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Abstract

Although rates differ across disciplines, between genders, and among students from various racial and ethnic groups, nearly half of all doctoral students fail to complete their programs of study within 10 years of their first matriculation. This state of affairs is highly problematic for universities, which waste finite resources training students who do not graduate, and for students, who dedicate their time and money to goals that remain unrealized. A number of contextual and intrapersonal factors have been associated with graduate student attrition: financial strains, a lack of social support, and feelings of inadequacy, to name a few. The aim of the study reported here is to document some of the major challenges that graduate students currently encounter when they first undertake graduate study. To address this interest, we asked a diverse sample of first-year graduate students to self-report their greatest challenges in the first year of graduate school. Analyses of responses indicated that time management was a significant challenge for many, as was learning to cope with reading and comprehending voluminous quantities of academic text. Struggles with other needed skills such as writing, oral discourse, and statistics were cited as well. We suggest that the results of small individual efforts like the one described here are a start toward developing interventions to address the challenges encountered by beginning graduate students. These interventions in turn may constitute a crucial facet of broader plans to reduce attrition.

Key words: graduate student graduation rates, graduate student attrition, *GRE*®, graduate student challenges

The Council of Graduate Schools (2008) reported the cumulative 10-year completion rate for doctoral students to be approximately 57% in the United States. Graduate student attrition rates, or more euphemistically, *departure rates*, vary between institutions and demographic groups, as well as across disciplines (Gardner, 2010, p. 63). For example, across disciplines the range is vast, from a low of 11% to a high of 68%, with higher attrition in the humanities and social sciences and lower rates in the natural sciences (Nettles & Millet, 2006). There is no doubt that attrition is a pervasive phenomenon in postbaccalaureate education.

Equally obvious is the fact that attrition has substantial consequences for colleges and universities. These include a loss of trained graduate assistants and experienced teaching assistants, as well as a loss of the social, intellectual, and financial resources spent to educate and train students. Students have much to lose as well, particularly after having dedicated their time and money to achieving a goal they do not complete. Getting back on track after an unsuccessful graduate school experience can be very challenging and is often demoralizing (Lovitts, 2001). For this reason, educators and theorists have had a longstanding interest in determining which strategies foster student retention and degree completion (Bowen & Rudenstine, 1992; Golde, 2005; Smallwood, 2004). These strategies include ensuring that students have access to dedicated faculty advisors, providing students with effective advisement and mentoring, offering adequate financial support, and creating a sense of community, to name a few (Nelson & Lovitts, 2008; Tinto, 1993).

The aim of this effort was to describe, in students' own words, some of the major challenges they perceive as first-year graduate students. Following this, we explicated the emergent themes as articulated by participants. Finally, we offer suggestions regarding the types of targeted interventions that may foster student retention as well as the rationale behind these approaches.

Theorists such as Gardner (2008) assert that students' success in, and completion of, graduate school is contingent upon the quality of their socialization experience. Successful socialization is defined as having learned the norms, priorities, knowledge, and skills of value within a particular social, cultural, or institutional group. Unsuccessful socialization can strongly influence graduate students' decisions to leave the academy before graduating (Gardner, 2008; Golde, 1998; Tinto, 1993; Weidman, Twale, & Stein, 2001).

Socialization varies across each discipline; values, norms, and skill sets for laboratory researchers in neuroscience, for instance—who often, out of necessity, work in teams—are likely to diverge from their counterparts who may study philosophy, for instance, on a more individual basis. Socialization may also vary between university settings, with values at the most prestigious institutions differing from those at less elite universities. As such, the behaviors and skills expected of graduate students are culturally and contextually bound (Gardner, 2008; Weidman et al., 2001).

Gardner's (2008) study using qualitative interview data indicated that graduate students studying in departments with the highest completion rates—as compared to those studying in other departments within the same institution—felt solidly accepted as group members in a sort of home away from home. They believed that faculty cared about them, and many reported also having been mentored by advanced graduate students. These findings are consistent with research on students' academic self-concept: Answering the question, "Do I belong here?" (Ostrove, Stewart & Curtin, 2011, p. 749) is fundamental to doctoral students' sense that they are not pretending to assume an identity that does not match their background and capabilities. The creation of a hospitable environment as well as the provision of mentoring and student resources as a mechanism for increasing doctoral student graduation rates has been cited by many (Conrad, 2007; Council of Graduate Schools, 2008; Nelson & Lovitts, 2008; Pearson, 2012). Resources include exposure to research early in graduate students' careers, writing assistance, support networks, early advising, and regular feedback from trained faculty and peer mentors. However, neither the quality nor the quantity of resources required for optimal outcomes has been fully explicated, nor have the differences among disciplines and stages of graduate study been empirically verified in a comprehensive manner.

Nonetheless, previous research has found that graduate students in departments with relatively low completion rates tend to rely on support from faculty alone (Gardner, 2010). Also noteworthy in these departments is the number of students who were nonnative speakers of English. It is possible that students who travel to America for graduate study are grappling with linguistic and cultural differences that make connection with other, more advanced students particularly challenging. Also reported by students in departments with low completion rates was a belief that students must rely solely on themselves to learn how to conduct research and solve problems. Although participants who were required to manage these challenges independently

understood and even legitimized why their professors did not confer much support, some still indicated a need for more assistance and guidance (Gardner, 2010).

Also noted to be ambiguous by the participants in Gardner's survey is the purpose of exams as well as how to perform tasks correctly at each phase of their graduate student career. Students voiced confusion regarding how to write as a graduate student as well as how to discuss and debate various theoretical arguments. These stressors were magnified among those who were nonnative speakers of English (Gardner, 2008).

What remains unclear, however, is exactly what type of mentoring is required as well as when in a graduate student's career it is most needed. Also unclear are the types of scaffolds that should be provided: For example, is assistance with editing a paper sufficient for students who report additional challenges with the reading load and comprehension? How might this differ for graduate students who are nonnative speakers of English?

Gardner (2008) asserted that the timeline of graduate study can be understood as distinct phases, from when an applicant first expresses interest in attending a particular institution to when he or she commences work with a specific faculty member and beyond. The time from which students begin their coursework throughout their first year of graduate school is the focus of this study. This time frame was chosen because, as reported by Golde (2005), one out of every three graduate students drops out by the end of the first year, which suggests that this is a uniquely impactful phase in students' graduate school trajectory. Moreover, completion of the first year of graduate school is also an obvious prerequisite for entrance to later phases of study, such as independent research.

Method

To address our interests, as part of a larger study we asked 474 first-year graduate students to self-report their greatest challenges as first-year graduate students. For the larger study, these students rated various aspects of their graduate experience on an online questionnaire; these responses were collected for a study designed to evaluate the predictive validity of the *GRE*® revised General Test. Included within this survey was one open-ended question—which is the focus of this study—that said, "It is normal for students to face challenges in graduate school. Please feel free to record the challenges you have faced in your first year." Our objective was to gain further insight, through the voices of first-year students, into difficulties encountered in the first year of graduate school. We anticipated that these

challenges might entail, for instance, coping with new academic and social expectations, an unfamiliar cultural context, and in some instances, the (possibly) unfamiliar language of the academy. Foreshadowing our findings is one participant's response, which reflects our expectations very well:

> The greatest challenge I face in graduate school is:
>
> Mimicking the conventions of scholarly essays published in my field. These conventions are seldom taught or even discussed at the undergrad level, and most graduate students must teach themselves how to effectively mimic, in order to participate in, academic conversations.

Procedures

Questionnaires requesting open-ended responses regarding first-year students' greatest challenges in graduate school were administered throughout 2013 and the beginning of 2014. Each of the 474 participants was compensated $10 for completing an online survey that contained the open-ended question pertinent to this study.

The universities and colleges with whom we partnered to recruit participants varied in size, student demographics, geographic location, and academic ranking; participants were also recruited via an e-mail blast (that is, students undifferentiated by the graduate school they attended) sent to students who took the GRE revised General Test in 2012.

Participants. With regard to location, 23% of participants attended U.S. graduate schools in the midwest, 23% attended U.S. graduate schools in the northeast, 21% attended U.S. graduate schools in the west, 31% attended U.S. graduate schools in the south, and 2% attended a school outside the continental United States. Fifty-five percent of participants were females, and forty-five percent were males; the majority of students attended large graduate schools (83%), 15% attended medium-sized graduate schools, and only 2% attended small graduate schools.[1] Half of the sample comprised matriculants in master's degree granting programs, one quarter of the sample comprised matriculants in doctoral programs, and another quarter of the sample chose not to indicate their matriculation status. The greatest representation was from graduate students studying disciplines within the social sciences (46%), followed by 30% studying disciplines within science, technology, engineering, and mathematics (STEM) fields and 18% studying disciplines within the humanities.[2]

GRE revised General Test score percentile ranks were available for 296 of the 474 survey respondents. The sample was somewhat more able in general than the GRE population of test takers, especially with regard to verbal reasoning. Median percentile scores were 70, 57, and 54 for the verbal reasoning, quantitative reasoning, and the analytical writing sections of the GRE revised General Test, respectively.

Data Analysis

Grounded theory was used to detect the categories that emerged from participants' responses (Creswell, 2003; Miles & Huberman, 1994). To that end, first, participants' responses were read several times. Second, preliminary labels were constructed to describe clusters of responses. Third, an open code, as well as descriptors or properties of each code, and exemplars were listed. Fourth, the codes themselves were refined so as to best summarize recurrent themes (Strauss & Corbin, 1990). Many statements were double coded and, in some instances, triple coded to reflect the multiple salient concerns voiced by each participant.

The accuracy of coding was achieved through peer deliberation, where the second coder independently read participants' responses, recorded codes, and then verified whether his or her codes were analogous to those provided by the first coder. Because participants were generally quite explicit in stating their concerns, extremely little disagreement was found in assigning comments to relevant categories. Discussion between the two raters focused on what they felt were surprisingly similar participant responses, with time management and consolidating the skills unique to graduate school—such as academic writing—voiced on a repeated basis.

Although an analysis of the most significant challenges voiced by master's versus doctoral students in this sample was not an explicit research question, the data were disaggregated between the two groups and the open coding process was repeated. Somewhat surprisingly, the most recurrent themes among students in master's level programs differed minimally from those voiced by doctoral students. This result may be a function of when participant sampling occurred—during students' first year of graduate school. It may be reasonable to infer that, if we had asked the same question in graduate students' second, third, and fourth years of study, emergent themes would have differed for master's and doctoral students.

Results

The most commonly reported challenges voiced by first-year graduate students in this study (see Table 1) were (a) managing time, (b) handling the reading load/comprehending what was read, and (c) determining how to write on the graduate level.

Other challenges included

- presenting scholarly information orally and, in particular, learning how to engage in academic discourse;
- adjusting to school after a protracted hiatus;
- negotiating work that is unexpectedly challenging;
- harboring concerns about academic self-concept (Do I belong here?);
- making sense of unclear expectations and unfamiliar grading methods;
- learning specific skills involving data analysis, code writing, and the use of software packages;
- motivating oneself in the face of seemingly unmanageable workloads or a lack of structure;
- becoming enculturated and socialized, including learning to interact with other graduate students;
- thinking critically about academic text and research;
- dealing with collaborative learning and group projects; and
- negotiating cultural and linguistic hurdles (for international students).

Mentioned by a small number of participants were financial concerns, hurdles associated with personal disabilities, and uniquely personal but sometimes fleeting problems.

Table 1

Participants' Self- Reported Challenges as First-Year Graduate Students

Category	*N*	%
Time management	176	37
Managing reading load/comprehension	57	12
Writing on the graduate level	52	11
Oral presentations/academic debate	43	9
Learning specific skills (data analysis, software)	43	9
Unexpectedly challenging work	29	6
Dealing with unclear faculty expectations	19	4
Self-motivation	19	4
Critical thinking	20	4
Becoming enculturated/socialized	14	3
Returning to school after hiatus	10	2
Questioning (e.g., Do I belong here?)	10	2
Collaborative learning	5	1

Note. Some participants' responses were double or triple coded, thus *N* does not sum to 474 and the percentages exceed 100%.

Time management. Many graduate students cited a myriad of factors that made it difficult for them to effectively manage their time. Some participants described the challenge of balancing coursework, a graduate or teaching assistantship, and research. Included therein were students who felt frustrated by their inability to integrate research into their study time due to a heavy course load. In addition, balancing broader aspects of life in tandem with school demands was noted to be a significant challenge by participants. For example, one participant wrote, "Time management. I have so much on my plate all the time and it becomes hard for me to balance everything (e.g., all my class work, lab work, thesis research, clinical work, eating, exercising, social life, etc.)." Other participants described the challenges of completing tasks, such as work or caring for a toddler, while keeping up with their teaching, grading, courses, and/or research. Accordingly, one first-year graduate student said the following when asked

about her biggest challenge: "Time management—I had a long commute, a GA-ship, a toddler, and I was pregnant. And a full course load."

Reading. Many students also voiced concerns regarding their struggle to balance an extensive reading load with the other tasks they had to complete. For example, one student said, "There is so much reading it is difficult to prioritize and learn to skim all of the assigned readings." Also noted were frustrations regarding how to read and comprehend scientific papers and scholarly research articles. As one student said, "The [biggest challenge] is how to analyze a paper and get the idea."

Writing and oral communication. Although written communication and oral communication require students to utilize distinctly different skills, some of the challenges students cited were parallel to each other. For example, one participant said, "The biggest challenge has been making sure that I was clear in explaining my thoughts (i.e., in writing)," and another participant said, "I still have some problem to articulate well when I speak." Clarity in speech and in writing, as well as the ability to think critically, was often noted to be quite difficult for first-year students.

Struggles unique to writing included a lack of experience in synthesizing information from multiple texts, difficulty writing cohesive summaries, and learning how to write for an academic audience. The language of graduate study within specific departments was often cited as being unfamiliar, and, much like English language learners, students often found that time was needed to understand how to use discipline-specific terminology. In tandem with learning how to write clearly and concisely, students reported challenges with beginning to write a thesis, finding time to write weekly summaries, and motivating themselves to start writing.

Level of challenge. The heightened level of challenge articulated by first-year graduate students as well as the process of trying to understand the culture of graduate school and determine professors' expectations is arguably associated with students' time management issues, their self-reported motivational problems, and their academic self-concept. In other words, ambiguity surrounding what, and how, to be successful in graduate school is likely to be associated with the degree to which students feel able to manage the workload; challenges with time management can also be symptomatic of these difficulties. Additionally, students' motivation is sometimes diminished in response to challenges that seem unmanageable. This

illustrates the connectedness between having an unclear sense of how to be successful and feeling overwhelmed with the workload.

For example, one student said, "My greatest challenge was feeling as though I should be in my program," which is another way of saying I am not sure I have what it takes to study this discipline. Other students reported anxiety, stating, "Anxiety about my abilities has at times made it difficult to sit in class." A third said, "Managing my stress level when I have multiple things to do at the same time. Sometimes it is difficult to get myself motivated." Compounding this for one student was an unfamiliarity with writing computer code—which was required for this student to complete all of his assignments—unfamiliarity with statistics and analysis, and limited facility in using mathematical formulas that were used routinely by those in a particular graduate program.

Nonnative speakers of English. Nonnative speakers of English described frustrations pertaining to two general themes: (a) obstacles that were language-based and (b) challenges born of adapting to an unfamiliar educational system. In reference to stressors due to linguistic differences, one student said, "My biggest challenge was understanding the native people when they speak English. Because the[y] speak so fast and I couldn't follow them." Additionally, one participant described his "language block" with writing. Consistent with this was "I think the biggest academic challenge is to express my opinion very clearly in writing a paper. I am an international student and sometimes, it is hard for me to show my thoughts exactly." In reference to unfamiliarity with graduate study in the United States, one participant said, "[my greatest challenge in graduate school is . . .] assignment components during the semester, which are uncommon in India." Another participant said, "The syllabus and the pattern and the style of teaching is completely different from the one we study back in home country." Thus it is clear that the challenges faced by native speakers of English are shared—and in some instances felt more poignantly—by students whose first experiences in America are as graduate students.

Discussion

Results from this study indicate that the challenges of first-year graduate students are often multifaceted and mutually reinforcing. For example, struggles with tasks such as writing (a cognitive challenge) are associated with low motivation (a dispositional challenge), resulting in time management issues (a skill-based challenge). This suggests that, in the absence of

appropriate interventions, cognitions and affect can negatively impact graduate student retention rates.

Results from this study also indicate that one of the most commonly reported challenge(s) voiced by first-year graduate students is time management. The Council of Graduate Schools (2013)—which conducted the Master's Completion Project pilot study—reported a similar finding: Graduate students who left master's level STEM programs prior to degree completion did so due to an inability to effectively assume their work, family, and school commitments.

While it is true that the benefits of completing a master's or doctoral degree may not outweigh the costs for some students, clearly many others could, if provided with targeted support(s), reap rewards associated with having earned an advanced degree (Gardner, 2009). Supports that are likely to reduce attrition among first-year students—as per the results of this study—as well as pertinent considerations subsumed therein are described below.

Time Management

One approach to address time management might entail having first-year students work with more advanced graduate students and/or advisors to discuss how to prioritize tasks, how to allocate time to each, and whether certain aspects of their schedules can or should be altered. For example, in an article published by the American Psychological Association (Novotney, 2013), more seasoned graduate students reported that in order to effectively manage their time they used Apple's iCal Calendar or Google Calendar, color coded specific time frames, and set personal reminders. Others kept a time audit, so they could realistically assess how much time they spent on tasks such as checking social networking sites, and some regularly rewarded themselves after having completed challenging assignments. Moreover, many noted the importance of "just doing it," and that when people have many tasks to juggle, perfection is not achievable and, thus, not a reasonable goal (Novotney, 2013).

Cultivating New Skills

To address commonly cited cognitive/skill-based issues, first-year graduate students might receive training in very specific skills (e.g., how to write annotated bibliographies; how to merge information into academic summaries; how to begin and sustain the writing/editing process; how to determine which parts of a reading assignment warrant careful attention—and possibly rereading; how to commit salient ideas/theories to memory; how to effectively take

notes; how to master specific skills such as coding; and how to articulate points during an academic debate). Building these skills should be an explicit curricular objective accompanied by corresponding pedagogical procedures/assignments and, possibly, assessed as part of first-year graduate students' coursework.

Socialization. Results from this study also suggest that the degree to which graduate students perceive themselves as emerging scholars, writers, teachers, problem solvers, and researchers is inextricably connected to their beliefs regarding the degree to which they belong (Ostrove, Stewart, & Curtin, 2011; Pearson, 2012). Sense of belonging is also affected by whether students encounter peers or faculty whose background, ethnicity, or culture resembles theirs. Those who do not feel they belong may validate these cognitions by focusing on that which makes them different, thereby shaping their academic self-concept (Gardner, 2010; Ostrove et al., 2011).

International students. For this reason, supports unique to international students should be conferred. While doing so, special attention should be paid to the following factors associated with adjustment issues: limited English language writing, speaking, or listening proficiency; minimal levels of social support; having lived in the United States less than 2 years; perceived discrimination due to ethnic or geographic origin; strong immersion in an international community with few American ties; and significant feelings of homesickness (de Araujo, 2011, p. 2).

Attributions. Students' academic self-concept is reciprocally intertwined with their attributions of success or failure. For example, if I attribute my low test grade to a trait that I believe I possess, such as a consistent inability to understand statistics—a facet of my academic self-concept—as opposed to an external influence, such as the professor's teaching competency, then I may believe that statistics is something I will never understand. In other words, if I attribute my failure or my struggles to something internal, I may also believe that my challenges are permanent and pervasive problems for people like me (Yeager & Dweck, 2012). Also problematic are attributions of success due to "luck, an admissions' committee mistake," or charm that "won them the approval of their superiors"; these perceptions are more frequently held by female graduate students, who, despite evidence of their significant capabilities believe themselves to be "imposters" (Clance & Imes, 1978, pp. 1−5).

Thus, we are suggesting that by mentoring students on a weekly or biweekly basis and discussing the normal challenges shared by most graduate students, as well as how those challenges can be overcome, students may feel a greater sense of normalcy, belonging, and personal efficacy. Additionally and perhaps more importantly, if first-year graduate students are explicitly taught and come to believe that "Effort + Strategies + Help From Others" (Yeager & Dweck, 2012, p. 911) yields success, then they are likely to have successes that stand in contrast to a negative academic self-concept.

The calculus of success through effort, not ability, is well summarized by Yeager and Dweck (2012):

> It is not just about effort. You also need to learn skills that let you use your brain in a smarter way. . . . You actually have to practice the right way . . . to get better at something. In fact, scientists have found that the brain grows more when you learn something new, and less when you practice things you already know. (p. 305)

Future Research

Additional studies should be conducted to determine the success, or lack thereof, of targeted mentoring interventions that are developed specifically to address the kinds of challenges that we have documented. Studies should also be conducted to determine the greatest challenges that graduate students face at various other phases of their graduate education beyond the first year: Writing a dissertation necessitates using skills sets that differ from those required to pass a qualifying exam or complete an introductory statistics course. In the future, studies might attempt to link this sort of data to attrition.

A limitation of the current study is that data were collected from first-year graduate students throughout 2013 and the beginning of 2014. Although all participants were first-year graduate students, controlling for the time of year in which they participated would reduce the possibility of temporal confounds. Also helpful would be studies that include the collection of data such as graduate students' marital status, number of children (if any), age, funding sources, status as full-time or part-time students, and work commitments to see if specific challenges are associated with particular life circumstances. Explicating these relationships would inform the creation and provision of targeted supports and community building that may reduce graduate student attrition rates. Moreover, these sources of support might differ depending upon the

academic discipline, the availability of existing supports, and risk factors such as linguistic differences that can render a large workload even more taxing to manage.

Conclusion

After having examined and classified almost 500 responses from first-year graduate students, a common—arguably superordinate—theme emerged: Not surprisingly perhaps, most students have a genuine desire to succeed in graduate school, they are aware of their struggles, and they would value opportunities to improve. It may be useful, therefore, to provide students with an understanding that although their struggles could impede their success as graduate students, these challenges are experienced by many—including those who are now esteemed scholars—and can be overcome with sustained effort. Findings from our study inform where those efforts should be directed and mirror research that reveals the inextricable relationship between skill building, personal efficacy, attributions, and academic self-concept. These lessons are the foundations for success in life.

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Notes

[1] School size was operationalized according to Carnegie classifications: Small schools have 1,000–2,999 degree-seeking students; medium schools, 3,000–9,999; and large schools, at least 10,000.

[2] The percentage of students studying disciplines in the social sciences, humanities, and STEM fields did not total 100% due to missing data.