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Conceptualizing Success in Doctoral Education: Perspectives of Faculty in Seven Disciplines

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Abstract

[...] competencies related to the professional realm are also mentioned in the literature in regard to doctoral student success.\n One example might be the concept of balance in the English faculty members' conceptualizations of success. [...] from the perspective of research, this study advanced the exploration of cultural constructions of success in doctoral education; however, it had four limitations.

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The term "success" in higher education has been used widely to describe multiple outcomes including models to better understand how students can succeed (e.g., Girves & Wemmerus, 1988; Padilla, Trevino, Gonzalez, & Trevino, 1997), the practices best suited for success (e.g., Frost, 1991; Williams, 2002), the influence of particular variables upon success over time (e.g., Burton & Wang, 2005; Decker, 1973; Fordham & Ogbu, 1986), and even the relationship between specific variables and success (e.g., Hirschberg & Itkin, 1978; Nettles, 1990; Wilson & Hardgrave, 1995). Indeed, a search of the 2006 conference program of the Association for the Study of Higher Education identified more than 20 different papers and sessions that utilized the term "success."

In doctoral education, the study of success is also prevalent. To be sure, understanding doctoral student success is particularly important as only 50% of those students who enter doctoral education actually complete the degree (e.g., Council of Graduate Schools, 2004; Nettles & Millett, 2006). To this end, scholars have sought to understand how factors such as advising (e.g., Baird, 1972; Schroeder & Mynatt, 1993), student characteristics (e.g., Cook & Swanson, 1978; Nettles, 1990), and particular measures such as grades and test scores (e.g., Burton & Wang, 2005; Girves & Wemmerus, 1988; Lannholm & Schrader, 1951) influence the concept of success in doctoral education. In each of these cases, "success" can mean anything from year-to-year persistence and high grade point averages to degree completion. Therefore, although multiple scholars have studied the concept of success from nearly every imaginable angle, its definition remains elusive. What is success? How does one differentiate a successful student from one who is unsuccessful? Does the definition of success vary by disciplinary culture?

Without a coherent view of what it means to be successful in doctoral education, the measurements and outcomes expected of students remain ambiguous. This study sought to understand the concept of success as defined by 38 faculty members in seven disciplines at one research-extensive institution through in-depth interviews about their experiences in doctoral education. The paper begins with a brief overview of relevant extant literature and the conceptual framework guiding the study. I then provide a description of the methods used, summarize the findings, and provide implications for future policy, practice, and research.

SUCCESS IN DOCTORAL EDUCATION

To better understand conceptualizations of success in doctoral education, a comprehensive understanding of the dimensions of the term is needed. In the study of doctoral education, the concept of success has been used widely to explain several outcomes including retention, academic achievement, completion or graduation, and professional socialization. I briefly discuss each of these topics below in relation to success in doctoral education.

Throughout the doctoral education experience, students are measured according to several outcomes as indicators of their success. Beginning with coursework, students are assessed in their academic achievement, resulting in the standard measure of grade point average (GPA). GPA is a common variable used to analyze student success in undergraduate education (Pascarella & Terenzini, 1991/2005); however, for doctoral education, GPA is generally not widely used in studies of success. Doctoral student achievement in coursework is typically expected to remain high, therefore making it difficult to measure differences (Girves & Wemmerus, 1988; Nettles & Millett, 2006), although some differences have been measured among underrepresented populations (Nettles, 1990; Nettles & Millett, 2006). Furthermore, coursework may last only for several semesters for many students, thereby providing an inaccurate long-term measure of student success. Exceptions are studies based upon predictor variables, such as the Graduate Record Examination (GRE), and their relationship to grades in particular coursework (Feeley, Williams, & Wise, 2005; House, 1999).

Retention is another widely used indicator of success in doctoral education. Also described as persistence (Lovitts, 2001), retention "refers to a student's continued enrollment" (Isaac, 1993, p. 15), a definition similar to that used to measure undergraduate student success (Pascarella & Terenzini, 1991/2005). In this way, retention is related to doctoral student success, accounting for the students who persist from year to year in the graduate program. Previous studies have cited varying retention rates. Golde (1998) and Bowen and Rudenstine (1992) have documented that, of all the students who will leave their doctoral programs, about one third leave after the first year, another third before candidacy, and a final third during the dissertation phase, a finding also confirmed by Nerad and Miller (1996). Reasons for retention (or its lack) among doctoral students are generally related to issues of integration into the program or department (Girves & Wemmerus, 1988; Lovitts, 2001; Tinto, 1993), feelings of psychological and cognitive inadequacy (Golde, 1998; Katz & Hartnett, 1976), lack of financial support (Abedi & Benkin, 1987; Bowen & Rudenstine, 1992; Girves & Wemmerus, 1988), and dissatisfaction with the program or department (Girves & Wemmerus, 1988; Lovitts, 2001; Perrucci & Hu, 1995).

Degree completion is another obvious indicator of doctoral student success. Completion rates in doctoral education, as previously stated, have been cited as averaging 50% (Bair & Haworth, 2005; Bowen & Rudenstine, 1992; Council of Graduate Schools, 2004; Nettles & Millett, 2006). Different disciplines, however, have varying rates. Those in the fields of science, technology, engineering, and mathematics (STEM) generally complete at higher rates than those in the social sciences or humanities (Bair & Haworth, 2005; Bowen & Rudenstine, 1992; Council of Graduate Schools, 2004; Nettles & Millett, 2006). Moreover, degree completion and its relation to such sociodemographic

variables as gender and race vary (Bair & Haworth, 2005; Bowen & Rudenstine, 1992; Council of Graduate Schools, 2004; Nettles & Millett, 2006). Similar to influences upon retention, it is apparent that many different variables influence degree completion (Lovitts, 2001) and time-to-degree rates certainly vary by both discipline (Bowen & Rudenstine, 1992) and by socio-demographic status (Bair & Haworth, 2005; Ferrer de Valero, 2001).

Finally, competencies related to the professional realm are also mentioned in the literature in regard to doctoral student success. The individual enrolled in doctoral education is, of course, also a burgeoning professional (Golde, 1998), learning the skills, knowledge, habits of mind, values, and attitudes of his or her chosen field (Soto Antony, 2002; Weidman, Twale, & Stein, 2001). Therefore, while quantifiable measures such as GPA, test scores, retention, and graduation rates may indicate success, professional and attitudinal competencies, such as a student's disposition toward the subject matter or professional development, are also desirable but are typically more qualitative measures of success (Hagedorn & Nora, 1996).

Undergirding all of these conceptualizations of success is the involvement of faculty members in the doctoral program and with the doctoral student (Austin, 2002; Clark & Corcoran, 1986; Lovitts, 2001; Weidman & Stein, 2003; Wulff & Austin, 2004). They serve as teachers, advisors, committee members, mentors, role models, and future colleagues. Despite their important role, however, no known studies have sought to determine how faculty members in doctoral education would define success. In other words, if faculty play such an integral role in the multitude of success outcomes for doctoral students, how they conceptualize success is key to understanding how to best structure programs, services, and experiences for this success.

CONCEPTUAL FRAMEWORK

An important caveat must be made, however: The doctoral education experience is not monolithic. Doctoral education is experienced differently within and among different disciplines. Disciplines have their own particular qualities, cultures, codes of conduct, values, and distinctive intellectual tasks (Austin, 2002; Becher, 1981) that ultimately influence the experiences of the faculty, staff, and, most especially, the students within their walls. Therefore, while studies of the undergraduate experience as related to success often occur at the institutional level (e.g., Tinto, 1993), the discipline and the department become the central focus of the doctoral experience, rather than the larger institution (Berelson, 1960; Bowen & Rudenstine, 1992; Golde, 2005; Nerad & Miller, 1996).

Much of the common understanding about disciplinary differences and categorizations is based on Biglan's (1973a) work, which identified the cultural and social structures of academic disciplines, resulting in their classifications as hard/soft, pure/applied, and life/nonlife systems. While not the first research conducted on disciplinary differences (see Braxton & Hargens, 1996 for a comprehensive discussion), Biglan's work is a testament to the concept that studies of academic cultures and contexts cannot be generalized across disciplines.

Work done by Becher (1981) expounded on the understanding of disciplinary differences. The disciplinary groupings developed by Becher and Trowler (2001) included the (a) pure sciences, akin to Biglan's hard-pure grouping; (b) the humanities, similar to Biglan's hard-applied disciplines; (c) technologies, much like the hard-applied disciplines in Biglan's model; and (d) applied social sciences, like Biglan's soft-applied areas. Becher also contributed to the common understanding of "rural" and "urban" fields, further explaining the social structures within disciplinary cultures. Whereas in rural fields, many researchers will focus upon relatively few research problems, urban researchers are generally fewer in number with more problems to be investigated.

These disciplinary groupings and organizational systems allow for a better understanding of the contrasting identities and characteristics of particular fields of study. Becher (1981) commented, "Disciplines are cultural phenomena: they are embodied in collections of like-minded people, each with their own codes of conduct, sets of values, and distinctive intellectual tasks" (p. 109). These cultures within disciplines, therefore, greatly influence the faculty and, consequently, the doctoral students within the departments (Golde, 2005).

For example, Biglan (1973b) described differences among disciplines resulting in discernible paradigmatic assumptions, concern with practical application, and concern with life systems. In addition, he studied the variation of social connectedness within disciplines, or the measure of "the informal relations among colleagues" (p. 204). He found, in particular, that social connectedness was important among the sciences since much of the research is conducted in team-based lab settings. Another measure of disciplinary culture for Biglan was that of commitment to teaching, research, administration, and service. Biglan remarked, "What evidence exists indicates that the emphasis on, and significance of, teaching differs in physical and social science fields. Scholars in social sciences emphasize educating the whole student and evidence a more personal commitment to students than do those in physical sciences" (p. 205).

Finally, Biglan measured scholarly output as a characteristic of disciplinary differences, including the quantity and quality of publications produced. Biglan demonstrated that faculty in hard areas, such as those in the sciences, technology, engineering, and mathematics, are generally rated higher in social connectedness for both their research and teaching activities, while those in the soft areas (e.g., humanities and social sciences) generally work more in isolation but indicate a higher commitment to teaching. Biglan's explanation for these differences was based on the paradigmatic assumptions particular to the disciplines, in which the single paradigm of the hard sciences allows for more collaboration while the multiple paradigms of the soft social sciences may impede common understandings and frameworks.

Further differentiation from Biglan (1973b) and Becher and Trowler (2001) included the distinction of pure versus applied disciplinary cultures. Pure fields are those in which results are focused on discovery, explanation, understanding, and interpretation-for example, physics in the hard sciences and history in the soft sciences. Applied fields, on the other hand, are those in which research results in products, techniques, protocols, or procedures, such as engineering in the hard sciences and education in the soft sciences. This pure/applied distinction allows for a better understanding of the type of training graduate students receive in these disciplines, particularly in regard to social connectedness, as well as the methods and modes of research conducted within the discipline (Biglan, 1973b). Moreover, a higher commitment to application is indicative of more social connectedness in service activities and more applicable publications such as research reports.

Finally, Biglan (1973b) distinguished between life and nonlife disciplines. Disciplinary areas focused on life systems, such as the study of botany and agriculture in the hard sciences and psychology and education in the soft sciences, are those which are also more socially connected. These faculty members are generally more interested in collaborative teaching activities and graduate training in these areas is characterized by a more team-oriented approach to advising. Nonlife disciplines, including computer science and engineering in the hard sciences and communications and economics in the soft sciences, generally have faculty members who spend more time on teaching activities but who more independently work and advise graduate students (Biglan, 1973b).

While both Biglan's (1973a, 1973b) and Becher's (1981) models are widely used, neither has been widely tested beyond their initial conceptualization; and many would argue that not all of the components of the Biglan model can be validated (Braxton & Hargens, 1996). My study therefore uses a conceptualization encapsulating the four general areas of disciplinary classification that are shared by both Biglan's and Becher's models, including the classifications of (a) pure sciences or hard-pure disciplines, (b) humanities or soft-pure disciplines, (c) technologies or hard-applied disciplines, and (d) applied social sciences or soft-applied disciplines. This conceptualization therefore uses disciplinary culture and context as a guiding framework to understand how success is defined in doctoral education in the seven different disciplines studied.

RESEARCH METHODS

This study was guided by the question: How does disciplinary context and culture influence understandings of success in doctoral education? I interviewed 38 faculty members actively involved in doctoral education in seven departments at one institution. I chose the seven disciplines for two reasons. First, it was important to examine doctoral education from multiple disciplinary perspectives representing disciplinary diversity (Becher & Trowler, 2001; Biglan, 1973a). Second, a previous study had determined that these seven disciplines represented both the highest and lowest completion rates over a 20-year period at their institution.

The seven disciplines were English, communication, psychology, mathematics, oceanography, electrical and computer engineering, and computer science. Departments in the soft-applied fields (e.g., educational fields) had mid-range completion rates or a large number of part-time students and were excluded from this study. Therefore, not only were disciplinary context and culture important in understanding conceptualizations of success by the faculty members working in them, but the specific context of completion and attrition in these departments was also significant. Participants in the study by department and completion rate are further described in Table 1.

The institution at which this study was conducted is classified as a research-extensive (McCormick, 2001) institution or a research university with very high research productivity (Carnegie Foundation, 2005). Located in the southern United States, this institution annually enrolls more than 30,000 students, including over 4,000 graduate and professional students. In relation to its peers, this institution is ranked as a third-tier institution among national universities, although many of its individual programs and colleges are rated in the very top (U.S. News and World Report, 2007).

I interviewed the 38 faculty members for the study in the winter and spring of 2007. I first contacted each department's chairperson, received permission to conduct the study, then used the institution's graduate school records to identify the individuals who most often served as chair/committee member on doctoral student committees. Thus, the interviewees had been in the department the longest and worked with the most students. I considered them representative of faculty who worked most intensively with doctoral students, and whose students had actually completed their programs. This sampling method is similar to that of Lovitts (2001) in her examination of doctoral student attrition and allowed for a deeper examination of the existing cultures. Many of these departments generally did not allow untenured faculty members to chair doctoral committees. The interviewees chaired a mean 8.9 dissertations and had served 18.5 mean years at the institution. Table 1 provides further details of faculty members in each department.

I next contacted the prospective interviewees by email. Given the fact that I was granted access through the Graduate School and had the cooperation of the department chairs, all individuals eventually agreed to be interviewed. I conducted in-person interviews using a loosely structured protocol that allowed participants to diverge from the main topics and to further explore concepts and ideas. (See Appendix.) Questions focused on the faculty member's experiences as advisors to doctoral students and specifically asked them to identify the characteristics of students whom they considered successful and unsuccessful. The audio-taped interviews lasted for approximately 45 to 60 minutes and were transcribed verbatim.

I analyzed the data through the constant comparative method, "a research design for multi-data sources, which is like analytic induction in that the formal analysis begins early in the study and is nearly completed by the end of data collection" (Bogdan & Biklen, 2003, p. 66). According to Glaser (1978), the steps of this method are: (a) Begin collecting data; (b) Find key issues, events, or activities in the data that become main categories for focus; (c) Collect data that provide many incidents of the categories of focus; (d) Write about the categories explored, keeping in mind past incidents while searching for new; (d) Work with the data and emerging model to discover relationships; and (e) Sample, code, and write with the core categories in mind.

The steps of the constant comparative method occur simultaneously during data collection until categories are saturated and writing begins. I used Glaser's steps in data analysis, which allowed themes to emerge from the data and provided a means for compressing large amounts of data into meaningful units for analysis. As stated earlier, I also used concepts of disciplinary culture and organization (Becher, 1981; Becher & Trowler, 2001; Biglan, 1973a) in analysis to better understand the dimensions along which disciplinary responses varied. The departments, defined by their Biglan classification, are listed in Table 2.

I assured trustworthiness of the data collected and its subsequent analysis through peer debriefing (Maxwell, 1996), having a colleague analyze the transcripts and verify the themes. I also triangulated the data sources (Bogdan & Biklen, 2003; Maxwell, 1996) since my study was a part of a larger study in which numerous departmental administrators and doctoral students were interviewed. After the larger study was completed in the fall of 2007, the reports for each department were distributed and verified by each department; faculty members who had been interviewed provided member checking (Maxwell, 1996) of the existing themes.

FINDINGS

From the analysis of the interviews conducted, it was evident that disciplinary culture and context greatly influenced the faculty members' conceptualizations of success in doctoral education. There was a clear distinction among disciplinary constructions of success and among departments with the highest and lowest completion rates. I discuss these findings below by highest-to-lowest completion rate for the departments included in the study, also differentiating by the Biglan (1973b) disciplinary classification.

High Completion Departments

In this study three departments had very high doctoral completion rates: communication at 76.5%, oceanography at 72.7%, and psychology at 70.7%. These rates are considered high by both national and disciplinary standards (Bowen & Rudenstine, 1992; Council of Graduate Schools, 2004; Nettles & Millett, 2006). Although quite different in culture, research mode, and disciplinary culture, these departments nevertheless shared certain attributes. The English Department, with a 56.4% doctoral student completion rate, may not be as high as the other three departments but represents high completion in comparison to other humanities departments, which generally have the lowest completion rates nationally (Bowen & Rudenstine, 1992; Council of Graduate Schools, 2004).

Communication. The discipline of communication is classified as soft pure nonlife in the Biglan (1973b) classification. This Communication Department's doctoral student completion rate of 76.5% is high by any measure but certainly very high for a discipline in the social sciences (Council of Graduate Schools, 2005). The department has at any one time approximately 50 doctoral students enrolled in the program; its 24 faculty members serve both as graduate faculty and also teach in a large undergraduate program. The vast majority of doctoral students in the program are fully funded through teaching assistantships in the department.

Interviews with the faculty members largely responsible for doctoral education and doctoral advising quickly identified a culture of cohesion, mutual respect, and caring. Indeed, these very words were often uttered, both in the interviews with the faculty members and by the 10 doctoral students interviewed as part of the larger study. Thus, it is perhaps not surprising that, when asked about their doctoral students, one faculty member responded, "We're lucky. They're a very bright group," adding, "You're going to hear a lot of affection [from faculty] about the students." These faculty members used two main themes to define success for their doctoral students: selfdirection and research dissemination. Thus, the attributes of success were characteristics inherent in the student's personality along with his or her accomplishments after entering the program.

These faculty members frequently spoke to successful graduate's student need for self-direction and self-motivation. One faculty member pointed out that a successful student is "one who is able to work independently," while another commented that successful students are "pretty strong and self-directed. They have a sense of vision in what they want when they come in." A third defined a successful student as "a person "who initiates [his or her] own research agenda and is able to work individually and collaboratively. They take their own initiative." In a sense, these faculty members are echoing the need for independent thinking and original scholarship, which is very much a focus of doctoral education in general (Council of Graduate Schools, 2005; Gardner, 2008; Lovitts, 2005).

The second theme for the communication faculty members was the dissemination of research findings, particularly through publications and participation as conference presenters. The faculty and the administrators of this department mentioned the growing emphasis on this attribute of success for their students and described how they pushed students to turn papers into presentations and publications. They recognized the connection between this activity and their students' ability to negotiate the academic job market. One faculty member noted, "They put out many papers and try to be on many panels because they understand that quantity is going to mark them as involved." Faculty, however, understood that this was not an explicit requirement of their program; therefore, students who achieved success in this area were exerting effort above and beyond their program's minimal criteria. Indeed, one faculty member was dismissive about required coursework: "I could care less about the student's grades. It's productivity that comes through conference papers, which leads to publications and grant proposals."

Oceanography. The Oceanography Department, a hard-applied life discipline in the Biglan (1973) classification, represents faculty efforts to bring coherence to what had once been an unstructured, interdisciplinary program. The department's high completion rate of 72.7% is characteristic of a faculty whose members are very supportive of their students and a department that is markedly cohesive. In these characteristics, it closely resembles the Communication Department. The Oceanography Department offers only graduate programs and typically enrolls about 13 new students annually. Much like other science fields, all students in the Oceanography Department are funded on individual faculty research grants.

Oceanography faculty and students represent a generally affable and innovative group. Like their communication colleagues, oceanography faculty expect their students to demonstrate high levels of independence and selfdirection. One faculty member remarked that successful doctoral students, in his opinion, are "self-motivated. They complete

their task from start to finish with minimal supervision." Unlike communication faculty, however, when speaking of their students, the four faculty members in oceanography used phrases like "nice people," "happy," and "helpful" to describe their students. Indeed, the faculty interviewed expressed these characteristics as integral qualities of successful students. One faculty member commented, when asked about the definition of a successful student, "Well, one that's happy. One that's comfortable with what they're doing. We don't want people to go out and have a job that they're not happy with."

All faculty members interviewed, however, commented about the need to ask for and to offer assistance as a characteristic of success. For example, one faculty member stated, "They would know when to ask for help; that seems to be what trips up some students," while another defined a successful student as "someone who helps other students when an opportunity comes." In this manner, this department represents the collaborative nature of work in the sciences, one that depends highly on teamwork in laboratory settings and research teams (Golde, 1998).

Psychology. The Psychology Department represents the third highest completion rate at this institution, with 70.2% of its admitted students graduating with their Ph.D. From a disciplinary culture perspective, psychology falls in the soft-pure life classification of Biglan (1973). Much like other psychology programs, this department serves a large undergraduate population of majors; it also offers master's and doctoral degrees in several concentrations. The Psychology Department typically admits 23 new doctoral students each year. These students often receive what amounts to full funding: a combination of teaching assistants for undergraduate classes and some research assistantships through individual faculty projects.

In meeting with the faculty members in this department, I got a distinct sense of a culture with highly demanding expectations for its students and its faculty. Faculty are very aware that the time and effort required for students to be successful often make it difficult for all students to meet these demands. Therefore, for these faculty members, successful students had characteristics external to the program-inherent characteristics that students brought with them. Foremost among them were natural talent and self-direction.

One faculty member, when asked about the department's students, described: "They're highly intelligent and they come in with really good GRE scores." Another faculty member echoed that successful students "are exceedingly bright. We have the highest GRE scores on campus." A third remarked that successful doctoral students in psychology are "bright, so they're good at coursework but they're also good at their research because they're so bright." The implied relationship between intelligence and GRE scores is noteworthy, particularly as this relationship has not generally been documented by the existing research on this topic (e.g., Kuncel, Hezlett, & Ones, 2001; Nettles & Millett, 2006; Rubio, Rubin, & Brennan, 2003).

Like the communication faculty, the psychology faculty identified selfdirection as the students' second attribute of success. One commented, "A successful student is organized, knows what they're supposed to do, communicates well with their mentor, reads the guidelines and follows them." Another faculty member adamantly asserted, "A successful student has two things: natural talent and self-discipline." Similarly, a third faculty member observed, "The folks who are extremely hard-working and extremely selfdisciplined- they do better. The kind of people who work on Saturday and work on Christmas break. They go back to work before anyone tells them they need to be back at work."

The faculty members in psychology resoundingly agreed that the main reason their completion rate was so high was because they could be highly selective in admissions. Only psychology and English faculty mentioned high selectivity as the underlying reason for their above-average completion rates, and their highly selective admissions were, in turn, the result of increased funding from the university, something only a handful of departments on campus have received. One psychology faculty member maintained, "I think our students are successful because we get good students from the get-go. Psychology is so highly competitive to get in. So, I think one of the reasons we have a high graduation rate is because we pick the cream of the crop from the beginning." Another psychology member insisted, "The single most important factor, bar none, factor of 10- if you do an experiment around a regression it would account for at least 90% of the variance-is admissions. Poor admissions decisions are unfixable." This shared recognition by psychology faculty may be an acknowledgement that their students' ultimate success has little to do with the program itself.

English. The English Department in this study has a completion rate below that of communication, oceanography, and psychology, but its 56.4% completion rate is considered high when compared to other humanities disciplines, in which completion rates nationally range from 13% to 37% (e.g., Nerad & Cerny, 1993; Zwick, 1991). English, as a discipline, is classified as another soft pure nonlife discipline by Biglan (1973). Because the English Department receives additional university funding for student recruiting, it can fully fund most of its students for four years. This funding comes in the form of one teaching assistantship per semester, a nationally competitive arrangement particularly attractive to prospective students. On average, the English Department admits 17 new doctoral students each year and also serves a large undergraduate population. Ultimately, while considered middle-of-the-road in terms of completion rates for this study, English faculty nevertheless exude pride in their students' success and their program. During interviews, they frequently alluded to their department's national ranking and reputation.

Indeed, the characteristics these faculty members defined as the keys to success for their doctoral students included ranking and reputation. They conceptualized success as their students' ability to secure employment, a goal reached through presenting and publishing. One faculty member commented, "A successful doctoral student is one who, from the very first seminar paper, is attempting not to write seminar papers but publishable articles. They also do other kinds of professional things. They're on panels and give papers." In fact, the majority of the faculty members mentioned publishing in one form or another in their definitions of successful English students. The highest mark of success, in one faculty member's view, was that the student "not only makes it through the program but gets placed- you know, gets the job, a good job." In other words, these faculty members viewed success as something external to the program, much like other highcompleting departments. One individual made this view explicit: "The real test of success is on the outside-employment or publication."

A major part of finding "a good job" is learning how to balance the many duties of a faculty member including, in particular, teaching. One individual observed that successful students "have a handle on their teaching. They've developed strategies to manage the demands of undergraduate courses and learned how to deal with grading and so forth so that they'll have time for their own work." Taken together, these faculty members are highlighting the many aspects of professional socialization, certainly a necessary part of finding and securing academic positions (Austin, 2002; Clark & Corcoran, 1986). Illustrating this idea, one faculty member asserted, "A successful graduate student is one who functions as and sees herself or himself as not simply a student but a candidate member, an apprentice member of this profession."

Low-Completion Departments

In contrast, are the three lowest completing departments in this study: mathematics, engineering, and computer science. Significantly, these disciplines in other national studies are generally among those with the highest completion rates. This institution's Mathematics Department had a 37.6% completion rate, computer science had 38.4%, and engineering had 17.6%. In contrast, science, technology, engineering, and mathematics (STEM) departments' completion rates in national studies range from 50% to 82% (Bowen & Rudenstine, 1992; Nerad & Cerny, 1993; Zwick, 1991). Biglan's (1973) model of academic disciplines classifies all three disciplines as hard nonlife disciplines, with computer science and engineering as applied fields and mathematics as a pure field.

Computer science and engineering. Computer science and engineering at this institution share many traits. A high percentage of its students and faculty are from Asia and India; thus, doctoral students in these departments must often deal with language barriers and the need to secure funding to remain in the country. Many faculty members in both departments attribute their low completion rates to two things: (a) a comparative lack of university funding, which translates into few teaching assistantships for graduate students and few grants for faculty; and (b) a highly competitive global job market, which means that international students who are struggling financially can frequently be lured into industrial jobs.

Over the past 20 years, the Engineering Department has typically admitted approximately 15 new doctoral students each year, and the Computer Science Department has admitted, on average, 18 new doctoral students annually. When discussing the concept of student success, however, faculty members in these departments frequently diverged from the topic to speak about the difficulty experienced by faculty members. Faculty members were, in general, more inclined to talk about their own issues and concerns than those of students.

To the extent that the discussion could focus on students, however, success for doctoral students in these two departments equated to having high intelligence and ambition. One engineering faculty member, identified "intelligence" as the most essential characteristic. "They have the preparation and background to do the research." He similarly continued, "They're sharp. They're motivated. If they're not sharp, it's very hard for them to get into the level of research needed. If they're not motivated, even if they get a Ph.D., they will not be really willing to go even further." Another faculty member in engineering remarked, "These are students that are self-driven. They work very hard; but I think more, they are very smart."

Computer science faculty saw similar traits in their successful doctoral students. One faculty member commented, "'Successful' probably meets several qualities: intelligence, preparation, required background of training, knowledge, the desire and motivation to get it done, and the academic skill." A second faculty member echoed: "I would say a successful student by our department's standards is someone with a strong background in a traditional core computer science." Like other departments in this study, then, success in engineering and computer science was equated to traits inherent in students before they entered the program, rather than traits they acquired in the program.

Mathematics. The Mathematics Department, in contrast, painted a different but important picture from the engineering and computer science departments. While certainly a lower-completing department when compared to others at this institution and nationally, Mathematics Department faculty did not depict a culture of low completion. Rather, it more closely resembled the culture of the English Department in being very focused on rankings and status and on placing its students at "good" institutions. The Mathematics Department at this institution awards its students full funding for several years, always in the form of teaching assistantships, and admits approximately 18 new doctoral students each year.

For the mathematics faculty, success for their doctoral students meant securing a good position in academia after graduation. Key traits were publishing and having the drive to "work very hard." It is interesting to note, however, that the only faculty member in the entire study who equated success to actual degree completion was in the Mathematics Department. He remarked, "I would say the most successful student is the one who gets the doctorate, I think."

In regard to publishing and the job market, one mathematics faculty member commented that a successful student is "someone who is actually able to get a publication," which would then lead to a "good post-doc and a good position at a university." The department chair summarized: "There are different kinds of success and the definition for success for the department changes to some extent based on what the pressure is from the departmental competition. The kind of success this department is looking for most today is a successful research career after graduation. We would like to see all placed into nationally competitive groups or at least post-docs." As for the ability and drive to "work hard," these faculty members agreed, though phrased variously, that "it takes, number one, the desire to succeed and the corresponding ability to work hard in the program." Another commented that the most successful students "have to be willing to work very, very hard." In this way, this department's faculty attributed success to an innate ability to work hard-which is a trait inherent in the admitted student's personality-paired with the external element, after the program's completion, of the job placement.

CONCLUSIONS

I interviewed 38 faculty members in seven departments at one researchextensive institution to better understand their conceptualizations of success in doctoral education. I chose the academic department, which is "where the imperatives of the discipline and the institution converge" (Clark, 1987, p. 64), as the focus of the exploration. Analysis of the faculty members' comments made it evident that both disciplinary and institutional contexts significantly influence how they understand and articulate success for their doctoral students.

Clark (1987) also remarked, "The disciplines have their own histories and trajectories, their own habits and practices" (p. 25). In this study, disciplinary culture was apparent in faculty perceptions of doctoral student success. For instance, differences between the disciplines of communication and oceanography in how they organized themselves and their research (i.e., individual versus collaborative) were evident in their responses about doctoral student success. While the analysis of the study was guided by the concept of disciplinary culture (Becher, 1981; Biglan, 1973a), the conceptualizations of success in this study discussed by the faculty members often shared not only their disciplinary grouping but their completion rate as well. For example, both communication and psychology faculty discussed the need for self-direction in successful doctoral students while both computer science and mathematics faculty mentioned the ability to work hard as a key to success. It is perhaps the difference between tangible and intangible qualities that defines these departments' conceptualizations and, therefore, their completion rates. In other words, it may be more difficult to define what constitutes "intelligence" or "working hard" than to define being independent or self-directed. Independently structuring and managing a study is much more clearly definable than "working hard" on the research. It may be that the students in these low-completing departments are struggling to meet undefined and intangible conceptualizations of success.

Conversely, some of the commonalities found in this study between departments owed a great deal to institutional influence. For example, while both English and mathematics faculty interviewees discussed the importance of securing a good job after graduation as "success," this commonality may have more to do with the institution's focus on rankings and status than any disciplinary influence. Further, the almost-mirror responses in computer science and engineering departments reflected not only completion rates but also the faculty's view that the institution was failing to meet crucial needs for funding and support. This finding is particularly important when contrasted with the English Department which receives additional funding from the university for its graduate students. Certainly funding does not tell the whole story of completion and non-completion at this institution (or at any other), but the faculty's perception of the importance of funding raises the question of whether every department could have "successful" students if only it received more institutional resources.

Another consideration is the cultural differences among the responses given by the faculty members. The affection for students manifest by faculty interviewees in the Communication Department, the university's highest completing department, contrasts with the almost dismissive comments by computer science and engineering, the lowest completing departments. Of course, these differences may arguably characterize the paradigmatic assumptions of these disciplinary cultures (Biglan, 1973b); but, interestingly, only oceanography faculty articulated the need to help others and seek help from them, even though other departments such as engineering and computer science often also involve high levels of what Biglan referred to as "social connectedness" or the need for collaborative cultures for laboratory and group-focused research.

Finally, the disciplinary differences in regard to Biglan's (1973b) and Becher's (1981) classifications were also noteworthy. As Table 2 shows, the majority of the high completing departments at this institution were in soft pure while the low completing departments were all hard nonlife disciplines. The only exception was oceanography, a department with one of the highest completion rates but which is categorized as a hard-applied life discipline. While difficult to attribute differences in completion rates merely to disciplinary cultures, it is nevertheless remarkable to see the hard/soft differentiation in completion rates at this institution. Unlike Biglan, however, the analysis of these departments did not result in a clear demarcation by pure and applied in regard to completion or concepts of success, nor between nonlife and life disciplines. Perhaps it is merely the orientation of the faculty members toward their students that ultimately resulted in the differences in completion and in departmental definitions of success; certainly, those in the highest completing departments were the most vocal about their students' well being and personal success. For example, in the Communication Department, faculty spoke very highly and warmly of their students, often referring to a sense of "family" and "camaraderie" in the department. In the Oceanography Department, the faculty talked about fostering a sense of "wholeness" in their students and helping them find their life's "passion" rather than simply completing a degree.

IMPLICATIONS

Taken together, the responses from the faculty members in these seven departments represent not only disciplinary but institutional views of success. It is therefore important to consider that much of the research conducted on doctoral education has been based on what occurs in the most prestigious and elite U.S. institutions (e.g., Bowen & Rudenstine, 1992; Nerad & Cerny, 1993; Nettles & Millett, 2006). This is not to say that such studies are unimportant or invalid but rather that they do not paint a complete picture of doctoral education in the United States. Known as Tier 3 and Tier 4 institutions, institutions like the one examined in this study are generally not ranked among institutions in the top 100 of U.S. News and World Report (2007) or among the Ivy League institutions. These rankings, however, should not diminish these institutions' role in graduate education in the United States. Indeed, these third and fourth-tier institutions accounted for 8,502 of the doctorates conferred in 2005, nearly 20% of the total conferred that year (Hoffer et al., 2006). Therefore, by not considering the voices of those within these lesser-ranked institutions, the literature has failed to address the holistic nature and institutional diversity of doctoral education in this country.

The findings from this study are important in several ways. First, from a policy and practice standpoint, it is important to understand how attrition and completion may be influenced by the department's cultural perspectives of what it takes to succeed. This finding was particularly evident in discussions of admissions procedures and expectations of students in each area. Departments and institutions must engage entering students in explicit discussions about these expectations. In addition, faculty and administrators should ensure that coursework and research opportunities align with these expectations. For example, if students are expected to be self-directed as a measure of success, structuring research opportunities to allow them to experience this self-directedness is important. Similarly, if students are expected to publish their work, aligning course assignments and research opportunities so that students engage in the publication process is also necessary. Another strategy may be matching incoming students in a mentoring-type relationship with more advanced students who exhibit these traits and habits.

Second, it is important to better understand the structure and procedures that may facilitate or impede students' success in a particular discipline. Certainly, if departments expect their students to obtain "good jobs" upon graduation, orienting professional development opportunities and mentoring toward the job search process and job market is imperative. Moreover, if faculty members expect particular behaviors from students, then faculty members, as mentors and role models for these students, should exhibit these behaviors themselves. One example might be the concept of balance in the English faculty members' conceptualizations of success. If students can observe successful examples of balancing teaching with research, they may be better able to demonstrate it themselves.

Third, the concept of funding must be explored in both institutional and departmental contexts. Psychology and English faculty members were adamant about the relationship of funding and high completion, much as computer science and engineering faculty members were in regard to low completion. Certainly, funding makes a difference in a student's stability throughout the graduate program, and opportunities to conduct and therefore disseminate research may be linked to his or her funding (Abedi & Benkin, 1987; Bowen & Rudenstine, 1992); but the link between funding and student success must be considered on more comprehensive levels. For example, one psychology faculty member made it clear that her department's high completion rates stemmed from the fact that they had more money to offer and therefore could choose the "best" students. Does success in doctoral education rely more on the department or on the individual student? Put another way, would this institution's psychology doctoral students be "successful" anywhere? For institutions like this one, which are not among the most elite or most selective, funding can be a slippery slope. If the institution's mission is to serve its state (in the case of a land grant university) or to serve particular populations (in the case of a historically Black university), does institutional selectivity really equal successful students? Aligning funding and resource allocation to institutional mission in this regard would be particularly important, although none of the faculty interviewees mentioned it.

Finally, from the perspective of research, this study advanced the exploration of cultural constructions of success in doctoral education; however, it had four limitations. My status as a faculty member may have played several conflicting roles in the study's limitations. My disciplinary and departmental affiliations were different from those included in the study, which may have impeded a true disciplinary understanding of the cultures at work and limited my access to a true account of these cultures. Second, this study was limited to a few departments at one institution. While the socio-cultural make-up of the department's students was part of the larger study, the faculty interviewees were those with whom the majority of students in the department worked. Future research, therefore, should explore how faculty and student perceptions of success align. Third, comparisons among other institutions and other disciplines should also be explored, as should differences among race, gender, and socioeconomic status. Fourth, this institution's completion rates were quite different from those cited in national studies (Council of Graduate Schools, 2008), meriting further exploration of the intersection between discipline and institutional setting. With these understandings of success in doctoral education, higher education may be better able to structure for success among all of its students in the future.

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Appendix

APPENDIX

1. Tell me a little bit about yourself-your background, how you came to academe, how you became a faculty member.

2. When and where did you complete your doctorate? How long did it take you at the time?

3. What do you feel your role is in relation to graduate studies in the department?

4. What type of training or orientation did you receive to advise doctoral students?

5. How are faculty informed about department and graduate school requirements, deadlines, guidelines, etc.? Do you feel these guidelines are followed?

6. What are your departmental standards for milestones such as the program of study, comprehensive exams, and the dissertation phase?

7. Tell me about a "typical" doctoral student in your department. How does he or she begin, what is the general course followed, etc.?

8. How would you describe a "successful" doctoral student in this department? Would that description change in other departments, and if so, how?

9. What about the opposite? What exactly do you see as the issue or problem for students who did not complete the program? What made them "unsuccessful"? Do you feel that the result would have been the same if the student were in another department?

10. In what ways does your department assist graduate students in being successful?

11. In your opinion, what else could be done to assist graduate students that isn't already being done?

12. Do you have anything else to add about your impressions of graduate students in your department?

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