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“What’s too much and what’s too little?”: The Process of Becoming an Independent Researcher in Doctoral Education

The student is urged to be independent in scholarly endeavor. Training an individual to be independent in an authoritarian social structure has a potential paradoxical quality that is not always recognized by the agent. In effect, professors say to students, “Become an independent thinker; be critical, innovate, and question the established body of knowledge; but remember, we will be the sole arbiters of what you must do and how well you go about it.”

—Rosen & Bates, 1967, p. 81

The transition to independent scholar is part and parcel of the doctoral education process (Council of Graduate Schools, 2005) as well as an integral part of the socialization process that occurs while in graduate school (Weidman, Twale, & Stein, 2001). This article details the journey toward independence, rooted in the socialization process of graduate school, as experienced by 40 doctoral students in the disciplines of chemistry and history at two institutions. I begin with an overview of the process of independence as experienced by students, including a discussion of socialization in graduate school, the guiding framework for the study and its analysis. I then discuss the methods of the study, followed by the study’s findings, conclusions, and implications for policy, practice, and research.

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Independence in Doctoral Education

Brenda, a doctoral student in history, has finally completed and defended her dissertation. She is happy to be done, but she is also exhausted. It has been a long and difficult 4 years, she says, and it seems to her that the dissertation process was what made it most difficult. Brenda struggled greatly with the transition that she made during the dissertation stage of her program—in particular, the transition to an independent researcher. In her mind, this was a drastic change from the experience she had throughout her years of previous schooling, and her struggle toward independence was magnified by the lack of assistance she felt she received from her advisor. Brenda describes the process involved in this transition from being a student largely dependent on the professor for guidance to one that is almost entirely independent. She explains what may be considered the ultimate paradox involved in doctoral education: “If someone holds your hand too much you’ll never learn to think for yourself, and if someone doesn’t hold your hand enough you’ll fall flat on your face.”

Michael is near completion of his dissertation research in chemistry. He explains the frustration that he has felt trying to find his independence within his doctoral program. At times he has felt abandoned by his dissertation advisor en route to completion. Michael advises new, incoming students, “If you are a very independent, self-starting person and you really, really think you can do things on your own, then that’s fine. But most people need a little bit of guidance from their advisors. So I guess there’s a fine line—what’s too much and what’s too little?”

The transition necessary to become an independent scholar and researcher, while not an easy one for Brenda or Michael, is nevertheless an inherent part of doctoral education in the United States. Indeed, the Council of Graduate Schools clearly delineated the independent nature of doctoral education:

Beyond some beginning course work, the experience of each Ph.D. student is individualized and varied. Ph.D. students bear a greater responsibility for defining the scope of their educational experience than do other students. Further, the degree requires initiative and creativity, and the award of the degree depends upon the individual performance of a student in completing original research in the area of study. (2004, p. 4)

The individualized nature of doctoral study and the need for greater responsibility and creativity on the part of the student are factors that may lead to much of the frustration involved in the doctoral process. This frustration may ultimately lead to students’ attrition (Council of Graduate Schools, 2004), a problem that has been cited as ranging

from 40% to 70% of the doctoral student population (Berelson, 1960; Bowen & Rudenstine, 1992; Nettles & Millett, 2006; Noble, 1994; Tinto, 1993).

For many students, the transition to independence is particularly difficult, in that it is a markedly different experience from their prior education. For example, doctoral students transition from being consumers of knowledge, such as they have experienced within the classroom, to creators of knowledge through their original research (Bargar & Duncan, 1982; Delamont, Atkinson, & Parry, 2000; Egan, 1989; Lovitts, 2001, 2005; Rosen & Bates, 1967). In addition, students transitioning from more intimate educational settings, such as small, private institutions, may find the transition to independence even more difficult since they are generally accustomed to working closely with faculty members (Gardner, 2005). Disciplinary cultures also play a part in a student's feelings of isolation in this transition toward independence. The research enterprise, in particular, varies greatly from discipline to discipline; whereas a scholar from the sciences will generally work collaboratively with others, a scholar in the humanities will typically work in isolation (Biglan, 1973; Clark, 1987; Golde, 2005). This culture of collaboration, or lack thereof, has a great effect upon the doctoral student's transition to independence. The Council of Graduate Schools asserted:

Researchers often note that the degree of social interaction characteristic of the sciences, where an apprenticeship model, research teams, and a laboratory environment prevail, can provide a more supportive environment than the dyadic relationship, individual research, and solitary time that those in the humanities often must endure. (2004, p. 16)

As the culminating activity and product in the transition to independent scholar, the dissertation often looms as the most difficult time for many students, especially in fields where this activity is meant to be conducted in isolation (Council of Graduate Schools, 2004). According to Katz, the purpose of the dissertation is to demonstrate the student's "ability to research a major intellectual problem and arrive at a successful conclusion independently and at a high level of professional competence" (1997, p. 6). The process of writing the dissertation is in itself a transition toward independence, as the student must first decide upon a topic, move forward in creating structure to complete the research, and finally write the actual thesis (Katz, 1997). Indeed, the dissertation has become the topic of multiple self-help books in order to assist students in its completion (e.g., Bolker, 1998; Bryant, 2003), as many students have found this particular part of the transition to independence to be the most difficult (Katz, 1997; Lovitts, 2001).

Taken together, these different aspects of the doctoral education experience contribute to the socialization of the students to the research and academic endeavor, with the projected result being that the student becomes the independent scholar that generally defines the PhD degree (Council of Graduate Schools, 2005). Golde described the process of graduate school socialization as one “in which a newcomer is made a member of a community—in the case of graduate students, the community of an academic department in a particular discipline” (1998, p. 56). However, socialization in graduate school is also a socialization into multiple cultures (Austin, 2002). Golde continued, “The socialization of graduate students is an unusual double socialization. New students are simultaneously directly socialized into the role of graduate student and are given preparatory socialization into graduate student life and the future career” (1998, p. 56). Socialization is integral to the success of the doctoral student and to his or her progression through the degree process (Turner & Thompson, 1993), as it is the process through which an individual learns to adopt the values, skills, attitudes, norms, and knowledge needed for membership in a given society, group, or organization (Bragg, 1976; Merton, 1957; Tierney, 1997; Weidman et al., 2001). Indeed, unsuccessful socialization contributes to the decision to depart from the degree program (Council of Graduate Schools, 2004). Independent scholarship is therefore part and parcel of the socialization process in doctoral education, because it is what defines the degree and its potential recipient.

One such theory of graduate school socialization is that of Weidman, Twale, and Stein (2001), based upon the earlier work of Thornton and Nardi (1975). Weidman et al. described graduate student socialization in four developmental stages: anticipatory, formal, informal, and personal. The anticipatory stage occurs primarily as students enter the program and need to learn new roles, procedures, and agendas to be followed. These students will tend to seek information and listen carefully to directions. This stage can be described as the student becoming “aware of the behavioral, attitudinal, and cognitive expectations held for a role incumbent” (Weidman et al., 2001, p. 12). In other words, in this stage the student comes to understand the roles and expectations that are expected of other graduate students. The formal stage is characterized by the graduate student observing roles of incumbents and advanced students, while learning about role expectations and how they are carried out. Students in this stage are primarily concerned about task issues, and communication at this stage is informative through course material, regulatory through embracing normative expectations, and integrative through faculty and student interactions. The informal stage is described as the

stage in which “the novice learns of the informal role expectations transmitted by interactions with others who are current role incumbents” (p. 14). At this time, the graduate student receives behavioral cues and observes acceptable behavior, thereby responding and reacting accordingly. The students’ cohorts are those with whom most interaction occurs, but the student will begin feeling less studentlike and more professional at the informal stage. The final stage, the personal stage, is characterized as the time when students’ “individual and social roles, personalities and social structures become fused and the role is internalized” (p. 14). During this final stage, the graduate student accepts a value orientation of the specific disciplinary culture and adjusts his or her behavior to meet the expectations that exist in this particular culture. The conflict that exists between the former graduate student identity and the new professional identity is resolved, and the graduate student will be able to separate from the department in search of his or her own identity.

Weidman et al.’s (2001) theory on socialization is a helpful model for understanding the processes involved in graduate school, but it nevertheless possesses certain limitations. Its monolithic treatment of graduate education neglects to see the variation among disciplinary and institutional cultures. Additionally, no empirical research has been conducted to investigate socialization models such as this one, nor does any existing research specifically examine the transition to independence. This study investigates the socialization experience of 40 doctoral students at two institutions to better understand how the transition to independent scholar is realized.

Research Design

The findings in this article resulted from the analysis of a larger study on doctoral student socialization in the disciplines of chemistry and history, which sought to understand the socialization processes of doctoral students throughout the different aspects of the doctoral program. Two institutions were chosen for inclusion in this study: one public, land-grant institution, hereafter referred to as “Land Grant University,” and one large, Association of American Universities (AAU) member institution, or “Flagship University.” Both institutions are classified as Doctoral Extensive in the Carnegie Classification (McCormick, 2001) and are state-supported universities located in the same state, albeit in different geographic locations. The institutions and students in this study are given pseudonyms in order to protect the identity of both the participants and the institutions.

The study's design and analysis were guided by the theoretical conceptualization of graduate school socialization. As defined earlier, socialization encompasses the process of learning about a particular culture and its attributes; within this study, this culture includes not only the culture of academia but also the cultures of the institution as well as the particular disciplinary cultures in which the students study. 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, the design of this study was purposeful in choosing not only two distinct institutional cultures and contexts (Land Grant and Flagship Universities) but also the two distinct disciplinary cultures of chemistry and history. Chemistry and history were chosen, in particular, for their disciplinary categorizations given by those such as Biglan (1973) and Becher (1981), as chemistry represents a culture of the hard sciences while history represents that of the humanities. Choosing two distinct disciplinary cultures assisted in better understanding how the socialization process was constructed and varied across students' experiences.

The study's participants included 40 students, broken down by 10 students from the disciplines of chemistry and history at both of the institutions. The participants included 14 males and 26 females (see Table 1), and with the exception of three Asian Americans and one African American, all other participants were Caucasian.

Identification of study participants was conducted through initial contact with the department chairs and then through the graduate studies coordinators for all departments, who coordinated contact with potential participants. While Land Grant University's participants were garnered through direct contact with the students, Flagship University facilitated recruitment of participants through departmental listservs in which the students contacted me directly for participation. Final participants for

TABLE 1
Breakdown of Graduate Students Interviewed by Gender, Discipline, and Institution

Gender	Institution 1 Land Grant		Institution 2 Flagship	
	Chemistry	History	Chemistry	History
Male	5	3	2	4
Female	5	7	8	6

the study were chosen in order to ensure participation in all years or phases of the degree programs (thereby reflecting the developmental nature of the socialization process), gender representation, as well as diversity by enrollment status.

After obtaining human subjects approval and consent from each participant, interviews were conducted. Each interview lasted approximately 30 to 90 minutes and was guided by a semistructured protocol. The protocol asked students to describe their impressions about different programmatic and interpersonal aspects of their doctoral experience, again therefore reflecting the developmental and socializing nature of the doctoral degree program. For example, questions were asked about the students' experiences beginning with their decision to enroll in graduate school, throughout the coursework, examination, and dissertation process. Questions also addressed relationships with others in the program, such as faculty and peers, and the challenges faced and the support received throughout their experience. While the transition to independent scholar was never directly asked about, it nevertheless emerged among all of the participants' responses. Rather than solely asking students at the end of the program to recall their experiences at particular points in their program, the sampling technique allowed for students' voices to be heard at the particular time in which they were located. This technique thereby allowed for a better understanding of the time or phase in which the students found themselves and the particular challenges and issues faced during each time, again pointing to the developmental nature of the graduate school experience.

Interviews were taped and transcribed for main ideas surrounding the theoretical conceptualization of socialization. Analysis of the data was conducted through the use of 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). The steps of the constant comparative method, according to Glaser (1978) include: (1) Begin collecting data; (2) Find key issues, events, or activities in the data that become main categories for focus; (3) Collect data that provide many incidents of the categories of focus; (4) Write about the categories explored, keeping in mind past incidents while searching for new ones; (5) Work with the data and emerging model to discover relationships; and (6) 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. This study utilized Glaser's steps in data analysis, which allowed for emergent themes to develop from the data and provided a means by which

large amounts of data were compressed into meaningful units for analysis. Trustworthiness of the data collected and its subsequent analysis was obtained through member checking of two students from each of the four departments studied as well as peer debriefing, wherein two colleagues were given representative transcripts for their analysis and verification of themes.

The conceptual lens of socialization also guided the analysis of this study. In essence, socialization theory provided a lens through which to view the research question and the findings from the study. Through this analysis, emergent themes on the issues and experiences of the students in this study were sought from the interviews conducted. Mortimer and Simmons described socialization as a two-fold process: "From the perspective of the group, socialization is a mechanism through which new members learn the values, norms, knowledge, beliefs, and the interpersonal and other skills that facilitate role performance and further group goals." They continued, "From the perspective of the individual, socialization is a process of learning to participate in social life" ((1978, p. 422). Within this context, the many facets of the doctoral experience are integral parts of the socialization process. In regard to independence, socialization is seen as the mechanism through which the student learns how to become an independent scholar through the values, norms, knowledge, beliefs, and interpersonal skills espoused by the particular context or profession. This understanding facilitated the development of the research design and the subsequent analysis of the data. Seeking to understand how socialization influences the path to independent scholar, the constituencies' attitudes about particular components in the degree programs, and their overall beliefs about doctoral education were relevant to the study throughout its entirety.

Findings

From the resulting data and subsequent analysis of the interviews conducted with the 40 doctoral students, an understanding of the transition to independent scholar throughout the graduate school process emerged. While the topic of independence was not part of the interview protocol for the study, this topic nevertheless emerged in each of the participants' discussions about their experience. This understanding of independence was garnered through the lens of socialization, as these students became socialized to their graduate programs as well as to the larger professions into which they were planning to enter (Austin & McDaniels, 2006; Golde, 1998). In particular, the transition to independence through the socialization process was articulated through three phases. These phases

emerged directly from the analysis of the interviews conducted with the participants, who were chosen for their representation in different years or parts of their doctoral education. The tasks, skills, and relationships that these students described illustrated three distinct turning points in their experience. Therefore, while students represented multiple institutions and disciplines, they nevertheless shared certain experiences, translating into these three phases of socialization to independence. These three phases reflect existing literature about the developmental nature of the doctoral experience (Austin & McDaniels, 2006; Lovitts, 2001; Nerad & Miller, 1996; Tinto, 1993; Weidman et al., 2001), while also contributing a conceptualization of the experience focused specifically on the transition to independence throughout the degree program.

The first phase consists of the time of admission to the program through the beginning year of coursework. The second phase of the doctoral program includes the time spent mainly in coursework until the examination period, and the third phase marks the culmination of coursework through the dissertation research, or the period generally referred to as candidacy. This conceptualization is an addition to the current body of knowledge, as the proposed model not only addresses the phases of the doctoral experience from the programmatic perspective in regard to requirements such as coursework, examinations, and the dissertation but also speaks to development in relational perspectives such as changing relationships with peers, faculty, and the larger field of professionals. Furthermore, personal identity development is also accounted for in this model. The students in this study all discussed their own personal growth and identity shifts in regard to their changing experience and their journey toward independent scholar. Therefore, this conceptualization of the doctoral experience focuses on the socialization experience of the students in regard to relationships and personal growth, rather than solely programmatic turning points. For example, phase one includes not only the experiences leading up to coursework but also the relationships that students begin to form with their peers and faculty members. At this same time, students are beginning to see themselves "as graduate students," understanding the new experiences and relationships expected of them within the graduate school context, thereby changing their personal perspectives while also changing their interpersonal relationships.

The phases are described in order to allow fluidity in transfer from one phase to another. Therefore, this model is not static, suggesting that events or interactions only occur in one phase, but are fluid in nature, often occurring in several phases or times in the degree program. For example, while the model describes phase II as the time when the student

forges relationships with peers and faculty, certainly these relationships begin to form at the earliest moments in the student's experience. This model is primarily intended to give structure and focus to the multiple events and relationships that occur during the doctoral program, thereby facilitating a better understanding of the student's experience at particular turning points. In other words, the model is a tool for structuring the programmatic aspects of the student's experience along with the interpersonal and developmental experiences that also occur. Students by phase are presented in Table 2. The following findings detail the model while describing the transition to independence experienced during each phase.

Phase I: Admission

Phase I is described as the time leading up to admission into the doctoral program through the beginning of the coursework experience. This phase generally only lasts a few months, but according to the students in the study it also impresses greatly upon the rest of their program and solidifies their decision to attend one institution over another. Tasks and experiences at this phase include applying to prospective programs and institutions; submitting requisite materials such as GRE scores to the programs; visiting programs; meeting and talking with faculty members, staff, and graduate students in these prospective programs; making a final decision in regard to the program of choice; moving to the new location; and attending orientation and the first few months of class. At this phase students are also meeting many of their new colleagues and faculty and settling into their roles as doctoral students before classes begin. In regard to socialization, this time is integral to the rest of the students' experience and marks what is typically referred to as the period of anticipatory socialization (Austin & McDaniels, 2006; Lovitts,

TABLE 2
Breakdown of Participants by Phase, Institution, and Discipline

Phase	Institution 1 Land Grant		Institution 2 Flagship	
	Chemistry	History	Chemistry	History
1	3	3	3	3
2	3	2	3	3
3	4	5	4	4

2001; Merton, 1957; Tierney & Rhoads, 1994; Weidman et al., 2001). From a personal and interpersonal perspective, these students are forming relationships and key understandings of what it means to be a doctoral student and a future professional from these initial experiences. While there was not necessarily great variation between the students' experiences in chemistry and history in phase I, these students are nevertheless learning about the expectations related to their particular field during this time.

In regard to the transition to independence, phase I marks the time when the student now becomes a graduate student, transitioning from the undergraduate experience to the more independent culture of graduate education. This independence first makes an appearance to the student upon the move to, what is for many, a new city. Stacy, a chemistry student from Flagship, said, "It was very overwhelming transplanting myself halfway across the country, basically starting my life by myself." Scott, a chemistry student at Land Grant, was discouraged by the process of locating an apartment on his own while being in another city. He said, "Trying to figure out where to live here was my biggest concern."

For Wendy, a chemistry doctoral student at Flagship, the most difficult part of the transition to graduate school was the shift in expectations of her work and her ability to be independent. She remarked, "The shift from doing something for somebody else, like turning in your assignments to get a certain grade whereas in graduate school it's really about what you know." She continued, "You know that you're going to need to know this one day so it becomes a lot more important for you to do well and it's a lot more stressful and you spend a lot more time making sure you do a good job." Melanie, a history student at Flagship, similarly commented,

The sort of independence that comes with being in graduate school was all new to me. I came from a very personalized education format, you know, you worked one-on-one with people all the time, there was a lot of collaboration and this is a much more independently based academic program where you do your own work and a lot of your own planning.

A great number of students interviewed expressed similar concerns, especially in regard to making the transition from private liberal arts colleges to these larger state institutions. Indeed, approximately half of the students in the study came from private liberal arts undergraduate backgrounds. It was therefore telling to hear how many of them felt overwhelmed by the completely new atmosphere of a large university and large department. Lovitts (2001) discussed similar findings with her

study, commenting that the anticipatory socialization that these students experienced in their undergraduate programs did not align with the actual experiences they encountered once in graduate school, thus resulting in less than satisfactory experiences later in their programs.

Phase II: Integration

Phase II encompasses the time after which the doctoral student begins his or her actual program through the attainment of candidacy status. This phase includes not only the coursework but also the other parts of integration into the program, including social integration with peers and faculty, the eventual choice of an advisor and committee, preparation for examinations, and, for many students, the experience of an assistantship. Again, the relationships formed in this phase and the understandings gleaned from their experiences are integral to the student's current success as a doctoral student and future success in the particular discipline. Altogether, these formal and informal gateways through which the student must pass mark important parts of the overall socialization process (Rosen & Bates, 1967).

In phase II, students are interested in forming relationships with their peers. Peer relationships in the academic department are an important part of the socialization process in graduate school and are central to satisfaction and retention (Austin & McDaniels, 2006; Baird, 1990; Boyle & Boice, 1998; Lovitts, 2001). Lovitts stated, "Other graduate students make an important contribution to individual students' learning experiences. They are a significant source of intellectual stimulation and social support both inside and outside the classroom" (2001, p. 126). In the current study, this social integration and relationship building occurs as the students move through coursework and their TA positions. Nyquist and Wulff (1996) and Austin and McDaniels (2006), in particular, discussed the development of TAs as they transition toward independence in their teaching, often relying on their peers for this development. In the current study, the students build friendships and bonds with their peers through these experiences, which they consider one of the most important and valuable parts of their graduate experience. Melanie, a history student at Flagship, commented on how her TA experience assisted her in developing relationships with her peers: "It helped a great deal when you're a TA because you sort of have a built in cadre of people that you interact with because you see them at training, you share offices with them, you see one another in classes, and you see them once a week for two hours." These relationships are extremely important to the students. Many of them made comments like Steve, another history student at Flagship:

They're at the same level you are, they've experienced some of the things that you're experiencing now, or they've experienced it before so they can tell you what to expect and you can interact with them. There's not that social distance that exists initially between graduate students and faculty members because of the difference in status. I immediately fell upon other graduate students as a sort of support group.

Eric, a chemistry student at Flagship, similarly commented, "The most important people [when I began] were my fellow students." Repeatedly, the students in the study commented on their peers, the support they received from them, and how important these relationships were to them throughout their programs. The support the students received from their peers was mentioned over and above any other type of support, even that of their advisor. Indeed, the literature on socialization discusses the importance of peers in graduate student success, as this relationship is often more influential than that the students have with the faculty (Bragg, 1976; Van Maanen, 1978; Weidman et al., 2001).

A great deal of informal social interaction with peers also occurs in each of the departments studied. Within the chemistry departments, this interaction is centered on the lab group in which the student is situated. These students spend large amounts of time with one another, often reaching 60 to 70 hours a week. The interactions these students have with one another are one of the most important parts of their overall graduate experience, with many of them commenting on the mentoring they received from their more advanced peers in their labs. Lynn, a chemistry student at Flagship, remarked, "The main resource [for me] has been the students who are one year ahead of me, being able to go to them and relying on their experience." The work in chemistry, as well as the relationships these students form, is highly group-centered and collaborative. At both institutions, nearly every chemistry student commented upon their reliance on their peers for assistance and support. Rebecca, a first-year student at Land Grant, told me, "One thing that has been helpful, especially in my first few weeks here, is talking to the other grad students in the group. They have been through everything I'm doing now so they can help me out in that way."

Doctoral students are concurrently developing relationships with their faculty in this phase. It is during this phase when most students will choose a faculty advisor and committee. Through the courses they take with faculty members and through informal interactions, the students ultimately choose the people with whom they will have extremely important relationships for the remainder of their programs and beyond. This relationship, according to Melanie and many of the students in the study, is "the most critical relationship you'll have in this program." It was not

surprising, therefore, when students expressed concern about the lack of opportunities to interact with the faculty during this phase. Steve commented, "I think there ought to be some greater interactions initially between students and faculty. I mean, I still run into faculty members I don't even know." Sarah had similar concerns: "I felt very distant from the faculty; I still do. The faculty aren't really involved with the new students unless the new students really seek them out, and I think that sends a really negative message to new students."

In each of the departments, the time and process for choosing an advisor is completely different. Commented on frequently in the literature and by the students in the study as one of the most important decisions a graduate student will ever make (Bargar & Mayo-Chamberlain, 1983; Clark & Corcoran, 1986; Fischer & Zigmond, 1998), choosing an advisor and making connections with faculty is an important part of the socialization process in graduate school (Lovitts, 2001). For doctoral students, the correct choice of an advisor can result in retention, higher satisfaction in their degree programs, and successful careers in the future (Lovitts, 2001; Clark & Corcoran, 1986). Advisor choice in the departments studied can range anywhere from a decision made as the student is applying, in the case of the history department at Flagship, to a decision made later in the first year of the program, as in the chemistry department at Flagship. As per the culture in chemistry, the choice of advisor is not merely the choice of one individual and subject area with whom the student will work for the remainder of the graduate program, but a choice of the peers with whom he or she will also work. Therefore, while the choice of an advisor is a major decision for all graduate students, it is certainly a more daunting one for the chemistry students in this study because they choose not only their advisor but their peer group as well.

Relationships with faculty members are a matter of great importance to the history students in this study. While the chemistry students remarked more often about their reliance upon one another, the history students expected and demanded a certain quality of relationship with their faculty that is characterized by a close, personal relationship in which the student and advisor see each other on a regular basis. While many of the history students also discussed their dependence on their peers for guidance, it was their general expectation that their faculty and advisors would supply the main advice and guidance for their experiences. Correspondingly, students in both of the history departments were distraught by the lack of contact with their faculty and advisors, particularly during sabbatical leaves. Students repeatedly commented that contact time was a major influence on a positive relationship with

an advisor and that a supportive advisor was often more important than having an advisor with a particular research interest and that, furthermore, without such a relationship, their entire graduate education experience is difficult. For example, Sarah, a Flagship history student, remarked, “Try to be as careful as you can because in the end, no matter how exact your research interests may be, if you can’t maintain a good personal relationship, you’re going to be miserable.”

In regard to the transition to independence, phase II is also about learning to manage and balance the many responsibilities of graduate school—something that many students are not prepared to do by their undergraduate experience. Melanie, a phase II history student at Flagship remarked, “You just kind of learn . . . you’re going to have to learn what to do and what not to do.” Paul, a chemistry Land Grant student in phase II, similarly commented about learning to balance his TA duties with his other responsibilities: “Going through that TAship was kind of a good thing because it kind of sets down a work ethic and also sets up a routine and. . . . it’s your initial pace of the job, so to speak.” Amber, a new doctoral student in history at Land Grant, talked about balancing the workload in her courses: “The first few weeks were really stressful because you’re trying to figure [it all] out. You get all the stacks of reading and you try to figure out how in the world you’re ever going to read this and adjust.” Scott, a second-year student in chemistry at Land Grant, commented, “I am figuring out what kind of time I have to commit, how much time I don’t, and how to budget my time.”

Taken together, the experiences in phase II prepare the student to make the “critical transition” to independence that is so often mentioned in the literature. Paradoxically, the relationships the students make with their peers and faculty are those that they typically leave behind in phase III as they transition to their independent dissertation research.

Phase III: Candidacy

After dealing with the structures and tasks of phase II, students move into the final phase of their doctoral experience. Phase III marks the period after which students have passed the examinations, or candidacy status. At this phase, students are focusing primarily on their research and looking toward the future. Programmatic structures in this phase include the dissertation research, generally consisting of an early proposal for research typically completed during the examination process in phase II or a brief prospectus completed soon after the examination process is completed, as well as the actual conducting of the research, the writing of the findings, the preparation for the job search or post-

doctoral appointment, and concluding finally with graduation. Personal and interpersonal development in this phase relate to the students' changing relationships with faculty members and peers, including their orientation toward a more professionally minded self rather than solely that of a student, reflecting the personal stage of Weidman et al. (2001).

The issue of independence is an integral part of phase III. The majority of the students interviewed were unaware of the lack of structure and self-direction required in this phase of their studies, something that many of the students felt unprepared to face. It is perhaps not remarkable that the students in phase III discussed the issue of independence most often in the study, as students at this stage are beginning to work on their research and are transitioning from the more structured and delineated coursework phase that characterized the majority of their previous educational experience. In regard to disciplinary differences, while both groups of students discussed this needed transition to independence, the chemistry students were more apt to talk about their difficulties in making this transition. When we see the more independent nature of research in history as compared to the research group model of chemistry, this transition to independent scholarship may be, in general, more difficult for the chemistry students to make.

Many students, like Stacy, a chemistry student at Flagship, had issues with this newly gained independence and the lack of structure that generally accompanies it. She explained, "I've realized that I'm not good without structure, I don't do well without defined goals. I need concrete things to work toward. I need to find ways to give myself these goals because it's not going to be given to me in the lab that I've chosen." Jenny, another chemistry student at Flagship, felt stymied by the lack of direction given to her at this phase in her program. She said, "There are no expectations for me to do anything, no clear expectations of what I should do." Michael, another chemistry student, explained his realization about the independence needed especially in scientific research: "With research there's no solution manual for the research, there's no one to check it and say, 'Oops, no, you did this wrong here.'"

As these students transition to this level of independence and self-direction, they feel the need to strike the delicate balance with their advisors between being given too much independence and not enough, as Michael earlier stated, "I guess there's a fine line—what's too much and what's too little?" The phrase the students used repeatedly in the interviews to describe the phenomenon of independence versus dependence with their advisors was "hand-holding." Brenda, a history student at Land Grant, explained this delicate balance: "If someone holds your hand too much you'll never learn to think for yourself, and if someone

doesn't hold your hand enough you'll fall flat on your face." She continued, "In order to finish you don't need an advisor who's in your dish all the time, but you need an advisor who's in your dish enough to kick your ass when you're not doing things you're supposed to . . . giving you enough rope to hang yourself but never letting you hang yourself." Karen, another chemistry student at Flagship, also discussed her experience with this delicate balance and her advisor:

He told me recently how I need to become more independent because he wants to train someone who can be an independent researcher, which is great, I love that, but at the same time he completely is micromanaging my work and when I have a different idea about how to do something, he just gets pissed off and ignores me for some number of months and then eventually comes back and still harps on me and gets me to do it his way. He believes he's teaching people to be independent researchers but he does it with his hands around your throat. In the sciences, the advisor has to live through the student because the student is the one who actually does the research, so the advisor's intellectual expression comes through the student. He genuinely wants to train us to be independent researchers and that is his goal but because he can only live through his own creativity—his own creativity has to be expressed through the students—it drives him to really dig his heels into your work.

Lynn, another chemistry student, commented about her transition to independence and the related difficulties she has experienced:

I got a sense that [my advisor] doesn't do any micromanaging but what I've learned is that he's almost too far the other way . . . which is great because then I can run my life the way I need to, but at the same time there are times when you need your advisor to say, "This is what you need to do. This is what I want from you. I want it by Wednesday, I want this, this, and this." And I'm discovering he's not that kind of person at all. So I'm having to adapt my style so that I can say, okay, this is when I need to get it done. And I know that some of that is my responsibility as a grad student, but it just seems like there should be a little bit more there because we're supposed to be learning how to do this, not all of the sudden being able to do it.

A related concern of the students at this phase in their programs is the isolation they feel. Often, this isolation is connected to the transition to independence that the students are experiencing. This feeling is especially germane for the doctoral students in history. Melissa, a history student at Flagship, commented on her feelings of isolation: "When you get to the dissertation process, you're rarely around the department, you're not TAing any longer, so you don't have interaction with the program. . . . now that I'm finishing the dissertation I have basically very little interaction with anybody." This lack of interaction also occurs in regard to the students' relationships with their advisors, especially for

the students who are off campus completing their research. Elaine said, "There is this disconnect that you feel between sort of the department and you—it's obvious. There are little things you don't expect, like I didn't expect to lose contact with my advisor like I did." Again, the isolation and independence that the students experience are parts of the larger socialization processes inherent in graduate education, as the student dons the identity of independent scholar, one necessary in the professional realm (Bowen & Rudenstine, 1992; Katz, 1976; Rosen & Bates, 1967). At the same time, however, students toward the end of phase III should be considering the need to become not simply independent but interdependent as they move toward a part of the larger disciplinary culture outside their institution and with other colleagues (Austin & McDaniels, 2006; Nyquist & Wulff, 1996).

Taken together, the phases represented here in doctoral education also translate directly to the transition to independence that is expected of all doctoral students. Whereas the students in phase I are concerned with making the transition to the independent culture of doctoral education and its related expectations, students in phase II are busy learning to independently balance the many responsibilities expected of them while also forming needed relationships with faculty and peers. Phase III students, then, are those most concerned with the actual role of independence as they are immersed in it during their dissertation research, but they temper this experience with the need for sustained direction from their advisors while still learning to manage on their own.

Discussion

It is generally understood that the purpose of the doctor of philosophy degree is the creation of an independent scholar, or a scholar who independently produces original research (Council of Graduate Schools, 2005). In this study, the concept of independence was often discussed not only in respect to research but also in many other ways. The students in this study were concerned with the transition they were making to the more independent and less structured environment of graduate school, with the relationships with faculty members as they conducted their research, and with their overall need to become more self-directed in their programs and future. In this way, these concerns reflect the multifaceted nature of the socialization experience, as students discussed not only the programmatic aspects of their experience but also the personal and interpersonal dimensions of their development as well. Table 3 presents the three phases of the process toward independence for these students in association with their programmatic, relational, and personal development.

TABLE 3
Programmatic, Relational, and Personal Development by Phase

	Phase I	Phase II	Phase III
Programmatic	Admissions Beginning of coursework Qualifying examinations	Completing coursework Examinations Assistantship	Research proposal Dissertation research
Relational	Developing peer, faculty, and staff relationships in department	Developing relationship with advisor and faculty Integration with peers in coursework and in assistantship	Transition away from dependence on peer relationships Transition to closer relationship with advisor Transition to relationships in larger discipline
Personal	Shift in cognitive development to demands of graduate school Understanding professional roles	Transition from student identity to more professional identity Balancing professional roles	Formation of identity as scholar Formation of identity in larger disciplinary culture

Several scholars have commented on the issue of independence in doctoral education, including Egan, who commented:

This level of independence is not consistent with earlier educational experiences, which accept passivity and encourage students' dependence on professors. New students may not be ready for such independence, but the structure does not encourage them to admit this fact. Asking for help may be interpreted by students as an inability to do what is expected of them. (1989, p. 202)

Indeed, this is the paradox that many of these students discussed in this study as they try to balance the independence they feel is expected from them while learning to conduct the research that is required. The paradoxical quality of the necessary relationship building in phase II and subsequent transition to independence in phase III is one that also left many students feeling isolated and frequently distraught. A constant need for support and guidance from their faculty is often tempered by the need to feel competent and independent from them as well. From the standpoint of socialization, this process of becoming independent is required for successful acceptance as a potential scholar who must also be independent within the professional world, but it is often a drastic transition for many of these students who have become accustomed to the

structure of their previous educational experiences, the point upon which Egan expounded. Therefore, while the need to become an independent scholar is necessary for the students' professional socialization, earlier and much longer socialization experiences in previous educational settings have often prepared students to become anything but independent.

This study highlights several parts of the existing literature on graduate student socialization while adding to the current understandings on the subject. For example, while Weidman et al. (2001) discussed the multiple aspects of development inherent in the socialization experience of graduate students, this study connects the importance of the relationships built in each phase and the personal development that must occur for the student to reach the status of independent scholar. The work of Weidman et al., as well as other models of graduate school socialization such as those of Lovitts (2001), Tinto (1993), and Nerad and Miller (1996), do not address in particular this transition to independence as it relates to the programmatic, interpersonal, and personal experiences in doctoral education. In addition, this study highlights the importance of these relationships with peers and faculty in the earliest days of the program, whereas Weidman et al. discussed these relationships' importance in much later stages of development. Finally, Weidman et al. conceptualized four stages of socialization in graduate and professional school, encompassing students within multiple disciplinary and institutional contexts. This study looked particularly at doctoral students in two institutions and in two disciplines to better understand how the unique environments and cultures were reflected in the students' socialization experiences in three phases of development, phases that emerged directly from the students' experiences rather than stages imposed upon them by a purely theoretical model.

In regard to independence, the disciplinary and institutional contrasts highlighted in this study point to differentiated experiences and structures that facilitate or impede the transition to independence. For example, the peer-concentrated laboratory groups in chemistry served the students well throughout their experiences, while the inherently isolating research that occurs in history departments often made the transition to independence even more difficult for the students in the history departments. Further, the chemistry students discussed the daunting experience of choosing not only an advisor but also, in their case, a peer group for the entirety of their doctoral program, whereas the students in history became increasingly isolated from their peers but generally gained a closer relationship with their advisor as they advanced. In regard to their research in phase III, students in history were quite isolated as they con-

ducted and wrote up their dissertation research, while chemistry students often discussed a lack of structure about what was expected from them, even if they were not necessarily alone or isolated in this phase. Overall, however, while disciplinary differences emerged in this transition to independence, students nevertheless discussed clear periods of time in their development that translated into three cohesive phases in their experiences. From an institutional perspective, large differences in the students' development toward independence were not seen between institutions. More study among institutions should be conducted in order to better understand the dynamics of institutional culture upon independence, particularly the role of institutional ranking and prestige on this process. Finally, while diversity among participants in regard to gender and race was sought in this study, there were not any distinct differences that emerged from the students' discussions about the transition to independence. This may lead one to believe that the transition to independence, at least in these four departments, is experienced similarly by students; certainly, more research must explore this issue.

Implications

It was clear from the interviews conducted that students were not adequately prepared for the experiences and expectations awaiting them as they transitioned from phase to phase of their doctoral programs. For example, the multiple students who discussed the obstacles to independence in phase III needed much more guidance in earlier phases to prepare them for this transition. Program staff and faculty can work with doctoral students as they transition toward independence by structuring multiple experiences before the research phase that require original thought and independence. In phases I and II, this might be accomplished through coursework experiences or other curricular opportunities that allow the students to work independently on large-scale studies or research projects that prepare them for their own dissertation research, or through collaborative projects with peers that ready for them for habits of mind that are required in original research and independent work. Students in phases I and II can also benefit from structured study groups for their examinations and from workshops that address their concerns throughout their experience. Similarly, students placed in a cohort model, such as that experienced by the chemistry students, will benefit from the shared experiences and peer relationships built early in their programs. Allowing students to have maximum interactions in their assistantship opportunities, whether it is in shared office locations or by structured professional development workshops on pertinent topics, also

allows them to interact with their peers on subjects related to their professional socialization. Furthermore, faculty advisors should be aware of the tenuous nature of independence as the students begin their dissertation research in phase III and should remain in touch with their advisees. Advisors should also work with students at this phase to structure periodic checkpoints during their research in order to provide feedback and guidance as needed. Workshops and brown bag seminars that alert students to these transitions toward independence in their experience could also be offered, and time management workshops for dissertators should also be offered to assist them in confronting the task ahead of them and structuring it for success. Finally, programs and students should seek opportunities for support through the transition to independence in all phases, such as the formation of writing support groups and continued mentoring relationships between peers.

In regard to future research, more studies must be conducted to better understand how other institutional and disciplinary contexts influence the socialization experience of doctoral students and their transition to independence. For example, do all of the hard sciences or the humanities experience the transition to independence similarly, or are there great variations among disciplines? Furthermore, does regional location and institutional status affect the students' experiences? In addition, analyzing differences among demographic characteristics such as gender, race, age, enrollment status, and educational background may also lead to better understandings of the structures of socialization in doctoral education. For example, while gender did not emerge in this study as a characteristic that affected the students' transition to independence, further studies focusing on the connection between the student and the advisor by gender may lead to better understandings of this dynamic in the students' experiences. Finally, socialization models such as that of Weidman et al. (2001) require more empirical research in these multiple contexts to better understand the experience of all students in all contexts available.

While a necessary part of the doctoral education experience, the transition to independence is nevertheless a tenuous one for many students. Ensuring the needed support and preparation for this transition will go far in assisting doctoral students to reach this goal and will provide the correct balance between what is too much and what is too little independence in their programs.

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