% of the 2011 cohort responding and less than 3% from the earliest years. Whether individuals from the earlier years chose not to respond or if they did not actually receive the email invitation cannot be determined; therefore, it is not possible to determine how representative this group is of the GRE testing population. In addition, this data source does not capture all individuals who attended, or planned to attend, graduate school. It does, however, provide access to a large number of students from a variety of demographic groups, fields of study, and institution types.

An internet invitation to complete the graduate deans' survey was sent to deans who were members of CGS. CGS universities award about 90% of all doctorates granted each year in the United States and about 75% of all master's degrees. Thus, its membership provides access to a wide variety of schools from major comprehensive research universities to much smaller master's-only institutions. Responses to the survey were received from 213 (43%) of the invited deans. Again, it is acknowledged that the results may not generalize to all graduate institutions or programs nor reflect the perceptions of all graduate deans.

Graduate deans provided information for students representing four types of programs: Professional masters, research master's, professional doctorates, and research doctorates. Nearly all (91%) of the responding deans indicated that their institution had research master's programs, 90% said they had professional master's programs, 77% had research doctoral programs, and 72% had professional doctoral programs. Although the professional degrees and the research

doctoral degree are relatively easily defined, the research master's degree was a somewhat problematic category; this degree may be a terminal degree, but it is also often used as a stepping stone to a doctoral degree. Thus, data from the research master's represent two types of degrees – those that are terminal and those that are “en route” to the doctorate.

For the current study, responses of graduate deans and graduate students to survey questions regarding level of knowledge of career options were examined. Only graduate students who were currently enrolled in school ($N = 2,683$) or had completed their degree ($N = 2,140$) were included in the analyses. The source of information provided to students about career possibilities, the way in which that information was delivered, and the perceived level of accuracy and helpfulness of the information were also examined. Finally, the types of careers encouraged by faculty were investigated. Note that this study reports only descriptive statistics. While survey responses provide some insight into important issues, additional research is required to thoroughly understand the implications of these results.

Results

Career Knowledge

Deans were asked to indicate how knowledgeable students were about career options at three time points: prior to entering graduate school, during graduate school, and upon graduate degree completion. Results indicated that, for those graduate deans who responded, they believed most students have limited knowledge of career options prior to entering graduate school (see Figure 1). Fewer than 20% of the deans thought students in professional and research master's programs and in research doctoral programs were very knowledgeable about career options. The

students with the highest level of knowledge of career options were seen as those entering professional doctoral programs.

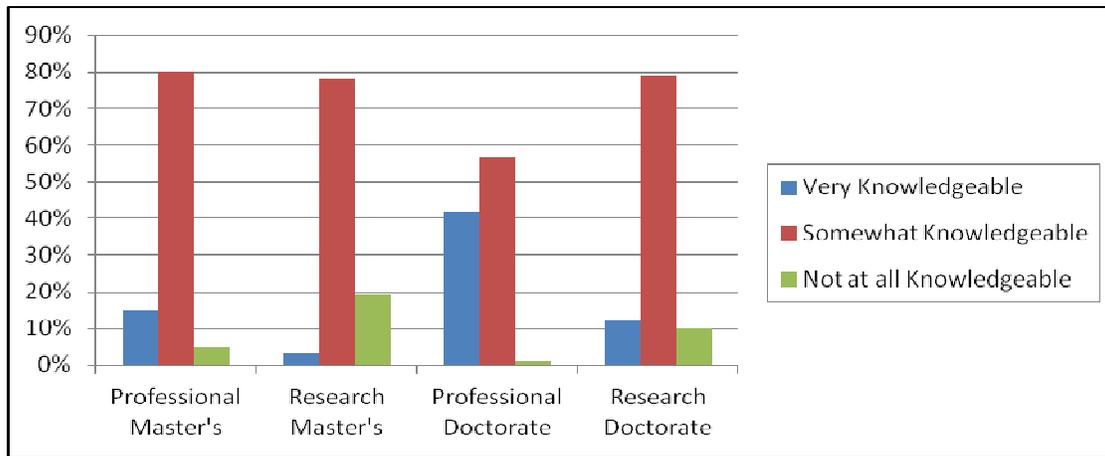


Figure 1. Graduate deans: Level of student career knowledge prior to entering graduate school.

During graduate school, graduate deans felt that the level of student knowledge regarding career options increased (see Figure 2). This was particularly true for students in professional doctorate programs, with 71% of students believed to be very knowledgeable about career opportunities. Professional doctoral students were thought to acquire more knowledge of options than students in research doctorate and master's programs, where less than 50% were seen by graduate deans as very knowledgeable about careers.¹

¹ Note that Figure 2 contains data that was updated after the initial posting of this document.

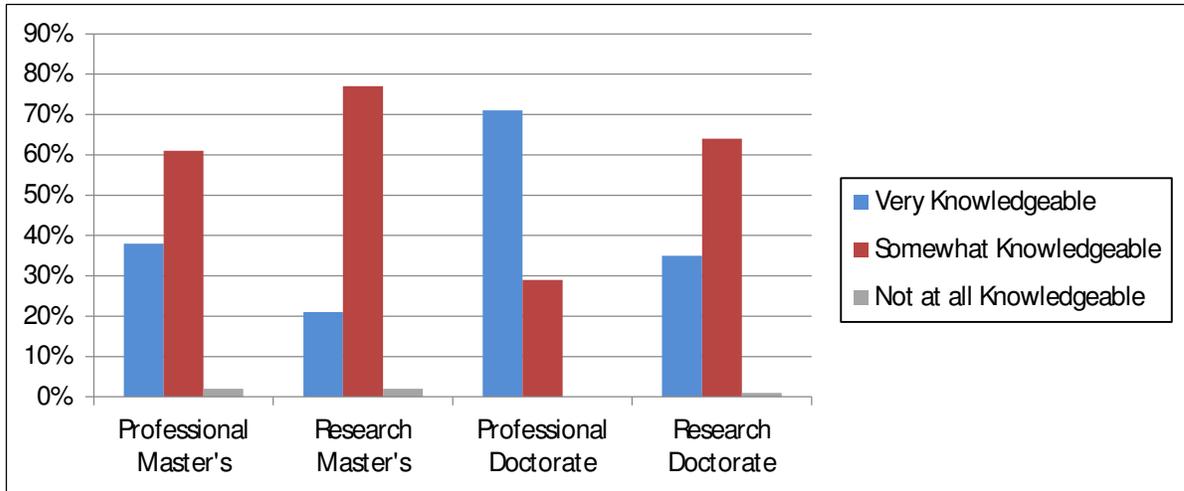


Figure 2. Graduate deans: Level of student career knowledge during graduate school.

Following degree completion, knowledge of career options was thought to be highest for those in professional programs, with graduate deans indicating that 89% of students in doctoral programs and 78% of students in master's programs as being very knowledgeable (see Figure 3). However, 40% of the deans indicated that students receiving a research doctorate were still only somewhat knowledgeable about career options; for research master's students, this number was 54%.

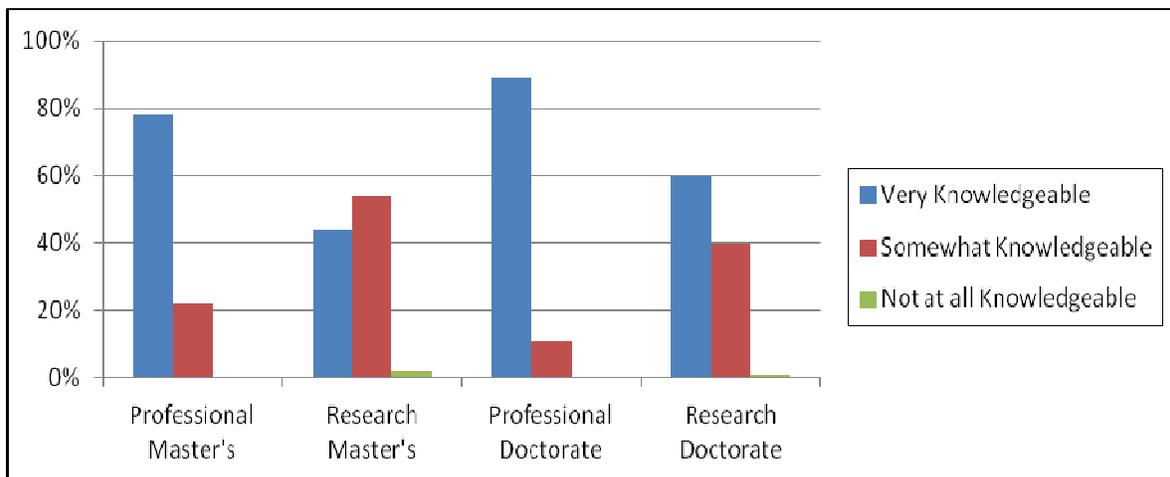


Figure 3. Graduate deans: Level of student career knowledge following degree completion.

Students who were currently enrolled in graduate school or who had completed their degree, however, reported that they felt they had received insufficient, unhelpful, and inaccurate information about career options prior to entering their graduate program. More than one half those students who responded indicated they had received less information than needed about possible careers (see Figure 4). As seen in Figures 5 through 7, receiving less than sufficient information about career options was expressed by all students, regardless of race/ethnicity, gender, or degree level and no differences were apparent across these groups.

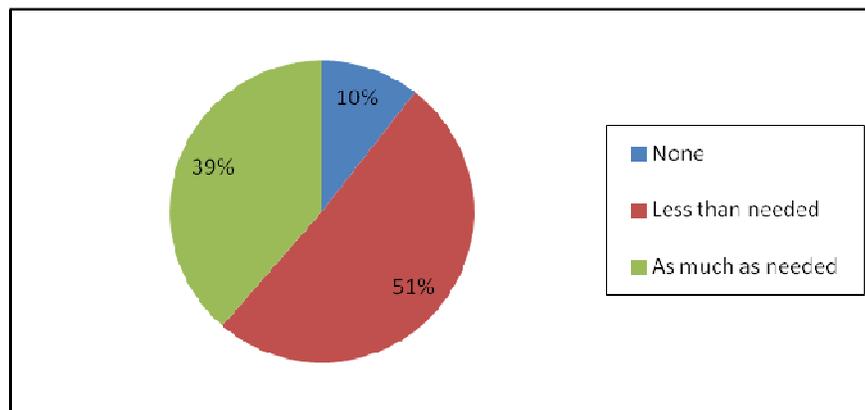


Figure 4. Students: Amount of information received about potential careers.

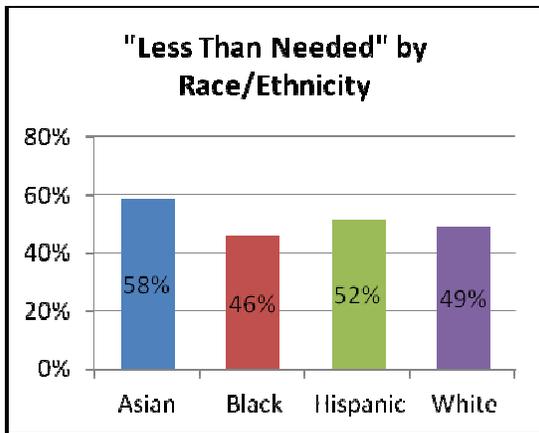


Figure 5. Students: Amount of information received about potential careers.

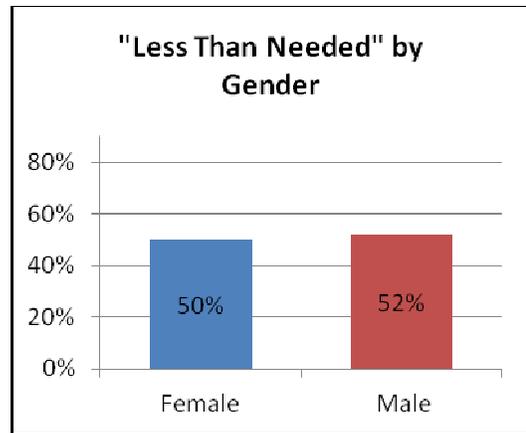


Figure 6. Students: Amount of information received about potential careers.

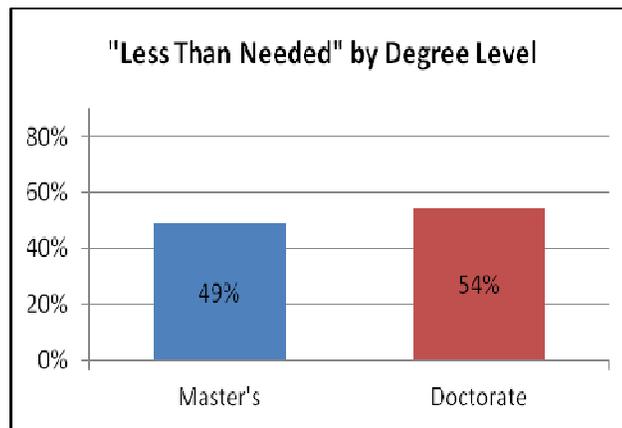


Figure 7. Students: Amount of information received about potential careers.

Some differences in the level of information received, however, were seen by field of study (see Figure 8). Over one half of the students who responded they were education or health science majors felt they had received as much information as needed about career possibilities prior to entering graduate school. For all other fields, less than 40% of students indicated they had received as much information as needed about career options. This result is not necessarily

surprising, since degrees in education and health sciences tend to be geared towards specific occupations (such as teaching or nursing).

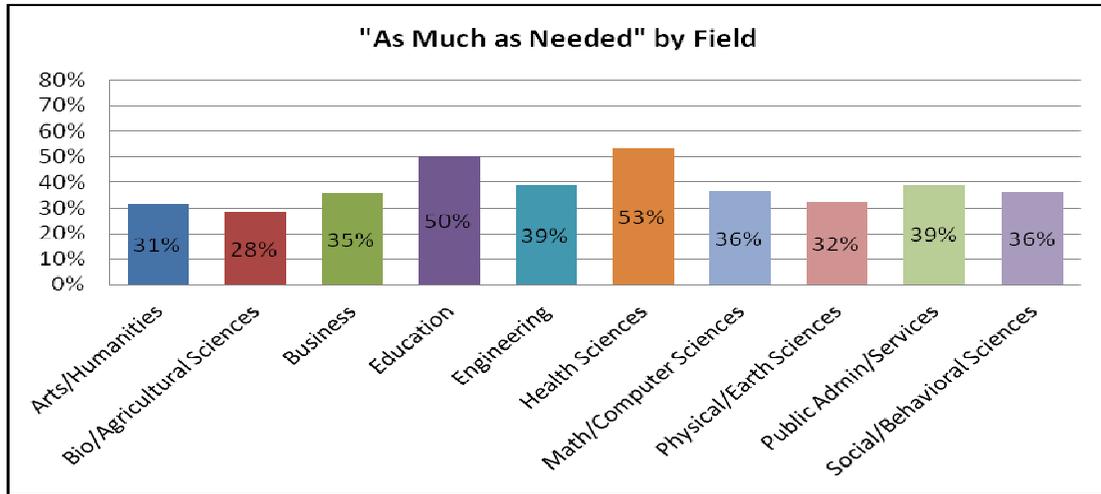


Figure 8. Students: Amount of information received about potential careers.

Students were also asked whether the information they received was helpful. In general, most students who responded (62%) indicated that the information was somewhat helpful, but very few (17%) felt it was very helpful and 21% felt it was not helpful at all in understanding career options (see Figure 9).

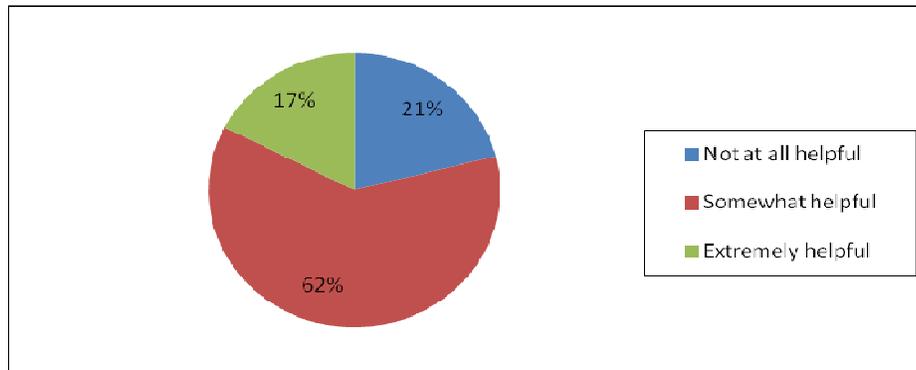


Figure 9. Students: Helpfulness of information received about potential careers.

Again, as seen in Figures 10 through 12, no differences were apparent across gender, ethnicity/race, or degree level.

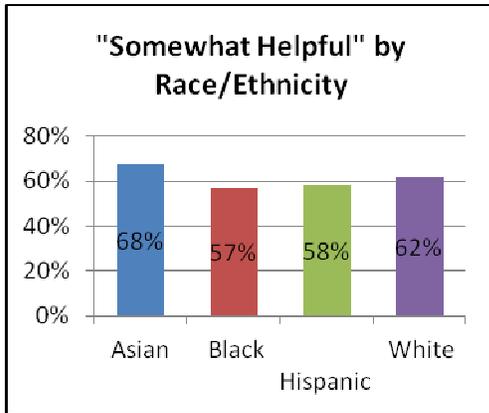


Figure 10. Students: Helpfulness of information received about potential careers.

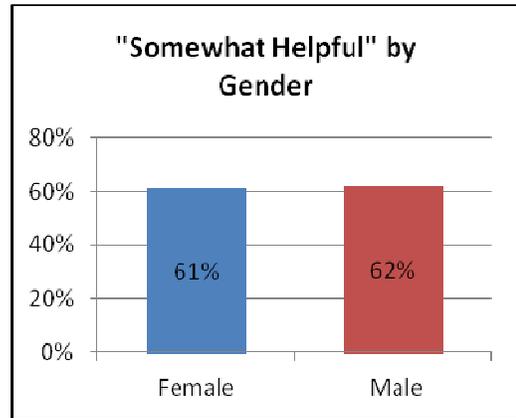


Figure 11. Students: Helpfulness of information received about potential careers.

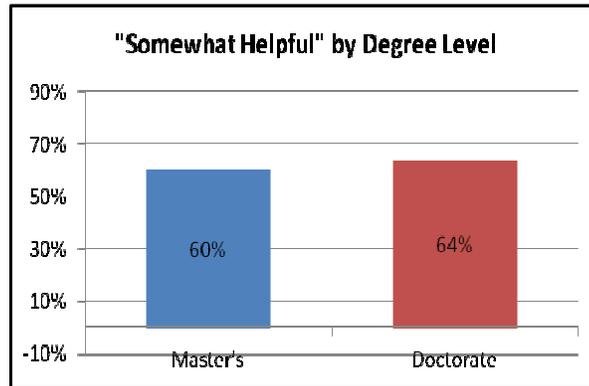


Figure 12. Students: Helpfulness of information received about potential careers.

However, some differences in the helpfulness of the information received were again seen by field of study (see Figure 13). About 67% of the students who were in engineering indicated that the information was somewhat helpful, more than any other group.

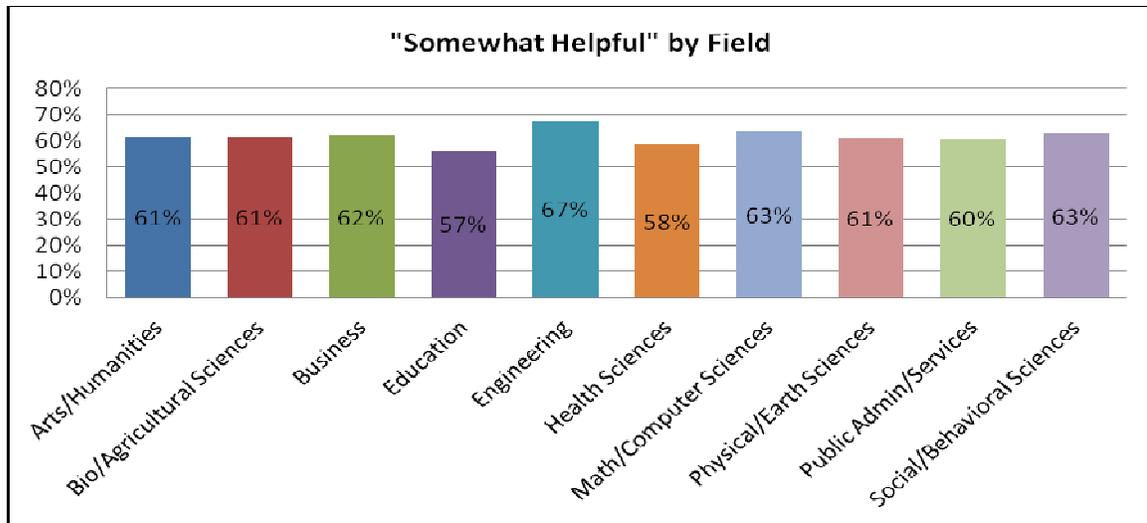


Figure 13. Students: Helpfulness of information received about potential careers.

Sources of Career Information

Graduate deans were asked who they encouraged students to seek career advice from. The majority of graduate deans who responded encouraged students to seek career advice from faculty members (98%) followed by the academic advisor (77%) (see Figure 14). (Note that only 54% indicated that the graduate dean's office was an appropriate source of career information.)

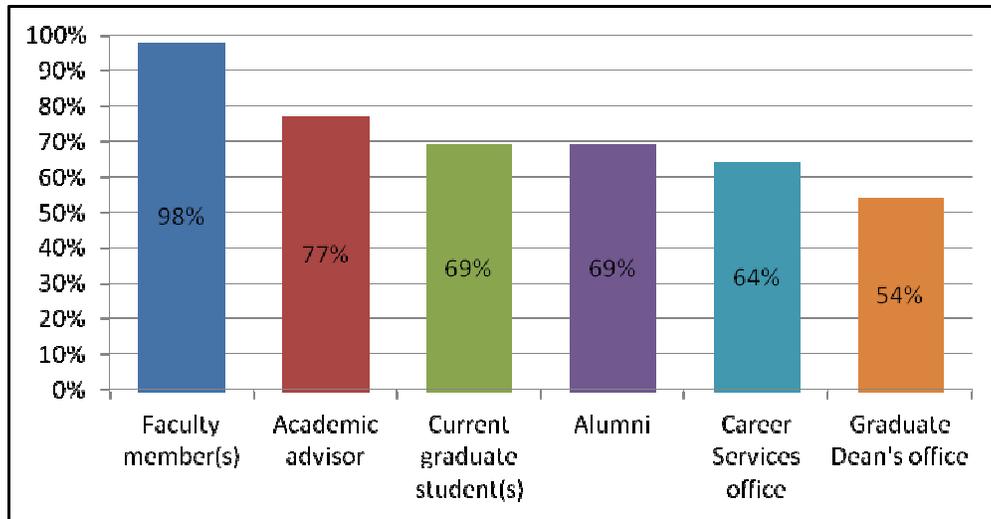


Figure 14. Graduate deans: Sources of information about potential careers.

While graduate deans said they encouraged students to seek information about potential careers from faculty, writing letters of recommendation was indicated as the most important faculty responsibility, regardless of the type of degree program (see Figure 15). Despite this, graduate deans felt that helping students **find** employment opportunities was a less important responsibility for faculty members than other responsibilities (see Figure 16). Helping students find employment opportunities was seen as more important for faculty for those students enrolled in a research doctoral program (61%) than in other types of programs, but it was still not considered as important as writing letters of recommendation.

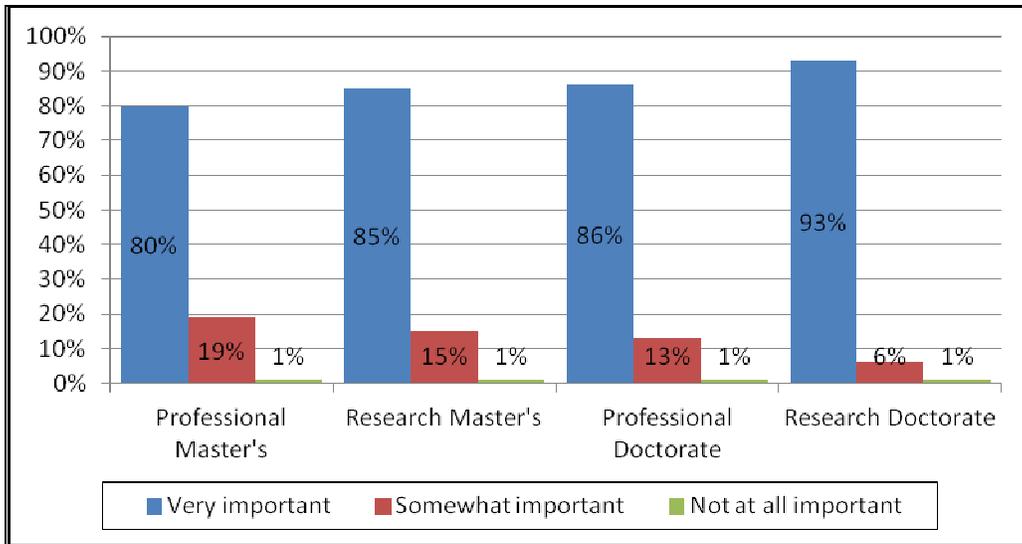


Figure 15. Graduate deans: Importance of faculty writing recommendation letters for students.

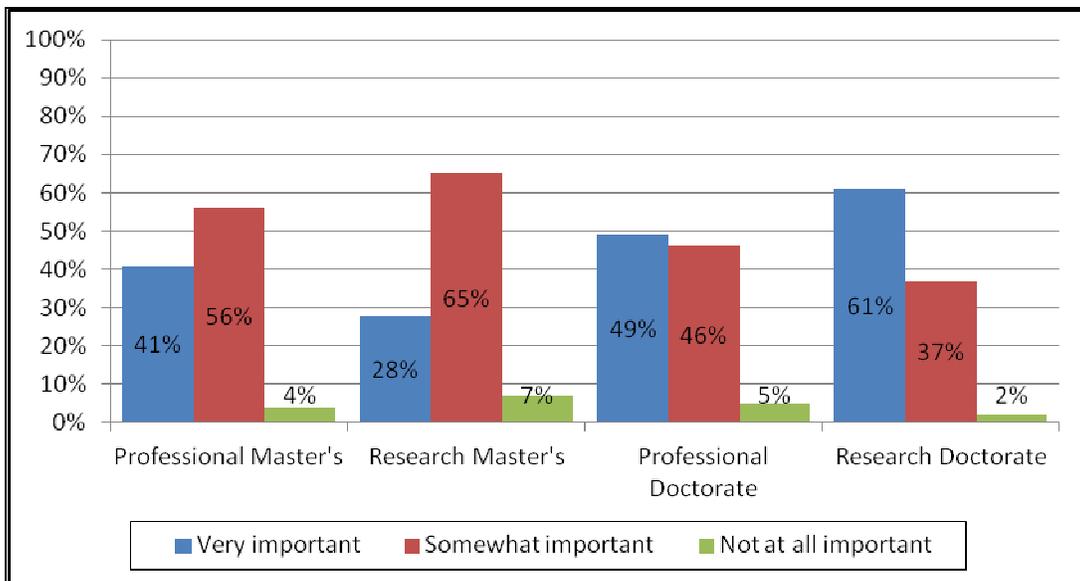


Figure 16. Graduate deans: Importance of faculty finding career opportunities for students.

Graduate deans were also asked who provided career-based activities for graduate students on their campus. Career Services offices were seen as a major player in providing such activities for students. Deans who responded indicated that the Career Services office was responsible for coordinating a number of activities at the institution, such as:

- Career fairs (69%)
- Career counseling workshops (64%)
- Professional development/skills workshops (59%)
- Off-campus internships (82%)

The majority of graduate deans who responded (59%) also indicated that they believed individual programs or departments were responsible for student career development at their institutions. However, the graduate dean's office was viewed as responsible for providing career guidance far less frequently than Career Services offices, individual programs, or departments. In some cases, deans indicated that few or no career development activities existed at their institution. Furthermore, at those institutions where activities aimed at providing career development for students were held, only two activities were believed by the majority of graduate deans to be very effective: off-campus internships (see Figure 17) and professional development and skills workshops (see Figure 18). In both these cases, deans indicated that such activities were the responsibility of the Career Services office.

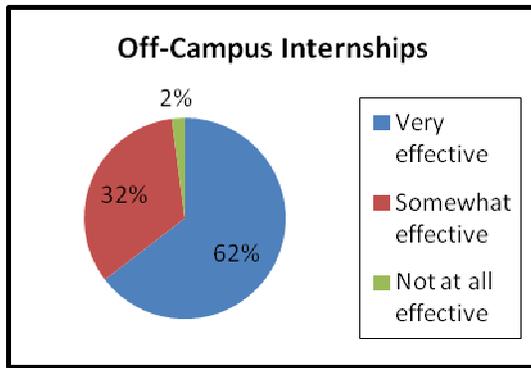


Figure 17. Graduate deans: Effective career development activities.



Figure 18. Graduate deans: Effective career development activities.

Graduate students were also asked who they consulted for career information (see Figure 19). Results were similar to those of the graduate deans, with 66% of responding students indicating they talked to faculty. However, students indicated that they consulted with **peers** more frequently (68%) about career advice than any other source, including faculty or their academic advisor. Very few sought career advice from those most closely associated with careers, such as career counselors (12%), people who work in the field (48%), or employers (23%).

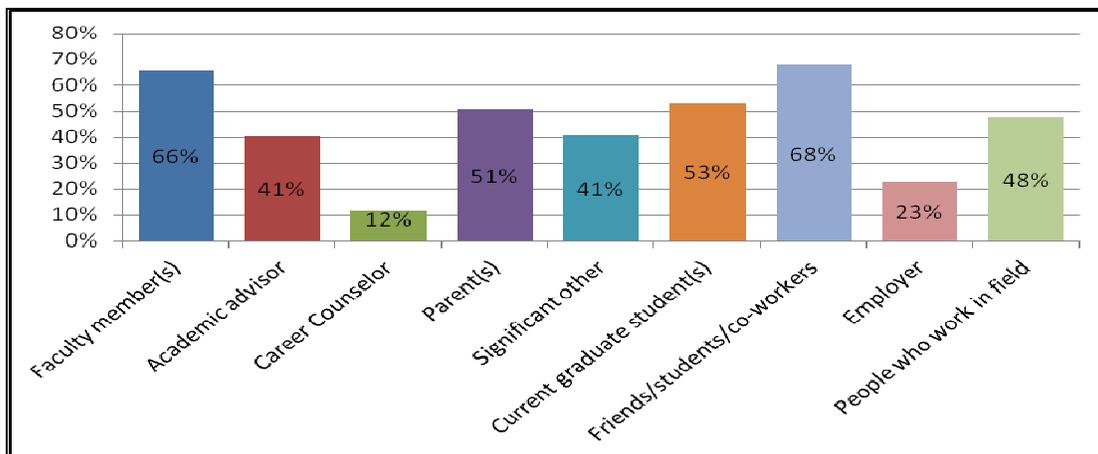


Figure 19. Students: Sources of information about potential careers.

Types of Careers

Graduate degree holders work in all employment sectors, from business to government to academia. Many master's programs are professional programs that prepare students for careers in business, government, and nonprofit organizations (CGS, 2009d). According to one estimate, about one half of the doctoral recipients obtained jobs outside of academics, but the percentages vary widely by field (for example, 85% from engineering, 66% from physical sciences, 38% from social sciences, and 14% from humanities) (National Science Foundation, 2006).

Graduate deans were asked about the types of careers they believed faculty encouraged graduate students to pursue (see Figure 20). In particular, interest was in the level of encouragement provided for nonacademic careers. Of those deans who had an opinion, the opinions were split: a third **agreed** that faculty discouraged such careers and a third **disagreed** that such careers were discouraged.

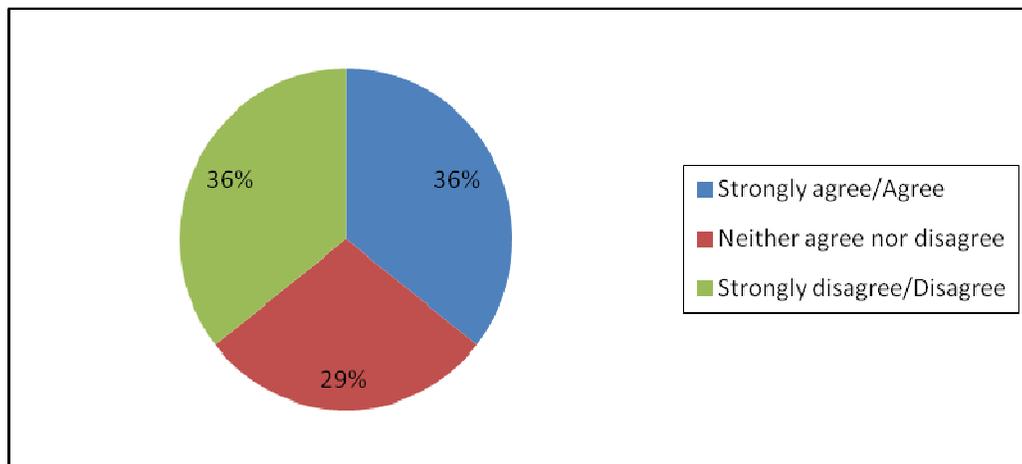


Figure 20. Graduate deans: "Faculty provide more support for students who are interested in academic careers than to those who are not."

Students were also asked about the types of careers that faculty encouraged them to consider (see Figure 21). “Traditional” academic careers were encouraged more than other types of careers: faculty/teaching positions (67%) followed by research positions (65%). Careers in the military (5%), entrepreneurial activities (13%), nonprofit organizations (22%), and the government (23%) were encouraged less.

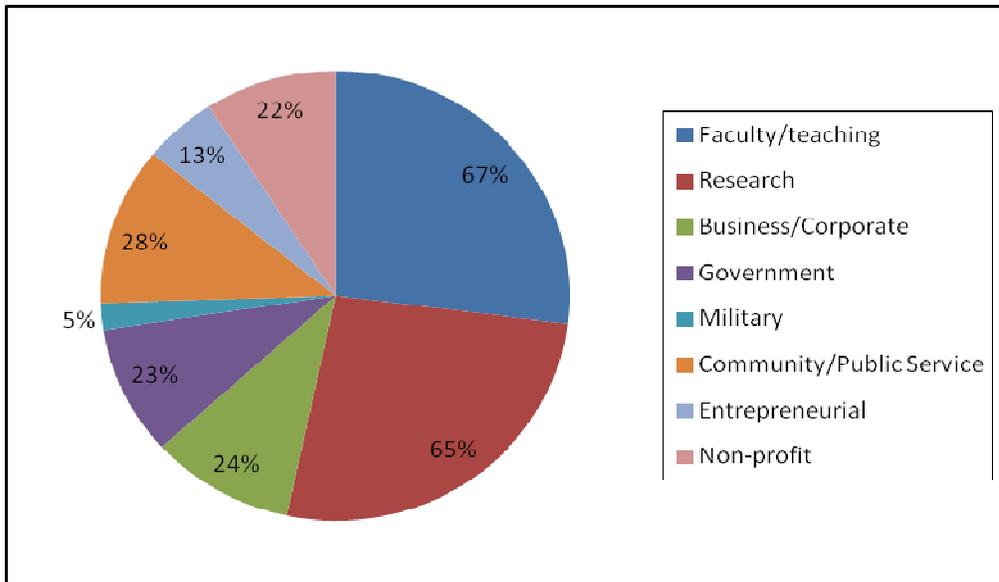


Figure 21. Students: Career options most encouraged by faculty.

Some minor gender differences were seen, with females indicating that they were encouraged to consider positions in the community/public service (35%) and nonprofit (27%) employment sector more frequently than males (19% and 16%, respectively). Differences were also seen by race/ethnicity. More White students (70%) indicated they were encouraged to consider faculty or teaching positions but fewer Asian students (62%) indicated they were encouraged to consider such positions. In addition, more Asian students (76%) felt they were encouraged to consider research positions; however, fewer Black students (56%) felt they were encouraged to consider

such positions. It is likely that field of study impacts these results, since more Asian students are enrolled in disciplines (such as STEM fields) that lead to work in research compared to other race/ethnic groups.

When actually considering employment options, however, most students who responded indicated they would consider positions in many sectors, with faculty/teaching (70%), research (63%), community/public service (45%), and business/corporate (44%) being ranked the highest. Only a career in the military was considered by less than one fourth of the students, with only about 9% indicating they would consider such positions.

Responses by students in all gender and race/ethnicity groups were similar, although a higher percentage of Asian students indicated they would consider or have considered careers in research (64%) or business/corporate (46%) compared to other students. Again, these differences may be the result of the particular field or discipline students are in, rather than reflecting their race/ethnicity.

Discussion

Wendler et al. (2010) pointed to the need for graduate education to develop clear career pathways for graduate students. The results of this study provide further support as to that need. However, because this study reports only descriptive statistics, additional research is required to thoroughly investigate and understand the issues raised in the Wendler et al. (2010) report.

Results reinforce the necessity of providing career counseling services for graduate students along with professional skills development, resources, and guidance in preparing for a variety of career pathways. Graduate deans indicated that students are not fully aware of career options prior to entering graduate school. While the level of knowledge regarding careers increases as

students are engaged in their graduate programs, there are still inconsistencies regarding career knowledge for students in some types of programs. Professional programs at the master's and doctoral level which, by design, are geared toward particular occupations tend to produce students who are more knowledgeable concerning career options.

Not all graduate schools provide activities related to career preparation and development. But for those schools that do, graduate deans felt that it was the Career Services office that had major responsibility for providing such activities. Deans also indicated that individual programs or departments were responsible for student career development, but that career guidance was not a responsibility of the graduate dean's office. Furthermore, only two activities – off-campus internships and professional development /skills workshops – were believed to be effective in helping students understand career options.

Students' perceptions confirmed what the graduate deans indicated: that they were not very knowledgeable about career options before entering graduate school. Students indicated that information they had received about careers was somewhat helpful, but nearly one quarter felt it was not helpful at all. The lack of knowledge about career options is not specific to particular groups of students but extends across all graduate students.

Wendler et al. (2012) suggest that graduate students would be better served if the pathways into careers were made clearer by graduate schools. A number of actions could accomplish this. Research has shown that the formation of career aspirations begins young – perhaps as early as elementary and middle school (Magnuson & Starr, 2000; Trice & McClellan, 1993). Thus, building relationships between K-12, higher education, and graduate education systems is critical. Through these relationships, information about career options available with various

levels of education can be provided to students which will allow them to better understand the connection between education and careers. Another action would be for graduate schools and programs to engage the university Career Services office in providing career counseling services aimed specifically at graduate students, such as professional skill development and guidance in identifying and preparing for positions in industry, government, and academia.

Graduate deans said that they encouraged students to seek career advice from faculty members or the academic advisor. While they viewed writing letters of recommendation an important responsibility of faculty, they did not view helping a student find employment opportunities as important. Students also indicated they talked to faculty or their academic advisor about career advice, but more indicated that they consulted with their peers. Very few sought career advice from those most closely associated with careers, such as career counselors or individuals already working in a field. Thus, students tend to know about career options from others who have little work experience (peers) or are limited in experience outside of the academy (faculty and advisors). This lack of experience in careers outside of the academy might explain why students reported they were more encouraged by faculty members to look at “traditional” academic careers, such as teaching and research, than other types of careers.

If graduate faculty are one of the main resources for graduate students regarding careers, it is vital that faculty are also aware of career opportunities that exist outside of the academy. Wendler et al. (2012) recommend that universities actively create links with industry. In particular, since many graduate faculty do not have direct knowledge of or experience with career opportunities outside of academia, graduate schools and industry employers should work together to provide

opportunities for *faculty* to engage in industry through sabbaticals or other research opportunities.

If, as has been posited, the ability to produce a highly-skilled workforce is critical to the future competitiveness of U.S. business (The Conference Board, 2011), graduate education plays a vital role. Graduate education must provide the environment in which students acquire those skills necessary to be successful in the workforce. Informing students of the career options a graduate degree provides will help ensure that students enter graduate school with an eye to the future. As such, graduate institutions and programs must be proactive in providing and supporting opportunities and knowledge of careers both inside and outside of the university. In addition, broadening the development of students to include professional skills such as communication, teamwork, presentation skills, oral communication, writing, planning and organization, and the analysis and synthesis of data in addition to discipline-specific content, will help them enter the workforce fully prepared to be successful.

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