Knowledge Studies in Higher Education 7

John C. Weidman
Linda DeAngelo *Editors*

Socialization in Higher Education and the Early Career

Theory, Research and Application

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Knowledge Studies in Higher Education

Volume 7

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Pittsburgh, PA, USA — John C. Weidman
Pittsburgh, PA, USA — Linda DeAngelo

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Kimberly A. Griffin is an associate professor at the University of Maryland and the editor of the *Journal of Diversity in Higher Education*. Prior to becoming a faculty member, she served as a higher education administrator and student affairs professional, working in undergraduate and graduate admissions, promoting diverse and hospitable learning environments, and new student orientation. Her research focuses on three core topics: increasing diversity and retention within the professoriate, diversity within the Black community, and mentoring and career development. She received the 2013 Early Career Award from the Association for the Study of Higher Education and was identified as an Emerging Scholar by ACPA, College Student Educators International, in 2010.

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Xi Hong is a PhD student of the Institute of Education, Tsinghua University, majoring in higher education. She is the recipient of a "Future Scholar Scholarship of Tsinghua University." Her main research fields are student development and higher education assessment.

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Jamila Lee-Johnson is a recent graduate of the University of Wisconsin-Madison. Before coming to Madison, she worked at the University of Michigan, College of Engineering. Her research focuses on Black women in higher education, specifically undergraduate Black women's leadership experiences at historically Black colleges and universities (HBCUs), as well as Black doctoral student socialization at predominantly White institutions (PWIs).

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Jill Alexa Perry is the executive director of the Carnegie Project on the Educational Doctorate (CPED) and a professor of Practice in the Department of Administrative and Policy Studies at the University of Pittsburgh. Her research focuses on professional doctorate preparation in education, organizational change in higher education, and faculty leadership roles. She is the founding editor of *Impacting Education: Journal on Transforming Professional Practice*, the new online journal focused on transforming professional preparation in education.

Robin Phelps-Ward is the director of the Student Affairs Administration in Higher Education Program and assistant professor in the Department of Educational Leadership at Ball State University in Muncie, IN. She is dedicated to cultivating equitable, just, and supportive environments for people of color across educational

contexts and commits her scholarship to simultaneously and complementarily exploring the experiences of those who are racially marginalized and minoritized while developing pedagogical and institutional strategies for eliminating such oppression. Her research focuses specifically on mentoring and formal mentoring programs to support students of color, black faculty and staff belonging, black women and girls' natural hair and identity development, and pedagogical practices for critical consciousness and social justice.

Jenesis J. Ramirez is a program manager for the Office of Engagement at Florida International University (FIU). Using Latina/Chicana feminist and mujerista perspectives, her research focuses on gender, race, and Latinx's experiences in higher education. In her dissertation, she examined how Latina faculty members, administrators, and doctoral students cultivate communities of women of color, building and exchanging funds of knowledge and body-mind-spirit wholeness.

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John C. Weidman is emeritus professor of Higher and International Development Education at the University of Pittsburgh. His research focuses issues of student socialization in higher education as well as international higher education policy and reform. He completed the first version of his conceptual framework for undergraduate socialization under a Fulbright Award as a visiting professor at Augsburg University in Germany (1986–1987). Other visiting appointments include UNESCO chair of Higher Education Research at Maseno University in Kenya (1993), guest professor at Beijing Normal University in China (2007–2012), and research fellow (professor), Graduate School of International Development, Nagoya University, in Japan (2011). His observations on global changes in higher education have appeared in international media outlets including China Radio International, Al-Fanar Media, and *The Huffington Post*.

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Part I
Introduction

Chapter 1
Student Socialization in Higher Education: An Exploration

John C. Weidman and Linda DeAngelo

This book is a celebration of the work by John Weidman and colleagues on student socialization in higher education (e.g., Twale, Weidman, & Bethea, 2016; Weidman, 1974, 1989, 2006; Weidman, DeAngelo, & Bethea, 2014; Weidman, Twale, & Stein, 2001). It expands the scholarly literature on college impact, spanning from the college years through graduate school and into the early career. It focuses on the significance of socialization processes in higher education for the successful navigation by students of academic programs preparing the next generation of professional practitioners and scholars. The text extends the Weidman frameworks (Weidman, 1989, 2006; Weidman et al., 2001), giving more attention to socialization processes for students from minoritized backgrounds and to human and social capital formation within a socialization framework. The frameworks are expanded in scope, covering passage through undergraduate and graduate degree programs as well as into professional careers.

Chapters are written by leading scholars who are actively engaged in research on issues of student socialization as they relate to various dimensions of the impact of higher education on preparation for and entry into professional careers. International research on the socialization of students in higher education is included. Chapter authors consider, along with other perspectives, the relevance of the Weidman socialization models for their own research and recommend directions in which the models might be revised/updated to reflect contemporary research on student socialization in higher education. The concluding chapter of the book offers a revised socialization model for future application in research and institutional policy that gives attention to issues for students of color, as well as socialization processes related to gender, internationalization, mentorship, and support from significant others external to higher education, among others.

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The book is organized into sections, each having a general theme, though the intent is not to be comprehensive. Rather, chapters highlight the scholarship of the individual authors and reflect their particular perspectives. All authors were asked to include consideration, including critique, of the socialization frameworks developed by Weidman and his colleagues.

Part I: Introduction

Chapter 1 (Student Socialization in Higher Education: An Exploration, by John C. Weidman & Linda DeAngelo) introduces the book, describing its structure and contents. The senior author's reflection on the fundamental conceptual and empirical roots of his frameworks for understanding student socialization in higher education (Weidman, 1974, 1989, 2006; Weidman et al., 2001) is included in Chap. 2 (Conceptualizing Student Socialization in Higher Education: An Intellectual Journey, by John C. Weidman).

Part II: New Perspectives on Student Socialization in Higher Education

This section addresses socialization for students from minoritized backgrounds, including chapters focusing specifically on Latinx and Black students in a variety of institutional contexts. Authors also consider the shift from more personal modes of social interaction to more impersonal, social media-based modes. Chapter 3 (Tied Together Wirelessly: How Maintaining Communication with Parents Affects College Adjustment and Integration, by Dayna Staci Weintraub) explores the question of whether college is a time to separate from family in order to establish one's independent identity or a time where maintaining contact with parents continues in importance. Using Weidman's (1989, 2006) model of undergraduate socialization and longitudinal quantitative analysis of parental communication patterns, this chapter investigates if the effect of parental communication patterns on students are different based sex, race, or class. Weintraub finds, among other things, that students are gravitating towards more asynchronous modes of communication with their parents. Peers and faculty are shown to be much stronger predictors of adjustment and integration relative to parents. The chapter concludes with recommendations of how future iterations of Weidman's model should address the interdependence of personal relationships and the use of social medial on college student development.

Chapter 4 (Rethinking Weidman's Models of Socialization for Latinxs Along the Postsecondary Educational Pipeline, by Gina A. Garcia, Jenesis J. Ramirez & Oscar E. Patrón) explores the usefulness of Weidman's socialization models (Weidman, 1989; Weidman et al., 2001) for understanding the socialization of Latinx undergraduate and graduate students. In the chapter the authors use a Latino Critical

Theory (LatCrit) lens to review the existing literature on Latinx undergraduate and graduate students' integration, adjustment, and socialization. They highlight the ways in which Latinx students experience racism along the postsecondary educational pipeline and how this affects their socialization. The authors then turn to Community Cultural Wealth (Yosso, 2005) to discuss how Latinx students backgrounds, dispositions, and relationships with their parents and peers serve as assets to the navigation of the normative contexts and socialization processes in higher education. Based on their review, the authors challenge and rethink the Weidman models, offering theoretical suggestions for making them more applicable to the experiences of Latinx students along the postsecondary pipeline.

Chapter 5 (Creating Porous Ivory Towers: Two-way Socialization Processes that Embraces Black Students' Identities in Academia, by Rachelle Winkle-Wagner, Dorian L. McCoy & Jamila Lee-Johnson) challenges one-way socialization processes, asserting that viewing the process in this way could be detrimental to Black students' identities and ability to find a sense of belonging in higher education. The authors present a theoretical model and exemplary practices that cultivate a two-way graduate student socialization process that could aid in revisions to the socialization model by Weidman et al. (2001). In particular, the authors provide examples of ways that programs and practices on college campuses can deliberately disrupt social reproduction and embrace the cultural capital (knowledge, skills, and abilities that are valued in a particular context) and social capital (social relationships, trust, and obligations that are valued in a particular setting) that Black students bring with them to higher education. The authors compare notions of disruption of social reproduction to community cultural wealth (Yosso, 2005).

Part III: Socialization into Professional Careers

This section includes chapters on early career socialization for faculty at Liberal Arts Colleges and professional pathways of doctoral students who do not choose faculty careers. Chapter 6 (The Professoriate in Liberal Arts Colleges: Early Career Faculty Socialization and Learning, by Vicki L. Baker) focus on the socialization of early career faculty members at liberal arts colleges (LACs) and the applicability and extendibility of the Weidman et al. (2001) socialization framework to understand these faculty's experiences. Baker examines socialization processes as well and career cycles and learning frameworks in her longitudinal, mixed methods study (Initiative for Faculty Development in Liberal Arts Colleges). Findings provide insights into the early career experiences of faculty at LACs. The chapter ends with recommendations and implications on how to effectively socialize faculty into these environments.

Chapter 7 (Doctoral Student Socialization and Professional Pathways, by Susan K. Gardner & Stacey A. Doore) notes that only half of doctoral graduates remain in academia. Consequently, this chapter focuses on the remaining graduates going on to work in industry, government, and business. Using and expanding on the Weidman

et al. (2001) model the authors presents a discussion of socialization for a diversity of professional pathways and provide practical implications for faculty, administrators, potential employers, and students regarding socialization of doctoral students for non-academic careers.

Chapter 8 (Preparing the Scholarly Practitioner: The Importance of Socialization in CPED-influenced EdD Programs, by Jill Alexa Perry & Emma Abruzzo) addresses the work of the Carnegie Project on the Education Doctorate (CPED) which brings together the world of scholarship and practice in designing high quality, effective education doctoral programs for professional practitioners. In CPED-influenced EdD programs students are prepared to use knowledge and inquiry as tools for change. Rather than offering a theoretical understanding of practice, the curricula in these programs is designed to apply theory and inquiry skills to the practice of solving pressing problems in the localized setting. Using the Weidman et al. (2001) model the authors consider ways of redesigning EdD programs that require practice-focused (as opposed to purely research-focused) socialization for students.

Part IV: International Perspectives on Student Socialization in Higher Education

Chapter 9 (The Socialization of International Doctoral Students in the USA, by Daniela Véliz) presents a model of socialization of international graduate students studying in the United States that builds upon the work by Weidman et al. (2001). In her exploration of the socialization challenges international students face, Véliz emphasizes the importance of both faculty and peers to socialization and successful degree completion.

Chapter 10 (Professional Socialization and Career Development of Chinese International Tourism and Hospitality Students and Graduates: A Revised Framework, by Katrine Sonnenschein) applies and reflects on the Weidman et al. (2001) framework using the findings of a broader study on the professional socialization of Chinese international tourism and hospitality students/graduates at an Australian University. Sonnenschein emphasizes the importance of socialization experiences in internships as an important aspect of preparation for and passage into careers. The chapter concludes with suggestions for enhancing the socialization processes and career development of Chinese international students and graduates with an Australian tourism and hospitality management degree.

Chapter 11 (Understanding Graduate Student Socialization in China: A Theoretical Framework, by Fei Guo, Huafeng Zhang, & Xi Hong) provides a critical literature review of student development in graduate schools in China. The authors apply the Weidman et al.'s (2001) model to understand graduate student socialization in Chinese universities and show how a very powerful, normatively driven student culture is built among students studying under a particular professor.

Chapter 12 (The Socialization of Doctoral Students in the Emergence of Structured Doctoral Education in Germany, by Hanna Hottenrott & Matthias Menter) focuses on developments in doctoral education in Germany, discussing effects of the emergence of structured doctoral education on the socialization processes of young researchers. The chapter extends the Weidman et al. (2001) model by differentiating between a traditional, chair-based, one-on-one training model and the more structured doctoral education model that has emerged in German graduate schools. The authors argue that structured doctoral education provides a wide set of benefits, but that structured doctoral education complements rather than replaces traditional chair-based training.

Part V: Diversity and Interdisciplinarity in STEM Graduate Student Socialization

Chapters on socialization and mentoring of graduate students of color in STEM fields are included in this section. It also includes consideration of socialization in interdisciplinary STEM doctoral programs. Chapter 13 (Doing, Caring, and Being: "Good" Mentoring and its Role in the Socialization of Graduate Students of Color in STEM, by Kimberly A. Griffin, Vicki Baker & KerryAnn O'Meara) applies the Weidman et al. (2001) model and incorporates sociocultural conceptions of learning (SCL) to extend the framework to more deeply understand how faculty foster students' socialization and learning throughout the process of becoming scientists. Their qualitative study of Black and Brown science graduate students finds that good mentors develop personal relationships and offer guidance regarding how to develop skills and behaviors that would allow students to become scientists and as well as opportunities to engage in the community practices in their science disciplines. The authors note that the findings from their study remind those involved in doctoral socialization that they must incorporate relational strategies such as guidance and care as well as offering students' opportunities to participate in community practices in the discipline to deepen students' commitments to science.

Chapter 14 (Emancipatory Research Counter-spaces: Re-Examining Black Doctoral Student Socialization, by Robin Phelps-Ward) applies Weidman's (2006) model to group of six black doctoral students engaged in a co-curricular participatory action research project (the Action Research Collective). Phelps-Ward offers a critical examination of the theoretical model and socialization processes of interaction, integration, and learning and advocates for restructuring of graduate education for Black doctoral students. The chapter concludes with implications for the future application of Weidman's socialization model and specific recommendations to support Black doctoral students in using their personal agency to resist and transform hegemonic structures in STEM disciplines.

Chapter 15 (Interdisciplinarity and Doctoral Education: Socialization, Process, and Outcomes, by Karri Holley) focuses on interdisciplinary graduate programs in STEM in the United States. Drawing on the literature related to doctoral student socialization, knowledge specialization, and interdisciplinarity, Holley considers the growth of interdisciplinary programs, especially in relation to the long-term growth of traditional disciplinary-based STEM doctorates. The chapter also uses the Weidman et al. (2001) model to examine the challenges to interdisciplinary doctoral education, focusing on how student knowledge acquisition, investment, and involvement are shaped by the interdisciplinary culture. The chapter concludes by examining the literature on the outcomes of interdisciplinary doctoral education, including career trajectories of scholars who hold interdisciplinary doctorates and offering suggestions for expansion of the socialization framework to accommodate interdisciplinarity as well as information on program design and delivery for institutions interested in promoting interdisciplinary graduate opportunities.

Part VI: Epilog

The chapters in this section address measurement concerns in research on student socialization and conclude with a discussion of revisions to Weidman's socialization models (e.g., Weidman, 1989, 2006; Weidman et al., 2001) as well as future directions for inquiry. Chapter 16 (Implications of Measurement Issues for Advancing the Socialization Framework, by David F. Feldon) examines measurement in socialization research and its implications for socialization as a theoretical framework. Although most of the socialization research relies on qualitative methods, quantitative studies can also be used to assess the generalizability of core tenets of socialization. However, they require psychometrically sound and valid measures in order to obtain better understanding of ways in which relevant constructs interact within the socialization process, including the possibility that some have greater influence than others in driving outcomes. The chapter examines potential strengths and weaknesses of existing empirical measures and discusses the reciprocal implications that measurement and theory development can hold for one another.

Chapter 17 (Toward a 21st Century Socialization Model of Higher Education's Impact on Students, by John C. Weidman & Linda DeAngelo) draws upon work published since 2006 (e.g., Twale et al., 2016; Weidman et al., 2014), including the contents of the present volume, to extend/revise Weidman's socialization model for use in understanding the impact of higher education on students. In presenting a revised model for socialization, the authors discuss the model's movement away from its predominately structural-functional foundation and its incorporation of perspectives that recognize the capacity of individuals to modify influences of and reshape structures within normative contexts (Archer, 1982; Giddens, 1979). This more comprehensive, sophisticated, and inclusive model of student socialization in higher education continues to be appropriate for application to research and to the study of specific issues related to student culture and context as well as institutional policy and structure.

References

Archer, M. (1982). Morphogenesis versus structuration: On combining structure and action. *British Journal of Sociology, 33*(4), 455–483.

Giddens, A. (1979). *Central problems in social theory: Action, structure and contradiction in social analysis*. London: Macmillan.

Twale, D. J., Weidman, J. C., & Bethea, K. A. (2016). Conceptualizing socialization of graduate students of color: Revisiting the Weidman-Twale-Stein framework. *Western Journal of Black Studies, 40*(2, Summer), 80–94.

Weidman, J. C. (1974). *The effects of academic departments on changes in undergraduates' occupational values*. Unpublished PhD dissertation, University of Chicago. https://files.eric.ed.gov/fulltext/ED087364.pdf

Weidman, J. C. (1989). Undergraduate socialization: A conceptual approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. V, pp. 289–322). New York: Agathon Press.

Weidman, J. C. (2006). Socialization of students in higher education: Organizational perspectives. In C. C. Conrad & R. C. Serlin (Eds.), *The Sage handbook for research in education: Engaging ideas and enriching inquiry* (pp. 253–262). Thousand Oaks, CA: Sage.

Weidman, J. C., DeAngelo, L., & Bethea, K. A. (2014). Understanding student identity from a socialization perspective. In C. Hanson (Ed.), *In search of self: Exploring student identity development* (New Directions for Higher Education, No. 166 (Summer): 43–51). San Francisco: Jossey-Bass.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. http://files.eric.ed.gov/fulltext/ED457710.pdf

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity and Education, 8*(1), 69–91.

Chapter 2
Conceptualizing Student Socialization in Higher Education: An Intellectual Journey

John C. Weidman

In this chapter I provide a brief synopsis of the intellectual journey that brought me to where I am with respect to the study of student socialization in higher education as well as other directions my career has taken over the course of more than half a century. I discuss the evolution of frameworks I developed for describing the socialization of undergraduate students in higher education, starting with the basic model in my doctoral dissertation (Weidman, 1974) followed by elaboration in subsequent empirical work (Weidman, 1979, 1984) as well as conceptually focused literature reviews (Weidman, 1989, 2006). While all of the figures depicting each subsequent framework are reprinted in this chapter, I have described only the key elements. Interested readers can find the complete text for each article and monograph in which the original models were published through my ResearchGate "Profile" homepage (https://www.researchgate.net/profile/John_Weidman).

When originally conceived, the undergraduate frameworks (Weidman, 1974, 1984, 1989) provided sociological alternatives to what were, at the time, the more prevalent and influential developmental psychological models of college impact (e.g., Astin, A. W., 1977; Chickering, A. W., 1969; Sanford, N., 1962). A notable exception was the groundbreaking literature review (Feldman & Newcomb, 1969) published just as I was formulating the design for my doctoral dissertation. Not only did I find their sociologically focused work to very useful for my dissertation research, but Kenneth Feldman has continued to provide support and encouragement over the years.

Looking back on the progression of my career, I was fortunate that my 1989 undergraduate socialization model started to be recognized for theoretical/conceptual significance before the advent of comprehensive electronic citation databases. My model (Weidman, 1989) was reprinted in two widely read (and cited) books,

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How college affects students (Pascarella & Terenzini, 1991) and the second edition of *Education and identity* (Chickering & Reisser, 1993). The complete 1989 chapter was also selected for inclusion in the second edition of *The ASHE reader on foundations of American higher education* (Bess & Webster, 1999), and the figure was reprinted in the 2nd Edition of *How college affects students* (Pascarella & Terenzini, 2005). This framework continued to be recognized as "one of the foundational conceptual models depicting the process by which college students develop proclivities toward certain values, aspirations, and career and lifestyle choices" in the 3rd Edition of *How college affects students* (Mayhew et al., 2016, p. 250).

I extended the undergraduate model, with the assistance of two former doctoral students (Darla J. Twale and Elizabeth L. Stein), to the study of graduate and professional student socialization (Weidman, Twale & Stein, 2001). As had been my approach with the earlier model, I did a partial test of the framework with related empirical work (Weidman & Stein, 2003).

Both models have endured over the years, though it was not until 2004, 15 years after publication, that my undergraduate socialization framework (Weidman, 1989) reached more than 20 annual Google Scholar citations. The graduate student socialization framework (Weidman et al., 2001), on the other hand, was cited more than 20 times in 2005, just 4 years after publication. As of mid-June, 2019, Google Scholar listed more than 400 citations (42 in 2018) of the undergraduate framework (Weidman, 1989) and more than 750 citations (90 in 2018) of the graduate and professional student socialization framework (Weidman et al., 2001) over the previous decade (http://scholar.google.com/citations?hl=en&user=AV29yF0AAAAJ).

I conclude this chapter by addressing what I presumed, at the time, to be the final phase of my work in this area, namely, formulating a general conceptual framework reflecting student socialization in higher education across all degree levels and institutional types (Weidman, 2006). This framework incorporated consideration of both cognitive and affective outcomes along with organizational dimensions of higher education's impact on students across the full spectrum of degree programs. In the 2006 chapter, I built on my previous work and linked constructs in my framework explicitly to other streams of research that, even though they may have been labeled differently, were analogous.

The Story of the Weidman Models

Prelude to My PhD Dissertation

In the fall of 1967, I enrolled in the Sociology of Education Program at the University of Chicago with its director, Charles Bidwell, as my advisor. When I began talking with him about potential dissertation topics in mid-1969, I was very much taken by research he had done on effects Harvard's undergraduate residential houses and academic majors had on students' attitudes and career values (Vreeland & Bidwell, 1965, 1966). This research resonated with me because, from my enrollment as an under-

graduate at Princeton University in the fall of 1963, I had grappled with the choice of an academic major and related career path. Both my high school teachers and my parents had encouraged me to major in natural sciences or engineering, but that interest/aspiration waned as I struggled with math and science courses through my first 2 years. Finally, as my options for finding a major were running out, I enrolled in an introductory sociology course the second semester of my sophomore year to see if that was a direction that would "float my boat." Fortunately, it was and I became a sociology major! Sociology turned out to be a good choice and I flourished academically my last 2 years at Princeton, graduating with departmental honors in 1967.

My senior year, I also received an undergraduate research assistantship to survey recent Princeton graduates for the Career and Counseling Center about what they were doing after graduation, certainly a precursor to my PhD dissertation research, though I did not recognize it at the time. In retrospect, my dissertation subsequently provided an opportunity for me to reflect on and understand my own checkered academic passage through college, not only in terms of the pathway I experienced, but also in terms of undergraduates, more broadly.

My Doctoral Dissertation: Studying College Impact on Undergraduates' Occupational Values (Weidman, 1974)

I formulated the conceptual framework shown in Fig. 2.1 (Weidman, 1974, p. 16) for my PhD dissertation. I chose as my starting point for this framework a classic definition of socialization as "… the process by which persons acquire the knowledge, skills, and dispositions that make them more or less effective members of their society" (Brim, 1966, p. 3). I also used a classic definition of the term "norm," namely, "… an idea in the minds of members of a group … that can be put in the form of a statement specifying what the members … should do, ought to do, are expected to do, under given circumstances" (Homans, 1950, p. 123). Extensiveness of an undergraduate student's involvement with others in the college environment (Vreeland & Bidwell, 1965) as well as interaction with both peers and faculty (Feldman & Newcomb, 1969, pp. 236, 237, 251) are particularly salient. Further,

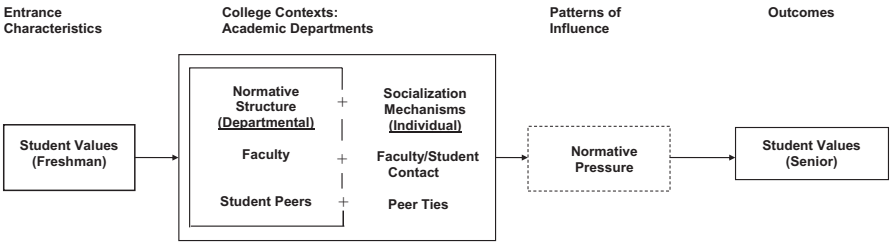

Fig. 2.1 A model of undergraduate socialization in academic departments. (Source: Weidman, 1974, p. 16)

according to Vreeland and Bidwell (1966), faculty influence tends to be concentrated in academic majors. Consequently, the model for my dissertation research focuses on experiences students have faculty and peers within their academic majors and assumes socialization in higher education occurs in a more or less linear, but sequential, progression that can be described as follows:

The model represents a set of processes whereby an undergraduate:

1. Enters college as a freshman with certain occupational values;
2. Is exposed to various socializing influences while attending college, particularly normative pressures exerted via primary interaction with faculty and peers in the major department; and
3. By senior year, either changes or maintains those values held at entrance to college.

> … Departmental norms are aggregate characteristics, the collective orientations of all members of each constituent group (faculty and students). The socialization mechanisms transmitting normative influences are the students' individual social relationships with departmental faculty and peers (Weidman, 1974, p. 15).

In Fig. 2.1, the line around *normative pressure* is dotted to reflect that *patterns of influence* are not measured directly but rather inferred from observed relationships among norms and social relationships. I argued that "…predictions concerning the direction and intensity of *normative pressures* to which a student is exposed can be made if the normative orientations of faculty and students in the major department and the interpersonal linkages of the student with faculty and peers are known" (Weidman, 1974, p. 17).

This model relies on a structural-functional approach to socialization, as reflected in the work of Parsons and Platt (1973). It assumes there is a pervasive consensus on norms and expectations for students in higher education that is driven by faculty expectations and pretty much independent of individual student orientations. Consequently, faculty expect students to conform to their requirements for acceptable performance in their passage to graduation. While acknowledging a temporal passage through college, the model assumes that socialization is primarily a linear process with relatively fixed institutional boundaries. While it also drew from career development models based on the white male culture of the time, I questioned those models and included gender as a variable in all of my college impact research.

Charles Bidwell agreed to arrange for me to get access to the data from the 1969 American Council on Education (ACE)-Carnegie Commission surveys of students and faculty in American colleges and universities (Trow, 1975) and the 1966 freshman survey conducted under the supervision of Alexander Astin, then at ACE (Astin, Panos & Centra, 1966). This freshman survey was the first of a continuing series of annual freshman surveys now administered by the Higher Education Research Institute (HERI) at UCLA. The undergraduate survey for the research was longitudinal, using items repeated in the 1966 freshman survey and the 1969 follow-up survey. The early surveys in this series had a reasonable representation of respondents by gender but not race. Consequently, my empirical research based on these datasets was restricted to white students, but included both males and females.

Norms were aggregated responses from faculty and student respondents in the major department, with means for each assigned to the individual student. Only those students for whom both departmental faculty and student data were available were included in the analysis. A detailed description of the methodology is included in Weidman (1974, Chapter Two, pp. 23–38).

While the results generally supported the framework, interpreting relationships was complex due to multiple interaction effects by gender and major. In subsequent research based on the same data set and underlying framework but using a multiple regression approach, I identified college effects more clearly, further supporting my model (Weidman, 1979) empirically.

Because I expected to defend my dissertation proposal in the spring of 1970, I was optimistic about the prospects for completing my dissertation within a year, two at most. Since it was possible in those days to start a new position as a PhD candidate (alternatively, ABD: all but dissertation), and I already had published a journal article based on my masters research, (Weidman, 1969), I entered the job market and landed a position as Assistant Professor of Education and Sociology (but outside the tenure stream pending award of my PhD) at the University of Minnesota, starting in the fall of 1970.

By the time I moved to Minneapolis in the fall of 1970, I had defended my dissertation proposal successfully and was ready to begin working on data analysis as soon as the ACE-Carnegie (Trow, 1975) national dataset on faculty and students in American higher education institutions became available for my use. Unfortunately, release of the data to scholars outside the original ACE-Carnegie research group, including my advisor, was delayed so I did not get the data until two more years had passed. I ultimately submitted the complete draft of my dissertation in July of 1973, but my committee did not approve it until December (though no revisions were required). I defended in January of 1974, and my PhD was awarded in March.

The Dean and my immediate colleagues at Minnesota were tolerant, but I lost 4 years in the tenure stream. Even though I published some journal articles during my years outside the tenure stream, there was a certain rigidity in the promotion and tenure process at Minnesota that did not accord full credit toward tenure for publications prior to completion of the PhD. I was told I would have to wait until my fourth year in the tenure stream (eighth year at Minnesota) to be considered for promotion and tenure. I was impatient and began exploring other opportunities.

Consequently, in the summer of 1977, I moved to a non-profit policy research organization, the Bureau of Social Science Research (BSSR) in Washington, DC, for which I had previously done consulting. BSSR was attractive to me because it was a quasi-academic entity with an emphasis on publication and participation by staff in professional research associations. Survey research was at the core of its work. The projects to which I was assigned tended to be demonstration manpower training programs funded by the U.S. Department of Labor. This kept me involved with career development issues in postsecondary education and introduced me to program evaluation.

However, the landscape for independent survey research organizations was changing and becoming increasingly competitive. As a small company, it was ultimately problematic for BSSR to compete with large organizations for national survey proj-

ects. Government agencies were moving away from "sole source" contracts based on personal relationships to open, competitive bidding. Contractors were increasingly being seen as "hired hands" rather than independent thinkers. Faced with these types of changes, I started looking for an opportunity to return to a tenure stream faculty position. I assumed an appointment as Associate Professor of Higher Education (untenured but in the tenure stream) with a secondary appointment in sociology at the University of Pittsburgh in January of 1979. My former BSSR colleagues were gracious in wishing me well and I continued to collaborate on publications from the projects on which I had worked there for the next several years. This enabled me to find ways of using experiences and data gleaned from policy-oriented consulting to inform my more academic work, a pattern I have followed ever since.

Parental and Non-college Peer Socialization During College (Weidman, 1984)

When I joined the Higher Education Program at the University of Pittsburgh in January of 1979, it had a large, part-time doctoral program and a small masters program, also part-time. Students tended to be employed full-time at regional higher education institutions, primarily in mid-level management roles or as instructors teaching in professional fields (the largest of which was nursing, a field that had only a few specialized PhD programs at the time). Most of the doctoral students were older than I was and had concurrent responsibilities with spouses and/or children in addition to employment. Courses were offered in the late afternoon and evening. It was not uncommon for faculty to have 35 or more doctoral advisees at any given time.

Fortunately, student degree completion was staggered because coursework taken on a part-time basis often took a long time to complete. Later on, as my external funding increased and I took on administrative responsibilities, my advising load was reduced. But, I still chaired more than 100 dissertation committees during my career at the University of Pittsburgh! So, perhaps it is no surprise that I would ultimately begin studying student passage through graduate school.

Initially, however, I continued my research on undergraduate socialization. Figure 2.2 shows the next iteration of my framework that appeared in an article expanding investigation of undergraduate socialization for careers (Weidman, 1984). As was the case for my doctoral dissertation (Weidman, 1974), this model follows a fundamentally structural-functional approach, drawing explicitly from the conceptual analysis of American universities by Parsons and Platt (1973):

> Specifically, it focuses on two aspects of their argument as it relates to undergraduate socialization. One refers to what they term the 'moral authority of institutions' (Parsons & Platt, 1973, p. 167). This refers to the normative order of the college or university as a potent agent of socialization. The second has to do with interpersonal relationships among various members of academic settings. These interpersonal attachments make an important contribution to the members' social *integration* within the college (Weidman, 1984, p. 450).

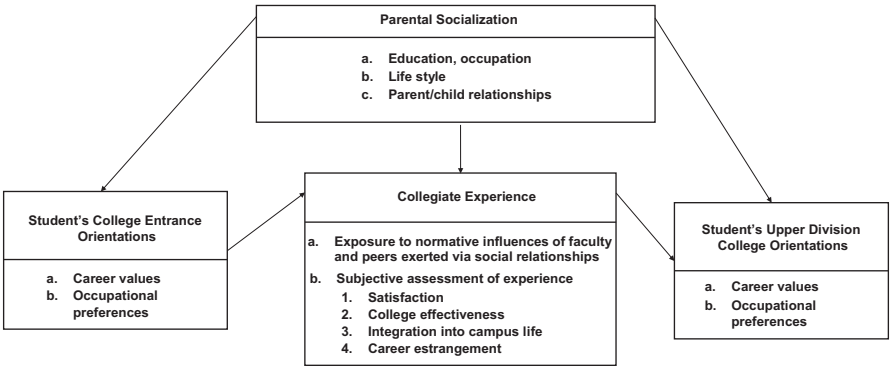

Fig. 2.2 A conceptual framework for the study of undergraduate occupational socialization. (Source: Weidman, 1984, p. 447)

Figure 2.2 depicts key dimensions within solid boxes and shows arrows linking them together in a way that reflects a longitudinal but still unidirectional set of processes. Each box includes major dimensions in the model that go beyond my earlier (Weidman, 1974) version. Dimensions are assumed to be relatively fixed, determined by institutional norms and expectations for students. Socialization processes are presumed to represent institutionalized "normative pressure" on students to conform to expectations for academic performance and related behavior.

Orientations (*occupational preferences*) are expanded to include specific career choices as well as career values. Students' *subjective assessment of experience* (*satisfaction, college effectiveness, integration into campus life, career estrangement*) are added to departmental norms within *collegiate experience*. The notion of *integration* draws from the classic work of Durkheim (1897) as applied to dropout from higher education by Spady (1970) and Tinto (1975):

> … integration occurs primarily through informal peer group associations, semi-formal extracurricular activities, and interaction with faculty and administrative personnel within the college. Successful encounters in these areas result in varying degrees of social communication, friendship support, faculty support, and collective affiliation, each of which can be viewed as important social rewards that become part of the person's generalized evaluation of the costs and benefits of college attendance and that modify his educational and institutional commitments (Tinto, 1975, p. 107).

By the beginning of the 1980s, the landscape of higher education was changing dramatically. Not only were enrollments expanding, but larger numbers of students were living off campus and degree programs were taking longer to complete, in part because more students were working to help pay college costs. A number of formerly single gender institutions had become co-educational. Enrollments in higher education institutions were becoming notably more diverse. Notions of career development could no longer be restricted to/driven by patterns experienced by white male students living on campus. Rejecting the then common assumption that

higher education institutions should be construed as encapsulated environments, I expanded the framework to encompass influences that occur while students are enrolled but are not necessarily under the direct purview of higher education institutions. The most prevalent of these external influences on college students' career choices were those exerted by parents, as reflected in the work of Jeylan Mortimer (1976), a Minnesota colleague. She also affirmed the importance of explicitly including consideration of gender differences in socialization of college students, in part a reaction to the changing landscape due to women's increasing enrollments and changing range of academic majors in higher education.

Consequently, I added the continuing influence of parents on students (*parental socialization*) during their years in higher education, especially on, but not limited to, career choices. In Fig. 2.2, the main avenues through which influences are transmitted are *social relationships*, primarily interpersonal interaction. This model reflects the following general conceptualization:

> … undergraduate socialization can be conceived as a series of processes whereby the student: (1) enters college as a freshman with certain values, career aspirations, and other personal goals; (2) is exposed to various socializing influences and mechanisms while attending college, particularly (a) normative pressures exerted via social relationships with faculty and peers in the major department and (b) parental support and achievement pressure; (3) assesses the salience of the college environment as the source of both knowledge and orientations perceived to be appropriate for attaining career goals; and (4) changes or maintains those values and aspirations that were held at college entrance on the basis of parental influence, normative pressure in the major, and subjective assessments of the collegiate experience (Weidman, 1984, p. 454).

As was the case for the two earlier studies (Weidman, 1974, 1979), data analyzed in Weidman (1984) came from the 1966 ACE freshman survey (Astin et al., 1966) and the 1969 ACE-Carnegie surveys (Trow, 1975). For this study, I used data from the 1969 follow-up of respondents to the 1966 ACE freshman survey as well as the 1969 faculty survey. Multiple regression analyses generally supported the framework and highlighted important gender differences in college impact. This research also affirmed that higher education institutions should not be conceived of as fully encapsulated environments.

Interlude: Early Years at the University of Pittsburgh and My International Turn

As I settled in at the University of Pittsburgh, I continued working with my BSSR mentor, Laure Sharp, and another colleague, Richard White, on two projects. One was a study of early careers of college graduates based on data from a large, federally funded survey, the National Longitudinal Study of the High School Class of 1972 (Sharp & Weidman, 1989). The second was the formative evaluation of a demonstration training program to prepare women on welfare for jobs as electronic technicians. Implemented in 1978, this program funded by the U. S. Department of

Labor, provided services to support the passage of highly qualified women receiving welfare benefits through a postsecondary certificate program for electronic technicians provided by a proprietary training institute in two mid-western cities. The assessment revealed an assortment of problems encountered by these women as they negotiated often conflicting demands on their time by boyfriends/spouses, their children's schools, welfare agencies, and the curricular requirements of training in a non-traditional field for women (Weidman & White, 1985). This work reinforced my inclusion of socializing influences outside of higher education institutions and suggested the importance of expanding consideration to employers and non-college peers for conceptualizing undergraduate student socialization.

In the fall of 1985, I was assigned to a committee charged with redesigning the departmental structure of the University of Pittsburgh School of Education. I also applied for a sabbatical leave and a Fulbright Teaching and Research Award at Augsburg University in Germany which had a cooperative arrangement with the University of Pittsburgh. In the spring of 1986, I was promoted to full professor and appointed chair of the new Department of Administrative and Policy Studies, though I did not take over until I returned from my German Fulbright in the spring of 1987. This restructuring brought the International Development Education Program (IDEP) into my department and, as chair, increased my opportunities to engage in programs serving international students and career professionals (e.g, the U.S. Department of State's Hubert H. Humphrey Program). It also exposed me to a much wider range of University of Pittsburgh colleagues who challenged me to move my academic work forward.

During my Fulbright at Augsburg University in 1986–1987, I taught an undergraduate seminar on the sociology of adolescence which reinforced my interest in conceptualizing undergraduate socialization, and completed a draft of my undergraduate socialization framework. This international experience also led to subsequent visiting professorships (Kenya, UNESCO Chair of Higher Education Research at Maseno University, 1993; China, Guest Professor, Beijing Normal University, intermittent, 2007–2012; and Japan, Visiting Research Fellow, Graduate School of International Development, Nagoya University, 2011) during which I worked with doctoral students and conducted research.

Expanding the Undergraduate Socialization Framework (Weidman, 1989)

Figure 2.3 shows the conceptualization of undergraduate socialization I elaborated during 1987–88 in a comprehensive literature review (Weidman, 1989). The focus continued to be on ways in which students' experiences during college shape their choices of careers along with related orientations and aspirations. This model still reflects a fundamentally structural-functional approach manifested through a set of longitudinal processes, but the lines connecting major dimensions no longer contain

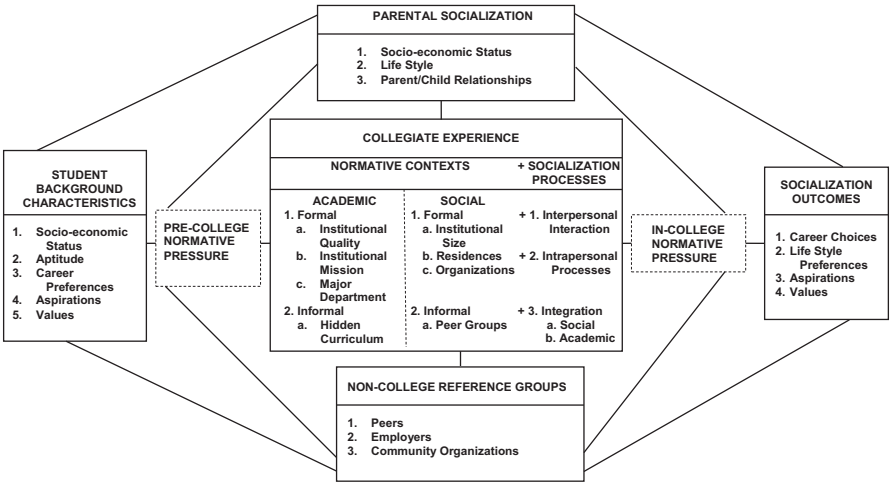

Fig. 2.3 A conceptual model of undergraduate socialization. (Source: Weidman, 1989, p. 299)

directional arrows. It suggests an iterative set of processes that do not necessarily occur in fixed patterns, depending on the various characteristics and experiences of individual undergraduates, but accepts the notion that consensual norms drive socialization processes.

This model retained *normative pressure* as a construct but added an anticipatory dimension (*pre-college*) that can may shape the nature of a student's *collegiate experience*. Anticipatory socialization is construed as "the acquisition of values and orientations found in statuses and groups in which one is not yet engaged but which one is likely to enter" (Merton, 1968, p. 438). Anticipatory socialization can help to prepare individuals for future positions (especially if what is expected turns out to be what is ultimately required) although, according to Merton (1968, p. 439), "… much of such preparation is *implicit, unwitting,* and *informal*…".

The model adds a second set of potentially important sources of socializing influences that are external to the higher education institution, namely, *non-college reference groups*. Included among them, among others, are non-college *peers, employers,* and *community organizations* to which students might belong. This dimension reinforces the notion that higher education institutions are not encapsulated environments.

The framework also incorporates key aspects of the *collegiate experience*, focusing on the transmission of influences on students within the *academic* and *social* (Tinto, 1975)[1] dimensions of *normative contexts* encountered by undergraduates. Both *formal* and *informal* aspects of *normative contexts* are included. Three types of socialization processes through which normative influences might be exerted are posited: *interper-*

[1] Vincent Tinto and I shared an office at the University of Chicago during the summer of 1969 while working for our respective advisers. That began a series of conversations about the significance of social and academic integration for college student impact, including persistence, that we continued off and on for more than three decades.

sonal interaction, intrapersonal processes, and *integration* (*social* and *academic*). These dimensions reflect both cognitive and affective processes. I did not, however, conduct additional empirical studies to test the framework shown in Fig. 2.3.

In 1992, my sixth year as department chair, I decided return to a faculty position and began searching for a place to spend a sabbatical leave. An international development education colleague, Seth Spaulding, was instrumental in launching me into the international higher education arena that would be an area of research and consulting for the remainder of my career. He recommended me for two positions: (1) as the higher education specialist for an Asian Development Bank project in Mongolia for assisting the government with the development of a national plan ("Master Plan") for education in the summer of 1993, and (2) a UNESCO Chair of Higher Education Research at Maseno University in western Kenya that I assumed in the fall of 1993. My first truly comparative higher education publication (Weidman, 1995) resulted from these experiences. In addition, several Kenyan and Mongolian colleagues with whom I worked in these two positions subsequently came to Pittsburgh to earn doctoral degrees with me.

Graduate and Professional Student Socialization (Weidman & Stein, 2003; Weidman et al., 2001)

From the time I came to the University of Pittsburgh, I worked almost exclusively with graduate students in my teaching as well as academic and research advising. Consequently, I began exploring the possibility of adapting my undergraduate socialization framework to the study of graduate and professional student socialization. I collaborated with two former doctoral students, Darla Twale and Elizabeth Stein, on this next conceptual phase (Weidman & Stein, 2003; Weidman et al., 2001).

The framework we developed represented two major departures from the previous models, is shown in Fig. 2.4. First, it responds to criticism by Tierney (1997) that the structural-functional underpinning of my undergraduate socialization model (Weidman, 1989) limits its applicability because

> … it ignores the possibility of a socialization process that is more unique, individualistic, and reflective of the diverse nature of the more recent incumbents to academic and professional roles as well as the changing environments affecting them (Weidman et al., 2001, p. 15).

We construe socialization of students in higher education institutions as a set of fluid and iterative (as opposed to invariant) processes, with permeable boundaries across spaces and dimensions. This is depicted by enclosing dimensions in intersecting ellipses with dotted lines rather than solid boxes connected with lines. In part, this was in response to comments from my University of Pittsburgh colleague, Rolland Paulston (1999), a leading figure in the social cartography of comparative and international education, whose work modeled unconventional (post-modern)

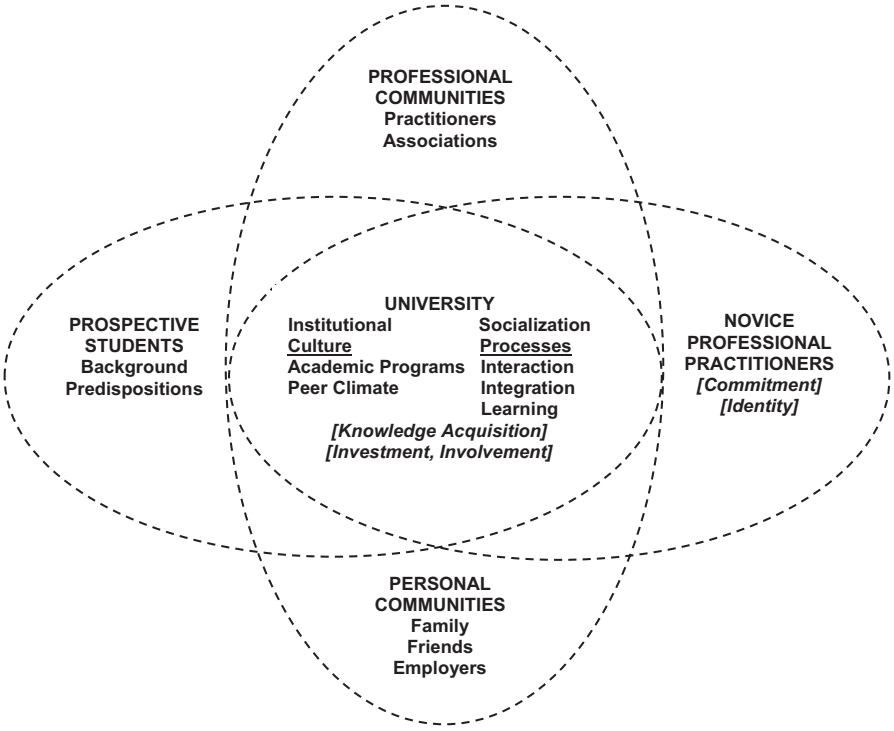

Fig. 2.4 Conceptualizing graduate and professional student socialization. (Source: Weidman et al., 2001, p. 37)

representation of constructs. While both the horizontal and vertical dimensions are similar conceptually to previous models, they are construed as being interrelated rather than reflecting experiences explicitly internal or external to the higher education environment.

Second, drawing from the work of Thornton and Nardi (1975), the model posits a set of *interactive stages of socialization* that do not necessarily represent a linear progression (Thornton & Nardi, 1975) but, nonetheless, reflect a discrete set of steps (*anticipatory, formal, informal, personal*) in the process of professional role acquisition. It also suggests ways that graduate and professional students are engaged in the *institutional culture* (changed from *normative contexts* to be more encompassing) and experience "Socialization Processes" (*interaction*, *integration*, *learning*) similar to those highlighted in my undergraduate socialization model (Weidman, 1989). The underlying assumption is that through *knowledge acquisition, investment, and involvement* students develop professional *commitment* and *identity*, the ultimate outcomes of socialization in graduate and professional programs (Stein, 1992; Thornton & Nardi, 1975). Maintaining continuity with major

conceptual themes in the college impact literature, the notion of *involvement* draws from the work of Astin (1984) that focused on undergraduates but is just as applicable to graduate and professional students.

Table 2.1 contains examples of ways in which the core elements of graduate and professional student socialization are reflected in each of the four stages of moving through advanced degree programs. Note that this table includes *engagement* as a core element even though it did not appear in the 2001 version of the framework (Weidman et al., 2001, p. 37). Engagement was, however, actually mentioned in the text (Weidman et al., 2001, p. 29) and subsequently included in the next iteration of the framework (Weidman, 2006).

Table 2.1 Core elements of collaborative professional socialization in higher education[a]

	Core elements			
	Knowledge acquisition	Investment	Involvement	Engagement
Stages: Anticipatory	Simulations, web sites, videos of institutions and professions	Matriculation, financial investment, tolerance of diversity, inclusiveness	Shadowing professionals, pre-professional experiences, move from outsider to insider, develop favorable self-assessment	Evaluate mental models of professions, develop identification with and dispositions to perform relevant professional roles
Formal	Transformative projects, learning communities, adaptive evaluation strategies, new instructional delivery methods, distance learning courses, new learning models	Team learning, purchase of necessary hardware and software, participation in training activities supplementing courses	Shared vision, cohort groups, experiential activities, collaborative communities (faculty, students and practitioners), mastery learning	Conference presentations, professional development, joint research projects, participation in professional community, professional collaboration, advancement of profession through practice and/or research
Informal	Academic interactions in addition to formal classes, role learning, cyber-competence and cyber-receptivity	Mutual sharing, group maturity, embrace diversity in class, faculty/student bonding, socio-cultural activity, social interactions, dialogue, study groups	Participation in collaborative communities other than those in formal settings (faculty, peers, practitioners), observation	Professional interaction, practitioner interaction, appreciate diverse colleagues, networking, role identification, self-reflection

(continued)

Table 2.1 (continued)

	Core elements			
	Knowledge acquisition	Investment	Involvement	Engagement
Personal	Internet, professional bulletin boards, personal vision and mastery, develop familiarity with new teaching and learning technologies	Formal mentoring by faculty and professional practitioners, volunteer participation in professional activities	Field experiences, internships, assistantships, clerkships, sponsorship	Internalize professional role, connectedness to professionals, independent thinking, self-evaluation, ethical practice, role transformation

[a]Adapted from Weidman et al., (2001, p. 29)

As was the case for the early research on undergraduate career socialization, this framework emphasizes the importance of *academic programs* or major fields of study (Weidman et al., 2001, pp. 88–89). Weidman & Stein (2003) did a limited empirical test of this framework comparing two academic departments (sociology and education policy studies) with a focus on socialization of doctoral students for research.

Toward a More General Model of Student Socialization in Higher Education (Weidman, 2006)

As I reflected on my conceptual work, I noticed that there seemed to be more similarities than differences between my socialization models for undergraduate (Weidman, 1989) and graduate (Weidman et al., 2001) students. This led to my formative effort (Weidman, 2006) to generate a more generalized model, framed in terms of organizational socialization of students in higher education. I returned to the work of Vreeland and Bidwell (1965, 1966) on effects of student residences and academic majors and incorporated the work of Berger and Milem (2000) on organizational socialization. I also described how constructs in the model, sometimes with different names, have appeared in the broader literature on college impact. This model is shown in Fig. 2.5. The following discussion of this model draws substantially from the text in Weidman (2006).

Because my objective was to show how the model could be generalized and linked to underlying conceptual themes, I focused on the main sets of constructs across the horizontal axis in preceding models. While I had originally been thinking about college impact from quasi-measurement (e.g., pre-test/treatment/post-test) or production/program evaluation (e.g., input-throughput-output) perspectives, it occurred to me that a more purely social scientific perspective would also be appro-

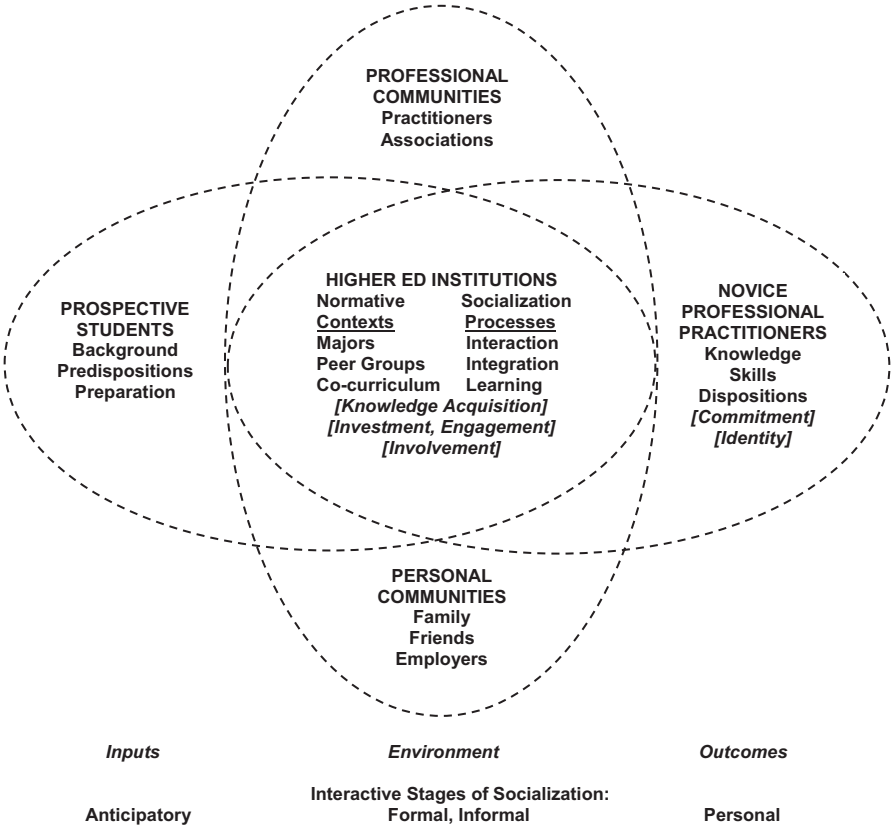

Fig. 2.5 Conceptualizing organizational socialization of students in higher education. (Source: Weidman, 2006, p. 257)

priate. Hence, I added a basic "inputs–environment–outcomes" (I–E–O) structure to the horizontal axis of Fig. 2.5. This conceptualization parallels what Astin (1970a, 1970b, 1991) had written about college impact. Further, the I–E–O structure is shared by classic human capital theory in economics (Becker, 1975) and status attainment theory in sociology (Sewell, Haller & Portes, 1969).

In this model, inputs (I) to higher education are conceived as attributes of prospective students: family background, beliefs and values (predispositions to being influenced), and prior academic preparation. Environment (E) represents the organizational structures and normative contexts of higher education institutions influencing students through processes of socialization, namely, interpersonal interaction, social integration (Tinto, 1975, 1993), and learning that connect students with salient normative environments in higher education. Socialization outcomes (O) are the resultant changes (knowledge, skills, dispositions) that occur in students during college. These types of outcomes are commonly labeled cognitive, psycho-motor,

and affective in more psychologically-oriented research and scholarship. The horizontal axis also denotes that socialization occurs through a set of sequential, interactive stages, though it does not imply a necessary order since each successive stage may include elements of both previous and subsequent stages.

The vertical axis in this model includes internal as well as external influences beyond the control of higher education institutions. The terms in italics in the central ellipse of this model links various ways students are influenced within higher education institutions to antecedents in the college impact literature. Knowledge acquisition or learning can occur both formally and informally (Pascarella, 1985), through instruction as well as interpersonal interaction with faculty and peers. These processes are reflected in the level of student involvement (Astin, 1984) in various formal and informal structures of college environments. Engagement (Kuh, Schuh, Whitt, & Associates, 1991) occurs as students develop attachments to persons and environments within higher education institutions. Involvement and engagement are also fundamental dimensions of integration (Tinto, 1975, 1993) into the social and academic spheres as well as personal investment into what each sphere represents. The notions of investment, involvement, and engagement also appear in the "college impress model" of Pace (1979, p. 126).

By this time, I was fully cognizant of how important demands from spouses and/or children could be for adult students (e.g., Weidman & White, 1985). Not only had I advised a number of doctoral students who were working full-time while managing households during their degree programs, I had also undergone my wife's completion of a PhD dissertation from the perspective of a spouse! Hence, this framework reinforces the notion that colleges are not encapsulated environments. It acknowledges the importance of both professional career communities and personal communities for ultimate student outcomes from higher education.

As it turned out, my frameworks attracted both domestic and international attention. Consequently, I returned to them a few years after the publication of my 2006 model. In the last chapter of this book, Linda DeAngelo and I describe the more recent iteration of the framework and, informed by the contributions of other authors in the present book, suggest further directions for framing student socialization in higher education.

References

Astin, A. W. (1970a). The methodology of research on college impact (part 1). *Sociology of Education, 43*, 223–254.

Astin, A. W. (1970b). The methodology of research on college impact (part 2). *Sociology of Education, 43*, 437–450.

Astin, A. W. (1977). *Four critical years: Effects of college on beliefs, attitudes and knowledge*. San Francisco: Jossey-Bass.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*, 297–308.

Astin, A. W. (1991). *Assessment for excellence: The philosophy and practice of assessment and evaluation of higher education*. New York: Macmillan.

Astin, A. W., Panos, R. J., & Centra, J. A. (1966). *A program of longitudinal research on the higher educational system* (ACE Research Reports, I (No. 1)). Washington, DC: American Council on Education.

Becker, G. S. (1975). *Human capital: A theoretical and empirical analysis, with special reference to education*. Chicago: University of Chicago Press.

Berger, J. B., & Milem, J. F. (2000). Organizational behavior in higher education and student outcomes. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 15, pp. 268–338). New York: Agathon.

Bess, J. L., & Webster, D. (Eds.). (1999). *Foundations of American higher education: An ASHE reader* (2nd ed.). Needham Heights, MA: Simon & Schuster Custom Publishing.

Brim Jr., O. G. (1966). Socialization through the life cycle. In O. G. Brim Jr. & S. Wheeler (Eds.), *Socialization after childhood: Two essays* (pp. 1–49). New York: Wiley.

Chickering, A. W. (1969). *Education and identity*. San Francisco: Jossey-Bass.

Chickering, A. W., & Reisser, L. (1993). *Education and identity* (2nd ed.). San Francisco: Jossey-Bass.

Durkheim, E. (1897) [1951]. *Suicide: A study in sociology* (J. A. Spaulding & G. Simpson, Trans.) . New York: The Free Press.

Feldman, K. A., & Newcomb, T. M. (1969). *The impact of college on students* (Vol. 1). San Francisco: Jossey-Bass.

Homans, G. C. (1950). *The human group*. New York: Harcourt, Brace & World.

Kuh, G. D., Schuh, J. S., Whitt, E. J., & Associates. (1991). *Involving colleges: Successful approaches to fostering student learning and personal development outside the classroom*. San Francisco: Jossey-Bass.

Mayhew, M. J., Rockenbach, A. N., Bowman, N. A., Seifert, T. A., Wolniak, G. C., Pascarella, E. T., et al. (2016). *How college affects students: 21st century evidence that higher education works* (Vol. 3). San Francisco/New York: Jossey-Bass/John Wiley.

Merton, R. K. (1968). *Social theory and social structure*. New York: Free Press.

Mortimer, J. T. (1976). Social class, work and the family: Some implications of the father's occupation for familial relationships and sons' career decisions. *Journal of Marriage and the Family, 38*(May), 241–256.

Pace, C. R. (1979). *Measuring outcomes of college*. San Francisco: Jossey-Bass.

Parsons, T., & Platt, G. M. (1973). *The American university*. Cambridge, MA: Harvard University Press.

Pascarella, E. T. (1985). College environment influences on learning and cognitive development. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 1, pp. 1–61). New York: Agathon.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students*. San Francisco: Jossey-Bass.

Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students* (Vol. 2) San Francisco: Jossey-Bass.

Paulston, R. G. (1999). Mapping comparative education after postmodernity. *Comparative Education Review, 43*(4), 438–463.

Sanford, N. (Ed.). (1962). *The American college: A psychological and social interpretation of the higher learning*. San Francisco: Jossey-Bass.

Sewell, W. H., Haller, A. O., & Portes, A. (1969). The educational and early occupational attainment process. *American Sociological Review, 34*, 82–92.

Sharp, L. M., & Weidman, J. C. (1989). Early careers of undergraduate humanities majors. *Journal of Higher Education, 60*(September/October), 544–564.

Spady, W. G. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange, 1*(1), 64–85.

Stein, E. L. (1992). *Socialization at a protestant seminary.* Doctoral dissertation, University of Pittsburgh.

Thornton, R., & Nardi, P. M. (1975). The dynamics of role acquisition. *American Journal of Sociology, 80*(4), 870–885.
Tierney, W. G. (1997). Organizational socialization in higher education. *Journal of Higher Education, 68*(1), 1–16.
Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), 89–125.
Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition* (2nd ed.). Chicago: University of Chicago Press.
Trow, M. (Ed.). (1975). *Teachers and students*. New York: McGraw-Hill.
Vreeland, R. S., & Bidwell, C. E. (1965). Organizational effects on student attitudes: A study of the Harvard houses. *Sociology of Education, 38*(Spring), 233–250.
Vreeland, R. S., & Bidwell, C. E. (1966). Classifying university departments: An approach to an analysis of their effects upon undergraduates. *Sociology of Education, 39*(Summer), 237–254.
Weidman, J. C. (1969). Some social factors which influence the elementary school performance of the urban child. *Education and Urban Society, 2*(November), 97–111.
Weidman, J. C. (1974). *The effects of academic departments on changes in undergraduates' occupational values.* Unpublished PhD dissertation, University of Chicago. Published as final report, project no. 1-E-111, Grant No. OEG-5-72-0010 (509), U.S. Department of Health, Education, and Welfare, Office of Education, National Center for Educational Research and Development (Regional Research Program). https://files.eric.ed.gov/fulltext/ED087364.pdf
Weidman, J. C. (1979). Nonintellective undergraduate socialization in academic departments. *Journal of Higher Education, 50*(January/February), 48–62.
Weidman, J. C. (1984). Impacts of campus experiences and parental socialization on undergraduates' career choices. *Research in Higher Education, 20*(4), 445–476.
Weidman, J. C. (1989). Undergraduate socialization: A conceptual approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5, pp. 289–322). New York: Agathon Press.
Weidman, J. C. (1995). Diversifying finance of higher education systems in the Third World: The cases of Kenya and Mongolia. *Education Policy Analysis Archives*, *3*(5). https://doi.org/10.14507/epaa.v3n5.1995.
Weidman, J. C. (2006). Socialization of students in higher education: Organizational perspectives. In C. C. Conrad & R. C. Serlin (Eds.), *The Sage handbook for research in education: Engaging ideas and enriching inquiry* (pp. 253–262). Thousand Oaks, CA: Sage Publications.
Weidman, J. C., & Stein, E. L. (2003). Socialization of graduate students to academic norms. *Research in Higher Education, 44*(6, December), 641–656.
Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf
Weidman, J. C., & White, R. N. (1985). Postsecondary 'high-tech' training for women on welfare: Correlates of program completion. *Journal of Higher Education, 56*(September/October), 555–568.

Part II
New Perspectives on Student Socialization in Higher Education

Chapter 3
Tied Together Wirelessly: How Maintaining Communication with Parents Affects College Adjustment and Integration

Dayna Staci Weintraub

Most college impact models limit the role of parents and families to demographic characteristics, namely education, occupation, and income, affecting student experiences and behaviors prior to matriculation (Sax & Wartman, 2010). Weidman's (1989) model of undergraduate socialization accounts for these traits but also asserts that parents continue to have a role during college. The updated model published in Weidman (2006) broadens the language to families, which reflects the engagement of members beyond parents (Kiyama & Harper, 2018). Specifically, the model recognizes that normative contexts and socialization processes influence students through both formal and informal interactions, including among those influences peers, faculty, community organizations, and parents and family members, though it is agnostic as to which of these influences has the larger effect on student development (Weidman, DeAngelo, & Bethea, 2014). To be more inclusive of the ways parents and families engage in their children's postsecondary education, this chapter will acknowledge the current movement to broaden the language to parents and families (Kiyama & Harper, 2018); however, most of the literature cited only includes parents, as did the study performed.

Given that Weidman's original research on undergraduate socialization arose in the 1970s at the demise of *in loco parentis* when students rebelled against universities' supervision and demanded increased autonomy and greater authority over their education and academic records, it was prescient to include parental socialization even though it may seem obvious given what we know of parents today. The current behavior of parents has a larger role in both the experience of administrators on college campuses, and in the cultural perception and media description of college life (Sax & Wartman, 2010). The most visible forms of increased parental involvement

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are higher levels of parental intervention with college administrators on behalf of their children and excessive parental pressure on their children to achieve (Hofer, 2008). In many respects, this echoes the widespread pejorative image of helicopter parents or tiger moms. Viewed from a different perspective, parents are genuinely interested in their college student's development and are seeking knowledge on the appropriate ways to encourage and guide their child when navigating the college experience (Wartman & Savage, 2008).

Additionally, parents have the ability to participate in the college community, attending events such as orientation and sporting events, joining alumni or parent associations or volunteering in campus organizations. This sort of participation gives parents a greater investment in the community, and may increase their ownership of the college experience (Wartman & Savage, 2008). Research has not documented parent participation in these ways as having a direct influence on students' adjustment and integration (Sax & Wartman, 2010), though the potential for such an indirect effect is, of course, always possible. Thus, it is imperative to empirically study the reality of the parental influence and better understand its place within the hierarchy of socialization processes as to its effect on the undergraduate student.

Incessant in the media are stories of the overly-involved helicopter parent who smothers one's child, and of the combative "tiger mom" riding her child hard to supposed success (Lythcott-Haims, 2015; Poon, 2011). The mass media exaggerates "extreme behaviors" on the part of some parents as reported by student affairs administrators (e.g., "contacting the college late at night to report a mouse discovered in a daughter's room, expressing anger over a grade on a paper 'my son worked so hard on', or complaining about a roommate who snores") (Coburn, 2006, p. 9; Sax & Wartman, 2010, p. 219). Mullendore (2014) faults the emergence of the cell phone, which he refers to as "the world's longest umbilical cord," for the flare of helicopter parenting (web log comment para. 1). Others disagree and name the increase in college tuition as the culprit, suggesting that parents have a financial investment to protect and they are simply behaving like responsible consumers (Johnstone, 2005).

Parent involvement has further been heightened for Asian American students with recent critiques of the "Tiger Mom" phenomenon (Chang, 2011a). In January 2011, the *Wall Street Journal* published an essay entitled, "Why Chinese Mothers Are Superior" by Amy Chua (2011). This essay and the ensuing media attention thrust Asian American parents and their presumed parenting style, labeled "tiger parenting," into the spotlight (Poon, 2011). Tiger parents were characterized as controlling and authoritarian, dictating their children's activities and schedules in order to achieve academic success (Juang, Qin, & Park, 2013). And yet, many Asian cultures are dictated by Confucian ethics (Tu, 1976), emphasizing collectivism and intergenerational ties (Juang et al., 2013), meaning a complete breaking away from parents may in fact be detrimental to some Asian American students' adjustment. Indeed, a study of Chinese American students and their parents found that children wanted more independence but also felt sad when parental pressure was absent (Qin, Chang, Han, & Chee, 2012). This media narrative is also flawed in how it authenticates the model minority myth, which paints Asian American students as a

monolithic group achieving academic success (Chang, 2011b; Museus, 2013; Poon, 2011).

This unverified media narrative claiming that students' frequent contact with parents ultimately leads to the development of overly dependent and less self-reliant young adults is neither consistent with Weidman's model nor empirically proven. For starters, these sensationalized stories too often represent the type of practices and the social position of certain families, namely, college-educated White and Asian families from middle to upper class backgrounds or from monolithic groups (Chang, 2011a, 2011b; Museus, 2013; Poon, 2011; Sax & Wartman, 2010). In reality, however, parent engagement is far more complicated. Furthermore, these tales take aim at mothers, exaggerating certain maternal qualities, and ignore the contribution of fathers to the parental influence (Sax & Weintraub, 2014).

The reality is quite different from these narratives, with students, particularly daughters, looking for more communication with their fathers (Hofer & Moore, 2010; Sarigiani, Trumbell, & Camarena, 2013; Sax & Weintraub, 2014), and finding satisfaction with the role their parents play in their college lives (Sax & Weintraub, 2016). Different gender, racial, and socioeconomic groups may not communicate with their parents in the same ways and thus may experience dissimilar familial bonds and effects (Harper, Sax, & Wolf, 2012). Students, particularly those from marginalized groups, may need their parents to support them in today's fraught world of cultural conflict and interpersonal violence, and parents of children in such groups may be legitimately worried about who would seek to harm their children, physically or psychologically, when they are unable to be physically present.

For example, there are a number of situations that arise on campus where parents' concerns for their students' safety and emotional well-being is justified. In fact, the rise in critical incidents on college campuses (e.g., sexual victimization and racial hostility) implies a variety of catalysts for parental involvement and may influence enrollment decisions as parents and students watch closely at how administrators respond to such situations (Anderson, 2017). For instance, parents of women may have greater contact after an incident of sexual assault occurs on campus. Likewise, parents of African American students may be asking similar questions related to their student's emotional safety and inclusiveness on campus. These examples bring to light how some of the motivation for parents to remain connected with their college-going children will naturally vary by gender, race, and class, and that college adjustment and integration may also vary by demographic background (Harper et al., 2012; Sax & Weintraub, 2014; Sy & Brittian, 2008; Witkow, Huynh, & Fuligni, 2015).

Because students come from a variety of backgrounds, there cannot be a single model of parental engagement. For instance, higher-income parents may have certain tangible privileges and resources that free their time to be involved in their children's education. Working-class families may not have the same sort of discretionary time, but this does not negate the love, support, care, and interest they show towards their children's education performance and aspirations (Lareau, 2011). Among immigrant families, especially true for middle- and upper-income Asian families, fathers may return to their home country to work while mothers and

children remain in the United States, termed “astronaut families” (Tsong & Liu, 2009, p. 365). Parents may also interact differently with their children on the basis of gender (Sax, 2008; Sax & Wartman, 2010). The extent to which parent-child relationships during college may depend on factors such as race, class, and gender is a major focus of this research.

Weidman’s (1989) model acknowledges parent engagement as a socializing influence on students’ cognitive and affective outcomes. The socialization process involves the imparting of values and is likely to manifest itself in communication between students and parents, as opposed to indirect involvement parents may have with the university. While there are many forms of parental influence, examining communication provides insight into the level of contact students maintain with their parents during college. As such, this chapter demonstrates explicit linkages between students’ interaction with their parental figure(s) and their social and academic experiences during college. The research questions examined include:

1. How are student-parent interactions associated with key indicators of first-year adjustment? How does the association between student-parent interactions and first-year adjustment vary by gender, race and ethnicity, and class?
2. How are student-parent interactions associated with key indicators of fourth-year integration? How does the association between student-parent interactions and fourth-year success vary by gender, race and ethnicity, and class?

The discussion will explore how what we learn from the association between student-parent interactions on first-year integration and fourth-year success aligns with the depiction of the parent and familial role in undergraduate socialization in Weidman’s model.

Importance of Student-Parent Interactions

Technological advancements have transformed how students maintain ties with their parents during college. Students seek modes of interaction that allow for immediate feedback and can be performed ubiquitously (e.g., cell phone, text messaging, or email) (Chen & Katz, 2009; Sarigiani et al., 2013; Sax & Weintraub, 2014). However, as Sarigiani et al. (2013) point out, electronic forms of communication are rapidly expanding; therefore, it is imperative to reexamine this topic on a regular basis as the potential avenues for communication expand and evolve (Sarigiani et al., 2013). Despite the use of technology in their communication choices, a majority of students did not report frequent use of social media as a means of communicating with their parents (e.g., Skype and Facebook) (Sax & Weintraub, 2014).

Students' preference towards electronic methods over more antiquated modes such as face-to-face interaction or postal mail may not look the same across racial and ethnic groups (Sax & Weintraub, 2014). For instance, Latinx American students may maintain greater face-to-face interaction with parents compared to White, Black, and Asian students given the value they place on living at or close to home during college (Ovink & Kalogrides, 2015; Tornatzky, Lee, Mejia, & Tarant, 2003). Note that the "x" in Latinx is used as an inclusive term and indicates male, female, or non-binary gender preferences. By living closer to home, Latinx students maintain familial closeness and prioritize family responsibilities (Desmond & Turley, 2009), which has been shown to increase the likelihood of bachelor degree attainment in comparison to White students (Cerna, Pérez, & Sáenz, 2009) and provide students with emotional support, connection, and high expectations for achieving success (Guiffrida, Kiyama, Waterman, & Musues, 2012; Kiyama et al., 2015; Museus & Maramba, 2011). Most research on student-parent interactions has generally been descriptive in nature with a narrow focus on the frequency of communication and its differential impact on college outcomes (Harper et al., 2012; Sax & Wartman, 2010; Wolf, Sax, & Harper, 2009).

Impact of Student-Parent Interactions on College Outcomes

While researchers have focused on cataloguing the frequency, mode, and nature of students' interactions with their parents during college, there is a limited body of scholarship which explores the effects of student-parent interactions on college outcomes. Much of the scholarship that does exist focuses on the psychological relationship between students and parents. Each outcome will be summarized, with attention to general correlates, as well as the ways in which parental engagement impacts adjustment and integration, and how such engagement varies by gender, race and ethnicity, and class. With respect to these variables, most studies of gender in the college context apply a biologically or socially constructed binary definition (Johnson & Repta, 2012). Race and ethnicity can be taken in both broad, aggregated racial and ethnic categories, such as Asian and White, or broken into finer ethnic groups, such as Filipinx and Japanese; the studies considered below draw from both of these options. Disaggregated racial and ethnic data raises consciousness about the specific educational and social outcomes among subpopulations and prevents confounding errors in research by neglecting to consider the unique needs of subgroups (Teranishi, Behringer, Grey, & Parker, 2009). Class is even more complicated to represent, with most studies in sociology conceptualizing it as an income variable, while others in psychology consider parental education as the primary indicator of socioeconomic standing (Diemer, Mistry, Wadsworth, López, & Reimers, 2013; Duncan & Magnuson, 2003). Again, both options are useful in understanding the effect of class on college outcomes and are treated equally in this section.

First-Year Adjustment

College adjustment during the first year is critical to longer-term persistence, academic achievement, and personal development (Pascarella & Terenzini, 2005; Tinto, 1993). Socialization factors such as leadership in academic and social clubs and organizations, positive peer interactions, and relationships with faculty and administrators facilitate first-year adjustment (Astin, 1993; Bean & Eaton, 2001; Braxton, Milem, & Sullivan, 2000; Kuh, Kinzie, Schuh, & Whitt, 2010; Pascarella & Blimling, 1996; Pascarella & Terenzini, 2005; Tinto, 1993; Upcraft, Gardner, & Associates, 1989). Rayle and Chung (2007) also found that receiving social support from friends and family contributed to first-year adjustment. Students adjusted to the academic rigors of college when they maintained open communication with their parents (Wintre & Yaffe, 2000) and perceived a quality relationship (Sarigiani et al., 2013).

Existing research in first-year adjustment accounts for variations in family dynamics that are based on gender, racial and ethnic, and class differences. For women, having an attached relationship with parents was associated with higher psychological well-being and positive adjustment (Melendez & Melendez, 2010). Women's relationship with their parents became closer over time; however, men's relationships did not change (Hiester, Nordstrom, & Swenson, 2009). Maintaining ties with family and family support eased the transition for students of color attending predominantly White institutions (Barnett, 2004; Carter, Locks, & Winkle-Wagner, 2013; Hinderlie & Kenny, 2002).

With respect to socioeconomic status, familial support can be both helpful and hindering to students' adjustment. For example, while on the one hand, first-generation college students are grateful for the opportunities presented by obtaining a college education and are thus driven to excel academically, their obligation to work and help support their family financially can be a burden (Elkins, Braxton, & James, 2000; Wolf, 2011). As a result, frequent contact with family may place inordinate amount of pressure on these students to provide financial and emotional support, potentially negatively affecting their college experience. After all, frequent contact home may give families more opportunity to express to the student the challenges facing the family. When children grow up with more exposure to these challenges, they are inherently privy to the details of such challenges. Receiving this information while away at college may further exacerbate the tension between familial obligation and college responsibilities.

Fourth-Year Integration

Maintaining a strong social connection and affinity to one's institution by feeling a sense of belonging and exercising autonomy and confidence in academic decision-making are important measures of college success (Nora, Barlow, & Crisp, 2005; Pizzolato, 2005). At the core of students' success is integration, which historically occurred when students fully immersed themselves into the formal and informal

college academic and social environments (Tinto, 1975). Tinto's theory of integration involved the act of separating from family and hometown friends, and this has come under great scrutiny by many critics, especially by scholars concerned that his theory is not culturally appropriate for most students of color (e.g., Guiffrida, 2006; Rendón, Jalomo, & Nora, 2000; Tierney, 1992). Given that this theory was developed based on a Eurocentric paradigm, critics contend the act of separation would require students of color to assimilate away from their cultural values in order to acculturate into a campus dominated by a predominantly White perspective (Guiffrida, 2006; Kuh & Love, 2000; Rendón et al., 2000; Tierney, 1992). Aspects of attachment theory combined with separation deem it possible for students of color to identify with and remain enmeshed in their cultural heritage while also acclimating to the college campus.

For some students, separating from one's family is not a viable option. In a study of Filipina American women, students described their family and college experience as "inextricably linked" and constant challenges and negotiations surrounding the balance of family obligations, expectations and college responsibilities played a pivotal role in college decisions. Additionally, constant gender double standards posed real stressors for these students (Maramba, 2008a). Students constantly faced challenges and were forced to negotiate ways to preserve their Filipina American identity while simultaneously trying to integrate on campus. They experienced "biculturalism, generally defined as a process by which individuals learn to live in two different environments, the dominant culture and their ethnic minority culture" (Maramba, 2008b, p. 345).

In addition, scholars recommend a greater emphasis on how different racial and ethnic groups relate to attachment and separation-individuation theories, especially given tendencies of Asian/Asian American, African/African American, and Latinx American families to place greater value on the well-being of the family and the community over individual achievement (Mattanah, Brand, & Hancock, 2004; Triandis, 1995). Likewise, emphasis is placed on children's responsibility to fulfill family obligations (Sy & Brittian, 2008). That said, most studies do not consider race and ethnicity as a sole predictor of student-parent relationships; rather, they combine race and ethnicity with other variables such as parent education level, socioeconomic status, and gender.

Institutions of higher education have become more culturally responsive and engaging; therefore, while integration is key, it must not be at the expense of removing the responsibility from the institution to be culturally engaging and culturally responsive environments for all students. More recent studies on integration outcomes during college include a few that focus on the role of parents in academic matters, such as decision-making, career exploration, and performance.

In a qualitative study, Simmons (2008) found that students seek parental guidance on academic and career decisions. Similarly, students in Pizzolato and Hicklen's (2011) study described their parents as guiding their decision-making process, rather than meddling or intervening, thereby suggesting an interdependent relationship dynamic as opposed to overreliance. When students shared their academic interests and concerns with parents coupled with parents' encouragement

and expressions of their belief in their children's academic potential, students were more likely to excel academically (Cutrona, Cole, Colangelo, Assouline, & Russell, 1994). Students who rated their parents as being supportive and granting appropriate levels of autonomy reported higher levels of integration. The supportive ratings diminished in salience somewhat from the first to fourth year, as students established new academic and social support communities (Strage & Brandt, 1999).

Parental involvement and contact with students' academic development varied by students' background characteristics (Wolf et al., 2009). Harper et al. (2012) extended this earlier study and identified student background differences in strength and directions between measures of parental involvement and frequency of parent contact on students' academic development, social satisfaction and sociopolitical awareness. These studies are particularly revealing given that most research fails to acknowledge the mutual reciprocity that students gain from being a receiver and provider of financial and emotional support from families (Wolf, 2011). For instance, students from Asian and Latin American families rely heavily on resources accumulated within and by the family (Fuligni, 2007). Furthermore, the act of students as providers for families during college (e.g., childcare assistance, financial support) can either be seen as diverting students' attention away from academic and social integration (Tinto, 1993), or can be seen as equipping students with the tools to understand independent living (Sy & Brittian, 2008; Wolf, 2011). These perspectives demonstrate the importance of instrumentation that considers the diverse experiences of students from all racial, ethnic, cultural, and economic backgrounds.

Method

Site

This investigation took place at a large, public, research university and among one of the most diverse with respect to socioeconomic, racial and ethnic diversity (website and news media sources) and enrollment from all 50 states and more than 100 countries. The institution also represents parents in local and distant locations providing a breadth of student-parent interaction patterns. Specifically, their annual Parent & Family Coffee Social day includes at least 55 locations representing 26 within the state, 21 out-of-state, and 8 countries.

Survey Instruments and Sampling History

This study merged data from two original surveys and a national instrument that served as a pretest assessment for the outcome measures. First, the study pulls baseline data capturing student characteristics upon matriculation to college from a single institution's participation in The Freshman Survey (TFS) administered by the

Cooperative Institutional Research Program (CIRP) at the Higher Education Research Institute (HERI) in 2011. Second, responses to the TFS were linked with this institution's annual Residential Life (RL survey) in spring 2012. A parent engagement module consisting of 40 questions which inquire about students' communication behaviors with their parental figure(s) was added to the RL survey in spring 2012. The parent engagement module had students self-identify up to two parental figures they interacted with the most. Answer options spanned a diverse range of parental and familial structures including mother, father, same-sex parents, adopted parents, and legal guardian/other (e.g., grandmother, foster parent, the State). Insufficient sample sizes prevented multivariate analysis beyond mother (combined with stepmother) and father (combined with stepfather).

These measures were pilot tested among 15 students in a student affairs graduate program in order to assess the reliability and comprehensibility of the instrument. Third, participants in both of these surveys were invited to participate in a follow up instrument, the Student-Parent Interactions (SPI) survey, to ascertain whether there was change in communication patterns with parental figure(s) 3 years later.

Final Longitudinal Sample

The population of the first wave consisted of 1155 first-year students who completed both the TFS and RL surveys and provided a student identifier to link their responses. Then, 574 students completed the follow-up survey. Of those, 368 students provided information on their communication with their mother (or stepmother) and father (or stepfather).

Parent 1 was identified as the mother (85.1%), followed by the father (14.9%), stepmother (0%), or stepfather (0%). Parent 2 was typically described as the father (83.7%), followed by mother (14.7%), stepfather (1.4%), or stepmother (0.3%). The gender breakdown of this sample was 67% female and 33% male. Among the sample, most students were domestic (97%) and 15.4% were first-generation college students. The overrepresentation of women and underrepresentation of international students in the sample increased somewhat from the first- to the fourth-year samples. The median income of the sample was $100,600. The higher median income in the final sample (relative to the first-year only sample) is a result of attrition among students from lower-income families in the 3 years between surveys.

Conceptual Framework

Guided by Weidman (1989), the model for the current study considers parents as an internal force that is directly integrated into students' experience alongside students' interactions with other sources of influence (e.g., peers, professors, and advisors). The multi-stage model of undergraduate socialization accounts for the

impact of student background characteristics, as well as students' social interaction with groups outside the college context, including, but not limited to, non-college pressures or external commitments that may divert students' attention away from campus. Weidman's (1989) model indicates that socialization processes occur in normative contexts and these environments are defined as value laden formal and informal structures where students discover ideas and perspectives. Peers and professors are important socializing agents that can influence students' values, aspirations, and preferences (Weidman, 1989). By directly acknowledging parents as a socializing force while in college this model speaks to the notion that higher education institutions are not insular environments. Students have continued contact with outside influences, and in particular parents, during college. Relationships with parents before and during college affect students' acclimation and socialization process (Weidman, 1989).

The primary block of interest included measures of student-parent interactions, a proxy for parental socialization as named in the Weidman (1989) model. Weidman's (1989) model acknowledges parent engagement as a socializing influence on students' cognitive and affective outcomes. The socialization process involves the imparting of values and is likely to manifest itself in communication between students and parents, as opposed to indirect involvement parents may have with the university. While there are many forms of parental influence, examining communication provides insight into the level of contact students maintain with their parents during college. Notably, this model demonstrates the way students' interactions with their parents during the first and fourth years of college predict their adjustment and success within a college impact model. In this context, student-parent interactions are considered a form of involvement and socialization.

Furthermore, the current investigation acknowledged that the relationship between student-parent interactions and the outcomes may operate differently by gender, race and ethnicity, and class. Weidman's (1989) undergirding philosophy was applicable as the model speaks to students who are negotiating competing familial, cultural, and academic expectations. Additionally, because variables such as gender, race and ethnicity, and class can affect the outcome of student-parent interactions differently, this study also incorporated Sax's (2008) model of conditional effects, which factors in these variables. Finally, the models frames how college experiences, and student-parent interaction in particular, influenced students' college adjustment and integration.

Dependent Measures

This study examined three dependent outcomes pertaining to first-year adjustment and fourth-year integration in college. First-year adjustment involved how well students' transition to both the social, emotional, and academic spheres of the college experience. Fourth-year integration involves students' sense of connection and affinity to one's institution and the extent to which they are making academic deci-

sions. As supported by prior literature, the adjustment and integration measures included: sense of belonging (e.g., students' level of connectedness to their institution) (first and fourth year), emotional well-being (e.g., the degree to which students felt depressed, isolated from campus, lonely, and overwhelmed by all that they had to do) (first and fourth year), ease of academic adjustment to college (e.g., the extent to which students adjust to the academic demands of college) (first year), and academic integration (fourth year). The selection of variables that constitute each construct were either directly replicated or closely derived from factors that have been tested as reliable and valid constructs used in previous studies (Hurtado et al., 2007; Sax, Bryant, & Gilmartin, 2004).

Control Measures and Key Independent Variables

All independent variables were selected in accordance with Weidman's (1989) model of undergraduate socialization and blocked in the following temporal sequence: (0) pretest (when applicable), (1) student background characteristics/pre-college traits, (2) non-college pressures, (3) college experiences and behaviors, (4) interactions with agents of socialization, and (5) student-parent interactions.

Block 1: Student background characteristics examined in this study included gender, race and ethnicity, status as a first-generation college student, parent income, parent educated outside of the United States, parent born outside of the United States, and average high school grade (first-year models only) as both student and parent traits can have a strong influence on socialization processes (Weidman, 1989).

Block 2: Measures of non-college pressures are described as hours/week working for pay, hours/week spent volunteering, hours/week spent using online social networks for personal reasons, hours/week spent visiting home, and hours/week spent contributing to the needs of family.

Block 3: College experiences and behaviors that likely occurred in such formal and informal settings within the residence halls, dining halls, and in student clubs and organizations included: hours/week spent studying, hours/week spent exercising, and hours/week spent participating in student clubs and organizations.

Block 4: The study included two measures representing students contact with peers and professors: hours/week spent socializing with friends and students' ease getting to know faculty.

Block 5: The primary block of interest included measures of student-parent interactions, described the frequency, mode, and perceptions of students' communication behaviors with parents. Frequency of student-parent communication by mode is described as phone, text message, email, etc. Students' perceptions of their parents during their interactions equaled the difference between the sum of positive descriptors (respectful, helpful, interested, and supportive) and the sum of negative descriptors (overly involved, intrusive, uninterested, and overly critical). To understand students perceived level of satisfaction with the amount of communication that they have with their parents, this was a five-point Likert-type scale ranging

from a lot more than the student likes to a lot less than the student likes, with a middle option for students to indicate the communication is just the right amount.

Data Analysis

Factor Analyses

Exploratory factor analysis was used to reduce the number of dependent and independent variables. First, principal axis factoring using promax rotation to maximize the strength of each unique factor was performed on a sample of greater than 100 cases (Russell, 2002). Next, the default method of extracting factors with eigenvalues greater than 1 was applied. Within a factor, variables loaded at 0.35 or greater in order to be included (Agresti & Finlay, 1997). Then, to determine the factor's internal consistency, interrelatedness and reliability, the Cronbach's Alpha were analyzed and deemed acceptable at 0.65 or greater (Cortina, 1993; DeVellis, 2011). Finally, after creating the factors with the total sample, separate confirmatory analysis was performed by gender, race and ethnicity, and class to conform the reliability of the factors. After identifying the factors, confirmatory factor analysis verified that the measures of the construct were consistent with the hypothesized model and that one underlying construct explained the variables (Sharkness & DeAngelo, 2011).

Regression Analysis

Stepwise multiple regression analyses examined the unique effects of student-parent interactions on first-year adjustment and fourth-year integration outcomes. All variables were blocked in a temporal sequence as discussed previously. Parent variables entered after controlling for students' pre-college characteristics, institutional characteristics, and college experiences.

Multivariate Results

First-Year Adjustment

The first research question examined the association between student-parent interactions and key indicators of first-year adjustment, and assessed how gender, race and ethnicity, and class moderated the association. Table 3.1 displays the final regression results for each outcome of the three outcome measures used to define first-year adjustment. Included in Table 3.1 are variables that entered any of the

Table 3.1 Regression predicting first-year adjustment (N = 368)

	Emotional well-being		Academic adjustment		Sense of belonging	
	r final beta		r final beta		r final beta	
Block 0: Pretest						
Emotional well-being	0.46***	0.44***	N/A		N/A	
	($R^2 = 0.21$)					
Block 2: Student background characteristics/pre-college traits						
First-generation status	−0.10*	−0.09				
White/Caucasian			0.14**	0.07		
	($R^2 = 0.22$)		($R^2 = 0.02$)			
Block 3: Non-college pressures						
Hours/week: Using online social networking sites for personal reasons			−0.23***	−0.25***		
			($R^2 = 0.07$)			
Block 4: College experiences and behaviors						
No variables entered						
Block 5: Interactions with agents of socialization						
Socialize with friends	0.24	0.23***	0.09	0.15**	0.25	0.25***
Ease: Get to know faculty			0.28***	0.26***	0.11	0.08
	($R^2 = 0.27$)		($R^2 = 0.16$)		($R^2 = 0.08$)	
Block 6: Student-parent interactions						
Quality of interaction with father	0.19**	0.12**	0.17**	0.13**	0.17**	0.19***
Frequency of interaction with mother (all modes)					0.07	0.12*
Frequency of interaction with father (all modes)	−0.05	−0.11*			−0.08	−0.17**
Desiring more communication with mother			−0.09	−0.11*		
Final R^2	($R^2 = 0.29$)		($R^2 = 0.19$)		($R^2 = 0.13$)	

Coefficients shown only for variables that entered the model. Significance indicated by *p < 0.05, **p < 0.01, ***p < 0.001

three regressions; blank cells indicate that a variable did not enter that particular model. This format enables visualization of the relevant variables across all models and to provide an overview of how student-parent variables are associated with the three dimensions of first-year adjustment.

The total proportion of variance accounted for by variables in each model included 29% (for emotional well-being), 19% (for academic adjustment), and 13% (for sense of belonging). Interestingly, interactions with agents of socialization accounted for a majority of the explained variance in all outcomes save for the emotional well-being model. In this case, the emotional well-being pretest, which was the only pretest included in any of the first-year models, accounted for the greatest proportion of variance in its associated outcome measure, followed by the interac-

tions with agents of socialization. Of particular note, although interactions with faculty and peers accounted for the greatest proportion of the variance in all measures of students' first-year adjustment, parent variables still explained a modest but statistically significant proportion of variance: emotional well-being (2%), academic adjustment (3%), and sense of belonging (5%).

Although the primary focus of this study is the effect of the student-parent interaction variables on measures of first-year adjustment, it is important to first review the role played by variables in prior blocks. Among background characteristics, those who identified as first-generation college students tended to report lower emotional well-being, and women indicated greater ease at adjusting to the academic demands of college (block 2). However, once socializing with friends was entered into the regression in block 5, both measures lost significance in their respective models, suggesting the effects of these variables are mediated by time spent socializing. With respect to forces that divert students' attention away from campus (block 3), the number of hours per week spent using online social networking sites for personal reasons negatively predicted first-year students' academic adjustment. No measures of college behaviors and experiences entered any of the models (block 4).

Among interactions with agents of socialization (block 5), spending time socializing with friends was a moderately strong positive predictor across all three outcomes. In addition, ease getting to know faculty entered as a positive predictor for academic adjustment and sense of belonging, though it lost significance by the final step. Taken together, these results speak to the important role that peers and professors play in students' first-year adjustment. Above all, the impact of socializing with friends on first-year adjustment underscores the value that contemporaries have on students' institutional affinity, wellness, and academic development.

Effects of the Parent Variables

Of the six parental communication measures included in block 5, at least two, and as many as three, were significant in any given model. In fact, perceived quality of interaction with fathers is positively associated with all three dependent variables, and perceived quality of interaction with mothers maintained a strong relationship with all three outcome variables until paternal quality entered the model. Furthermore, these findings suggest that the more secure that students feel towards their interactions with their parents, the more likely it is that they will acclimate to the college environment. The one exception to this is that higher frequency of interaction with fathers was a negative predictor of emotional well-being and sense of belonging. In addition to the general trends, desiring more communication with mothers negatively predicted academic adjustment among first-year students. In other words, either greater levels of interaction with mothers or desiring more interaction with mothers was associated with lower security (e.g., emotional well-being and sense of belonging) or levels of academic adjustment. Of course, the direction of effect cannot be known from these data: It is possible that students who feel less

secure or are having a difficult time adjusting are communicating more often with mothers and/or desire even greater interaction with mothers.

Comparing the regression coefficients across each outcome uncovers interesting interrelationships among parent variables. Across all three outcomes, the quality of interaction measures revealed a positive association with first-year adjustment, yet frequency of parental interaction and dissatisfaction with parental interaction showed negative relationships with the outcomes. Consider emotional well-being as an example. In this case, more frequent communication with fathers correlated with lower emotional well-being. It is not known whether students with a lower sense of their emotional well-being are subsequently communicating more frequently with fathers, or if frequency of communication results in lower emotional well-being. Though it is difficult to discern the relationship among the parent measures, broadly speaking a pattern emerges corresponding to the value of quantity versus quality of interaction in relationships with mothers and fathers during the first year of college. As noted earlier, perceived quality of interaction is associated with positive indicators of adjustment, whereas dissatisfaction with communication amount or frequency of communication showed a negative association. Thus, these findings accentuate a role for parents in first-year students' adjustment to college, bearing in mind the vast majority of the variance in these outcomes is explained by interactions with peers and faculty.

Fourth-Year Integration

Research Question 2 parsed out the relationship between student-parent interactions and key indicators of fourth-year integration, and explored how relationship differed by gender, race and ethnicity, and class. Fourth-year integration was defined using three constructs similar to the three factors that defined first-year adjustment. When available, the constructs were exact or near-exact replicas of the first-year measures. In a similar format, Table 3.2 summarizes the final regression results for each outcome measure used to define fourth-year integration.

The total proportion of variance accounted for by variables in each model included 30% (for emotional well-being), 38% (for academic integration), and 32% (for sense of belonging). For emotional well-being and sense of belonging, the first-year counterpart measure explained 20% of the variance in emotional well-being and sense of belonging. For academic integration, the pretest of first-year adjustment explained only 8% of the variance. Instead, the strongest predictor of fourth-year academic integration was ease getting to know faculty, which explained 19% of the variance in the outcome measure. In fact, consistent with the first-year results, interactions with agents of socialization explained the largest proportion of the variance across all measures of fourth-year integration. Parent measures played a much smaller role, only explaining 1% of the variance in academic integration; parent measures did not enter the equation at all for emotional well-being or sense of

Table 3.2 Regression predicting fourth-year integration (N = 368)

	Emotional well-being		Academic integration		Sense of belonging	
	r final beta		r final beta		r final beta	
Block 1: Pretest						
First-year emotional well-being	0.45***	0.42***		N/A	N/A	
First-year academic adjustment		N/A	0.29***	0.23***		N/A
First-year sense of belonging		N/A		N/A	0.44***	0.41***
	(R^2 = 0.20)		(R^2 = 0.08)		(R^2 = 0.20)	
Block 2: Student background characteristics/pre-college traits						
Parent educated outside the US	−0.19**	−0.11*			−0.13**	−0.05
Parent born outside the US			−0.22	−0.10*		
Gender: Female			0.15**	0.14***		
	(R^2 = 0.23)		(R^2 = 0.14)		(R^2 = 0.21)	
Block 3: Non-co liege pressures						
Visit home	−0.12**	−0.08			−0.11*	−0.12**
Hours week: Doing volunteer work	0.12**	0.08				
Hours week: Using online social networking sites for personal reasons			0.06	0.09*	0.08	0.07
	(R^2 = 0.24)		(R^2 = 0.15)		(R^2 = 0.24)	
Block 4: College experiences and behaviors						
Hours week: Student clubs	0.15**	0.08			0.29***	0.21***
Hours/week: Studying			−0.11*	−0.11*		
Hours/week: Exercise/sports					0.19	0.10*
	(R^2 = 0.25)		(R^2 = 0.17)		(R^2 = 0.30)	
Block 5: Interactions with agents of socialization						
Ease: Get to know faculty	0.23***	0.14**	0.50***	0.44***	0.21***	0.14**
Socialize with friends	0.22***	0.12**				
	(R^2 = 0.30)		(R^2 = 0.36)		(R^2 = 0.32)	
Block 6: Student-parent interactions						
Quality of interaction with m other						
Quality of interaction with father			0.24***	0.12**		
Final R^2	(R^2 = 0.30)		(R^2 = 0.38)		(R^2 = 0.32)	

Coefficients shown only for variables that entered the model. Significance indicated by *p < 0.05, **p < 0.01, ***p < 0.001

belonging. Thus, it seems that the parental role has diminished to a negligible level by the fourth year of college.

As students progress to their fourth year in college, results indicated that certain college experiences and behaviors played the greatest role in students' integration, while parents played a less pronounced role. For instance, the frequency with which students visit home was a negative predictor of both sense of belonging and emotional well-being. It is unclear whether students who are less attached to campus are

visiting home more often, or if frequent visits home lead to lower sense of belonging on campus. On the other hand, socializing with friends and time spent engaged in activities such as exercise/sports and clubs, use of online social networking sites that often involve a lot of peer contact, had positive and strong associations with emotional, academic, and social integration. Interestingly, the results pointed towards an evolution in which the use of online social networking sites for personal reasons may have changed over the 4 years. There are two possibilities to the positive association between students' use of online social networks and academic integration. First, students may be increasingly communicating with students on campus. Second, networking may be a part of courses (e.g., group discussion boards as a course requirement). With respect to the change in sign from the first year compared to the fourth year, this change could be the result of an increased independence from parents, increased comfort with online options, on the part of the student and/or parents, or some other explanation, but it is not necessarily related to development. The role of parental quality remains evident, but the overall strength is less than the effect of peers and professors. Finally, these data suggested that the relationship between students and their parents with fourth-year integration operated similarly across gender, race and ethnicity, and class.

Variations by Gender, Race and Ethnicity, and Class

The results revealed, to some extent, the relationship between student-parent interactions and key indicators of adjustment were moderated by students' gender, race and ethnicity, and status as a first-generation college student. These patterns did not remain in the fourth year; rather, the relationship between parental communication patterns and integration functioned similarly across gender, race, and class. Furthermore, interesting patterns were revealed in terms of the intersections of race and class, which aligns with previous research that identified SES differences among AAPI students' transition to college. Within this study, the patterns for high-income students were very similar to those of the White/Caucasian and the East and South Asian group and, similarly, low-income family communication effects on integration were echoed in the other racial groups. This may be due to similar dynamics in low-income and non-White/Caucasian households, or it may be that most of the high-income households are White/Caucasian, and therefore reflect many of the same students. This aligns with research that found an intersection between Asian American Pacific Islander students and income status (Museus & Vu, 2013). Specifically, AAPI students from higher-income families received greater parental expectations and matriculated in college at higher rates than their peers from lower-income families, and the higher SES students sought out parental guidance at higher rates than the lower SES students who turned to peers more so than parents (Museus & Vu, 2013).

The presence of differences in the role of parents across students' background characteristics was less than expected, which may be a product of the limited

sample. Given the unique racial and ethnic demographics with respect to certain racial groups, future research needs to collect more data from a larger and more diverse sample of institutions. Furthermore, by controlling for student background characteristics separately, interactions within categories and the intersectionality of multiple identities were not captured.

Discussion

This study adapted Weidman's (1989) model of undergraduate socialization, and later updated in Weidman (2006). While this study applied the 1989 model, the recommendations suggested by the findings consider both versions. It is important to acknowledge that this model was the first to consider the role of parents during college; and therefore, ahead of research on college impact models in this respect.

Students' interactions with parents do contribute favorably to adjustment and integration during the college years, but they do not appear to be interfering with their development. This might be interesting to consider in future iterations or adaptations of the model. More importantly, peers and faculty were shown to be much stronger influences in students' adjustment and integration. In alignment with these findings, Weidman's model explicitly considers parental socialization and the role parents play in career orientation and aspirations (Weidman et al., 2014); however, even the updated version does not specifically address how and where familial influence on students' college experiences belongs. Thus, rigorous studies with diverse samples and multiple time points that incorporate family traits and behaviors both upon matriculation and during the college years are recommended.

Kiyama and Harper (2018) push the field forward by proposing a Model of Parent and Family Characteristics, Engagement, & Support. This model centers the various ways family influence students during the college experience through self-efficacy, educational aspirations, family characteristics, social networks, dimensions of support, and involvement & engagement. Such a comprehensive approach to the various dimensions in which family intermingle with students' characteristics upon entering college, the outside family and community, college characteristics and institutional context demonstrate and support what the findings of this study suggest. Kiyama and Harper's (2018) model serves to elaborate on the work of Weidman and studies in the future should examine how to incorporate the nuance of Kiyama and Harper's (2018) work within Weidman's model. In other words, can Kiyama and Harper's (2018) model be extended to demonstrate the familial role within college characteristics on student outcomes and socialization process? While parental influence was not as strong of a predictor as interaction with peers and faculty, the role of parents is not independent of these other socializing influences. For instance, parents may influence who their children choose as peers, how much interaction the student initiates with faculty, and how much a student engages with the local community. Weidman's (1989) model does not posit nor account for the extent to which agents of socialization (e.g., parents, peers, and faculty) influence

each other. While Weidman's model suggests that personal and professional communities often provide strong normative contexts for human social behavior, the model shows them as external to the higher education institutions, though they are acknowledged to "spill over" (Weidman, 2006, p. 258). To this end, these "normative contexts" are central to the organizational structure of colleges and universities, and play a key role in the socialization of students (Weidman, 2006). Greater specificity and acknowledgement of the type and degree of this role would be helpful to explain.

Exploring the multi-faceted ways in which parents maintain influence during the college years also requires consideration of the substantial ways technology transforms the nature of student-parent communication. Advancements in technology provide a greater variety of communication modes for students to choose from and allow for more frequent communication. Understanding how accessibility of communication influences parents continued influence on student socialization is important.

Finally, it is important to expand the notion of parental involvement to familial engagement, largely to better meet the needs of an increasingly diverse college student body (Kiyama et al., 2015). Familial encouragement and support is very important for students' entry into college and persistence to graduation; however, knowing how to encourage and support one's college student may be uniquely challenging for families who are unfamiliar with college processes, costs, and, time commitments. While Weidman's (2006) model expands the language from parents to families, in this new iteration, family is grouped with friends and employers in a category of personal communities. In this version, even the role of families is less distinct. Though the survey provided students with the option of indicating a non-maternal or non-paternal parental figure (e.g., adopted parents, legal guardians, same-sex parent), an insufficient number of responses to these categories prevented them from being included in the analysis. Furthermore, this study combined biological and step-parents though they do not exert the identical influence. Future research should disaggregate parent types. Thus, familial ties should be considered throughout the college experience and remain at the center of the model, not only situated as a precollege factor nor grouped with other external factors such as employers and friends.

References

Agresti, A., & Finlay, B. (1997). *Statistical methods for the social sciences* (3rd ed.). Upper Saddle River, NJ: Prentice Hall, Inc.

Anderson, M. (2017, October 19). How campus racism could affect Black students' college enrollment. *Atlantic*. Retrieved from https://www.theatlantic.com/education/archive/2017/10/how-racism-could-affect-black-students-college-enrollment/543360/

Astin, A. W. (1993). *What matters in college? Four critical years revisited*. San Francisco: Jossey-Bass.

Barnett, M. (2004). A qualitative analysis of family support and interaction among Black college students at an Ivy League university. *The Journal of Negro Education, 73*(1), 54–68. https://doi.org/10.2307/3211259

Bean, J., & Eaton, S. B. (2001). The psychology underlying successful retention practices. *Journal of College Student Retention, 3*(1), 73–89. Retrieved from http://csr.sagepub.com/content/3/1/73.full.pdf

Braxton, J. M., Milem, J. F., & Sullivan, A. S. (2000). The influence of active learning on the college student departure process: Toward a revision of Tinto's theory. *Journal of Higher Education, 71*(5), 569–590. https://doi.org/10.2307/2649260

Carter, D. F., Locks, A. M., & Winkle-Wagner, R. (2013). From when and where I enter: Theoretical and empirical considerations of minority students' transition to college. In *Higher education: Handbook of theory and research* (pp. 93–149). Dordrecht, The Netherlands: Springer Netherlands. https://doi.org/10.1007/978-94-007-5836-0_3

Cerna, O. S., Pérez, P. P., & Sáenz, V. B. (2009). Examining the precollege attributes and values of Latina/o bachelor's degree attainers. *Journal of Hispanic Higher Education, 8*, 130–157. https://doi.org/10.1177/1538192708330239

Chang, M. J. (2011a, January 26). Tiger mom adds to stereotype that burdens Asian American students. *The Sacramento Bee.* Retrieved from http://www.sacbee.com

Chang, M. J. (2011b). Battle hymn of the model minority myth. *Amerasia Journal, 37*(2), 137–143.

Chen, Y. F., & Katz, J. E. (2009). Extending family to school life: College students' use of the mobile phone. *International Journal of Human-Computer Studies, 67*(2), 179–191. https://doi.org/10.1016/j.ijhcs.2008.09.002

Chua, A. (2011, January 8). Why Chinese mothers are superior. *The Wall Street Journal.* Retrieved from http://www.wsj.com

Coburn, K. L. (2006). Organizing a ground crew for today's helicopter parents. *About Campus, 11*, 9–16. https://doi.org/10.1002/abc.167

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications. *Journal of Applied Psychology, 78*(1), 98. Retrieved from http://www.psycholosphere.com/what%20is%20coefficient%20alpha%20by%20Cortina.pdf

Cutrona, C., Cole, V., Colangelo, N., Assouline, S., & Russell, D. (1994). Perceived parental social support and academic achievement: An attachment theory perspective. *Journal of Personality and Social Psychology, 66*(2), 369–378. https://doi.org/10.1037/0022-3514.66.2.369

Desmond, M., & Turley, R. N. L. (2009). The role of familism in explaining the Hispanic-White college application gap. *Social Problems, 56*(2), 311–334. https://doi.org/10.1525/sp.2009.56.2.311

DeVellis, R. F. (2011). *Scale development: Theory and applications* (Vol. 26). Los Angeles: Sage.

Diemer, M. A., Mistry, R. S., Wadsworth, M. E., López, I., & Reimers, F. (2013). Best practices in conceptualizing and measuring social class in psychological research. *Analyses of Social Issues and Public Policy, 13*(1), 77–113. Retrieved from http://cares.la.psu.edu/pubs/Best%20practices%20in%20conceptualizing%20and%20measuring%20social%20class%20in%20psychological%20research.pdf

Duncan, G. J., & Magnuson, K. A. (2003). *Off with the Hollingshead: Socioeconomic resources, parenting, and child development: Socioeconomic resources, parenting, and Child Development* (pp. 83–106). Retrieved from http://www.education.uci.edu/person/duncan_g/docs/hollingshead.pdf

Elkins, S. A., Braxton, J. M., & James, G. W. (2000). Tinto's separation stage and its influence on first-semester college student persistence. *Research in Higher Education, 41*(2), 251–268.

Fuligni, A. J. (2007). Family obligation, college enrollment, and emerging adulthood in Asian and Latin American families. *Child Development Perspectives, 1*(2), 96–100.

Guiffrida, D. A. (2006). Toward a cultural advancement of Tinto's theory. *The Review of Higher Education, 29*(4), 451–472. Retrieved from http://muse.jhu.edu/article/198720

Guiffrida, D. A., Kiyama, J. M., Waterman, S., & Musues, S. D. (2012). Moving from individual to collective cultures to serve students of color. In S. D. Museus & U. M. Jayakumar (Eds.),

Creating campus cultures: Fostering success among racially diverse student populations (pp. 68–87). New York: Routledge.

Harper, C. E., Sax, L. J., & Wolf, D. S. (2012). The role of parents in college students' socio-political awareness, academic, and social development. *Journal of Student Affairs Research and Practice, 49*(2), 137–156. Retrieved from http://www.tandfonline.com/doi/abs/10.1515/jsarp-2012-6147

Hiester, M., Nordstrom, A., & Swenson, L. M. (2009). Stability and change in parental attachment and adjustment outcomes during the first semester transition to college life. *Journal of College Student Development, 50*(5), 521–538. Retrieved from http://muse.jhu.edu/article/317037

Hinderlie, H. H., & Kenny, M. (2002). Attachment, social support, and college adjustment among Black students at predominantly White universities. *Journal of College Student Development, 43*(3), 327–340.

Hofer, B. (2008). The electronic tether: Parental regulation, self-regulation, and the role of technology in college transitions. *Journal of the First-Year Experience & Students in Transition, 20*(2), 9–24.

Hofer, B. K., & Moore, A. S. (2010). *The iConnected parent: Staying close to your kids in college (and beyond) while letting them grow up*. New York: Simon and Schuster.

Hurtado, S., Han, J. C., Sáenz, V. B., Espinosa, L. L., Cabrera, N. L., & Cerna, O. S. (2007). Predicting transition and adjustment to college: Biomedical and behavioral science aspirants' and minority students' first year of college. *Research in Higher Education, 48*(7), 841–887. https://doi.org/10.1007/s11162-007-9051-x

Johnson, J. L., & Repta, R. (2012). Sex and gender. In *Designing and conducting gender, sex, and health research* (pp. 17–37). Retrieved from https://www.sagepub.in/upm-data/40428_Chapter2.pdf

Johnstone, D. B. (2005). Financing of higher education: Who should pay? In P. G. Altbach, R. O. Berdahl, & P. J. Gumport (Eds.), *American higher education in the twenty-first century* (pp. 347–369). Baltimore: Johns Hopkins Press.

Juang, L. P., Qin, D. B., & Park, I. J. (2013). Deconstructing the myth of the "tiger mother": An introduction to the special issue on tiger parenting, Asian-heritage families, and child/adolescent well-being. *Asian American Journal of Psychology, 4*(1), 1. https://doi.org/10.1037/a0032136

Kiyama, J. M., & Harper, C. E. (2018). Beyond hovering: A conceptual argument for an inclusive model of family engagement in higher education. *The Review of Higher Education, 41*(3), 365–385.

Kiyama, J. M., Harper, C. E., Ramos, D., Aguayo, D., Page, L. A., & Riester, K. A. (2015). Parent and family engagement in higher education. *ASHE Higher Education Report, 41*(6), 1–94. https://doi.org/10.1002/aehe.20024

Kuh, G. D., Kinzie, J., Schuh, J. H., & Whitt, E. J. (2010). *Student success in college: Creating conditions that matter*. New York City, NY: Wiley.

Kuh, G. D., & Love, P. G. (2000). A cultural perspective on student departure. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 196–212). Nashville, TN: Vanderbilt University Press.

Lareau, A. (2011). *Unequal childhood: The importance of social class in family life*. Berkeley, CA/Los Angeles: University of California Press.

Lythcott-Haims, J. (2015). *How to raise an adult: Break free of the overparenting trap and prepare your kid for success*. New York: Henry Holt and Company.

Maramba, D. C. (2008a). Understanding campus climate through the voices of Filipina/o American college students. College Student Journal, 42(4), 1045. Retrieved from MasterFILE Premier, Ipswich, MA.

Maramba, D. C. (2008b). Immigrant families and the college experience: Perspectives of Filipina Americans. *Journal of College Student Development, 49*(4), 336–350. Retrieved from http://muse.jhu.edu/article/241956

Mattanah, J., Brand, B., & Hancock, G. (2004). Parental attachment, separation-individuation, and college student adjustment: A structural equation analysis of mediational effects. *Journal of Counseling Psychology, 51*(2), 213–225. https://doi.org/10.1037/0022-0167.51.2.213

Melendez, M. C., & Melendez, N. B. (2010). The influence of parental attachment on the college adjustment of White, Black, and Latina/Hispanic women: A cross-cultural investigation. *Journal of College Student Development, 51*(4), 419–435. Retrieved from http://muse.jhu.edu/article/389244

Mullendore. (2014). http://news.uga.edu/releases/article/071414-ITN-am-i-a-helicopter-parent/ National Survey of Student Engagement. (2007) *Experiences that matter: Enhancing student learning and success.* Retrieved from http://nsse.iub.edu/NSSE_2007_Annual_Report/docs/withhold/NSSE_2007_Annual_Rep

Museus, S. D. (2013). Unpacking the complex and multifaceted nature of parental influences on Southeast Asian American college students' educational trajectories. *The Journal of Higher Education, 84*(5), 708–738.

Museus, S. D., & Maramba, D. C. (2011). The impact of culture on Filipino American students' sense of belonging. *The Review of Higher Education, 34*(2), 231–258. The Johns Hopkins University Press. https://doi.org/10.1353/rhe.2010.0022

Museus, S. D., & Vu, R. (2013). Socioeconomic status and Asian American and Pacific Islander students' transition to college: A structural equation modeling analysis. *The Review of Higher Education, 37*(1), 45–76.. The Johns Hopkins University Press. Retrieved June 10, 2016, from Project MUSE database. https://doi.org/10.1353/rhe.2013.0069

Nora, A., Barlow, L., & Crisp, G. (2005). Student persistence and degree attainment beyond the first year in college. In A. Seidman (Ed.), *College student retention: Formula for success* (pp. 129–153). Westport, CT: Praeger.

Ovink, S. M., & Kalogrides, D. (2015). No place like home? Familism and Latino/a–white differences in college pathways. *Social Science Research, 52*, 219–235. Retrieved from http://www.sciencedirect.com/science/article/pii/S0049089X15000095

Pascarella, E., & Terenzini, P. (2005). *How college affects students: Findings and insights from twenty years of research, volume 2, a third decade of research*. San Francisco: Jossey-Bass.

Pascarella, E. T., & Blimling, G. S. (1996). Students' out-of-class experiences and their influence on learning and cognitive development: A literature review. *Journal of College Student Development, 37*(2), 149–162.

Pizzolato, J. E. (2005). Creating crossroads for self-authorship: Investigating the provocative moment. *Journal of College Student Development, 46*(6), 624–641. Retrieved from http://muse.jhu.edu/article/189021

Pizzolato, J. E., & Hicklen, S. (2011). Parent involvement: Investigating the parent-child relationship in millennial college students. *Journal of College Student Development, 52*(6), 671–686. https://doi.org/10.1353/csd.2011.0081

Poon, O. A. (2011). Ching Chongs and Tiger Moms: The "Asian invasion" in US higher education. *Amerasia Journal, 37*(2), 144–150. https://doi.org/10.17953/amer.37.2.m58rh1u4321310j4

Qin, D. B., Chang, T.-F., Han, E.-J., & Chee, G. (2012). Conflicts and communication between high-achieving Chinese American adolescents and their parents. In L. P. Juang & A. J. Umaña-Taylor (Eds.), *Family conflict among Chinese- and Mexican-origin adolescents and their parents in the U.S* (New directions for child and adolescent development, 135 (pp. 35–57)). Hoboken, NJ: Wiley.

Rayle, A. D., & Chung, K. Y. (2007). Revisiting first-year college students' mattering: Social support, academic stress, and the mattering experience. *Journal of College Student Retention: Research, Theory & Practice, 9*(1), 21–37. Retrieved from http://csr.sagepub.com/content/9/1/21.full.pdf

Rendón, L. I., Jalomo, R. E., & Nora, A. (2000). Theoretical considerations in the study of minority student retention in higher education. In J. M. Braxton (Ed.), *Reworking the student departure puzzle, 1* (pp. 127–156). Nashville, TN: Vanderbilt University Press. Retrieved from Education Source.

Russell, D. W. (2002). In search of underlying dimensions: The use (and abuse) of factor analysis in Personality and Social Psychology Bulletin. *Personality and Social Psychology Bulletin, 28*(12), 1629–1646. Retrieved from http://psp.sagepub.com/content/28/12/1629.full.pdf

Sarigiani, P. A., Trumbell, J. M., & Camarena, P. M. (2013). Electronic communications technologies and the transition to college: Links to parent-child attachment and adjustment. *Journal of the First-Year Experience & Students in Transition, 25*(1), 35–60. Retrieved from http://www.sc.edu/fye/journal/files/JFYESIT2513.pdf

Sax, L. J. (2008). *The gender gap in college: Maximizing the developmental potential of women and men*. San Francisco: Jossey-Bass.

Sax, L. J., Bryant, A. N., & Gilmartin, S. K. (2004). A longitudinal investigation of emotional health among male and female first-year college students. *Journal of the First-Year Experience, 16*(2), 39–65.

Sax, L. J., & Wartman, K. L. (2010). Studying the impact of parental involvement on college student development: A review and agenda for research. In J. Smart (Ed.), *Higher education: Handbook of theory and research, XXV*. Dordrecht, The Netherlands: Kluwer Press.

Sax, L. J., & Weintraub, D. S. (2014). Exploring the parental role in first-year students' emotional well-being: Considerations by gender. *Journal of Student Affairs Research and Practice, 51*(2), 113–127. Retrieved from http://www.tandfonline.com/doi/abs/10.1515/jsarp-2014-0013

Sax, L. J., & Weintraub, D. S. (2016). Hold on tight or let go: Exploring the parental role in first-year students' college adjustment. *Journal of the First-Year Experience & Students in Transition, 28*(2), 73–92.

Sharkness, J., & DeAngelo, L. (2011). Measuring student involvement: A comparison of classical test theory and item response theory in the construction of scales from student surveys. *Research in Higher Education, 52*(5), 480–507. https://doi.org/10.1007/s11162-010-9202-3

Simmons, A. N. (2008). A reliable sounding board: Parent involvement in students' academic and career decision making. *NACADA Journal, 28*(2), 33–43. Retrieved from http://depts.washington.edu/apac/roundtable/1-21-09_A%20Reliable%20Sounding%20Board_%20Parent%20Involvement_Academic%20and%20Career%20Decision%20Making.pdf

Strage, A., & Brandt, T. S. (1999). Authoritative parenting and college students' academic adjustment and success. *Journal of Educational Psychology, 91*(1), 146–156. https://doi.org/10.1037/0022-0663.91.1.146

Sy, S. R., & Brittian, A. (2008). The impact of family obligations on young women's decisions during the transition to college: A comparison of Latina, European American, and Asian American students. *Sex Roles, 58*(9–10), 729–737. https://doi.org/10.1007/s11199-007-9385-z

Teranishi, R. T., Behringer, L. B., Grey, E. A., & Parker, T. L. (2009). Critical race theory and research on Asian Americans and Pacific Islanders in higher education. *New Directions for Institutional Research, 2009*(142), 57–68. https://doi.org/10.1002/ir.296

Tierney, W. G. (1992). An anthropological analysis of student participation in college. *The Journal of Higher Education*, 603–618. https://doi.org/10.2307/1982046

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), 89–125. Retrieved from http://www.jstor.org/stable/1170024

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago: The University of Chicago Press.

Tornatzky, L. G., Lee, J., Mejia, O., & Tarant, S. (2003). *College choices among Latinos: Issues of leaving home*. Los Angeles: The Tomas Rivera Policy Institute.

Triandis, H. C. (1995). *Individualism & collectivism*. Boulder, CO: Westview Press.

Tsong, Y., & Liu, Y. (2009). Parachute kids and astronaut families. In N. Tewari & A. N. Alvarez (Eds.), *Asian American psychology: Current perspectives* (pp. 365–380). New York: Taylor & Francis. Retrieved from https://www.researchgate.net/profile/Yuying_Tsong2/publication/229431004_Parachute_Kids_and_Astronaut_Families/links/0fcfd500d1dfd5f548000000.pdf

Tu, W. M. (1976). The Confucian perception of adulthood. *Journal of the American Academy of Arts and Science, 105*(2), 109–124.

Upcraft, M., Gardner, J., & Associates. (1989). *The freshman year experience*. San Francisco: Jossey-Bass.

Wartman, K. L., & Savage, M. B. (2008). *Parental involvement in higher education: Understanding the relationship among students, parents, and the institution*. San Francisco: Jossey-Bass.

Weidman, J. C. (1989). Undergraduate socialization: A conceptual approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5). New York: Agathon Press.

Weidman, J. C. (2006). Socialization of students in higher education: Organizational perspectives. In C. C. Conrad & R. C. Serlin (Eds.), *The Sage handbook for research in education: Engaging ideas and enriching inquiry* (pp. 253–262). Thousand Oaks, CA: Sage.

Weidman, J. C., DeAngelo, L., & Bethea, K. A. (2014). Understanding student identity from a socialization perspective. In C. Hanson (Ed.), *In search of self: Exploring student identity development* (New Directions for Higher Education, 166 (Summer), 43–51). San Francisco: Jossey-Bass.

Wintre, M., & Yaffe, M. (2000). First-year students' adjustment to university life as a function of relationships with parents. *Journal of Adolescent Research, 15*(1), 9–37. Retrieved from http://jar.sagepub.com/content/15/1/9.full.pdf

Witkow, M. R., Huynh, V., & Fuligni, A. J. (2015). Understanding differences in college persistence: A longitudinal examination of financial circumstances, family obligations, and discrimination in an ethnically diverse sample. *Applied Developmental Science, 19*(1), 4–18.

Wolf, D. S. (2011). *Uncovering the complexity of student-family support systems and their subsequent influence on the persistence of underserved college students* (Order No. 3452117). Available from Dissertations & Theses @ University of California; ProQuest Dissertations & Theses A&I; ProQuest Dissertations & Theses Global. (863639100). Retrieved from http://search.proquest.com/docview/863639100?accountid=14512

Wolf, D. S., Sax, L. J., & Harper, C. E. (2009). Parental engagement and contact in the academic lives of college students. *NASPA Journal, 46*(2), 325–358. Retrieved from http://www.tandfonline.com/doi/pdf/10.2202/1949-6605.6044

Chapter 4
Rethinking Weidman's Models of Socialization for Latinxs Along the Postsecondary Educational Pipeline

Gina A. Garcia, Jenesis J. Ramirez, and Oscar E. Patrón

There continue to be inequities in postsecondary outcomes for Students of Color[1] (NCES, 2017). Latinx[2] students, in particular, are more likely to enroll in less selective, broad access institutions, including community colleges (Carnevale & Strohl, 2013), which contributes to their inequitable graduation rates compared to white[3] counterparts (NCES, 2017). Moreover, the pathway into graduate school and the professoriate for Latinxs is inadequate, with Latinx faculty members representing only 4% of all full-time faculty at degree granting institutions, with their representation decreasing as professorial rank increases (NCES, 2016). These inequities are concerning, as Latinxs are the fastest growing racial/ethnic group in the U.S. and in postsecondary education, now representing the second largest racial/ethnic group in college behind white students (NCES, 2017).

[1] We intentionally capitalize "Students of Color," "People of Color," and all forms as a way to acknowledge and center racially minoritized people within our research and writing.

[2] We use the term "Latinx" as a gender inclusive term for people who self-identify as having racial and ethnic roots in Latin America, South America, Mexico, and parts of the Caribbean. Latinxs are connected by colonization, geography, and culture, yet they are a heterogeneous and complex group of people.

[3] We intentionally use lower case "w" to refer to the white racial group as a way to decenter whiteness in our research.

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While we recognize that the pipeline into postsecondary education is damaged, with Latinxs being pushed out, priced out, or completely excluded at multiple points along their educational trajectories, here we focus on college and beyond. Although their access to postsecondary education has been historically elusive, the data suggest that Latinxs are finally entering college at rates reflective of their population in the U.S., at approximately 17% for both in 2015, but they are not completing degrees at a reflective rate, with approximately 12% of those graduating with bachelor's degrees in six-years identifying as Latinxs (NCES, 2017). So what happens to Latinx students while in college that causes them to leave?

Arguably there are a number of reasons why Latinx students depart college without getting a degree, but here we focus on the college environment, exploring the extent to which Latinx students become socialized into institutions in ways that facilitate their cognitive outcomes, such as graduation, as well as their socialization outcomes, including career choices, lifestyle preferences, aspirations, and values. Weidman (1989) argues that beyond the psychological aspects that early college impact models claimed to be most relevant to the long-term retention and persistence of students, there are also sociological elements worth considering. In other words, beyond individual affective and cognitive processes, there are structural elements that affect students' experiences and outcomes (Weidman, 1989). We agree, yet we question the extent to which Weidman's proposed models of both undergraduate and graduate socialization (Weidman, 1989; Weidman, Twale, & Stein, 2001) consider structural elements (i.e. white supremacy and patriarchy) that specifically affect the socialization of Latinx students.

As a result of their racial/ethnic positioning in society, Latinx students are overtly discriminated against and covertly minoritized along the postsecondary educational pipeline (Villalpando, 2004), which ultimately affects their socialization in college and beyond. By minoritization we mean that Latinxs are devalued in educational settings, denied access to educational resources, and excluded from educational opportunities (Sensoy & DiAngelo, 2012). Arguably this process is sociological, as racism, eurocentrism, nativism, and linguistic oppression are systematic, historical, and cultural. From a sociological perspective, the long history of discrimination and minoritization in higher education cannot be ignored, as institutions of higher education have historically been spaces of social mobility for a distinct group of people (wealthy white men) while minoritized groups have had to fight their way in, often times met with resistance. As such, the postsecondary environment has always been an exclusionary space, rather than one that is adaptive to the diverse group of people that has entered (Hurtado, Alvarez, Guillermo-Wann, Cuellar, & Arellano, 2012).

Any sociological conversation about minoritized groups, therefore, must include a critical analysis of the systemic nature of their oppression in the U.S. and in educational settings. In this chapter, we use both Latino Critical Theory (LatCrit) (Hernandez-Truyol, 1997; Valdes, 1996) and Community Cultural Wealth (CCW) (Yosso, 2005) as guiding frameworks in order to rethink the Weidman models of socialization. We offer theoretical suggestions for making the models more applicable to Latinxs in postsecondary education, taking into consideration the unique sociological elements present for them as a minoritized group of people.

Conceptual Framework

When Weidman (1989) first conceptualized socialization for undergraduate students, he tried to make sense of the impact of college and how the college environment influences non-cognitive outcomes, or what he called, "socialization outcomes" (career choices, lifestyle preferences, aspirations, and values). He proposed socialization as a process by which undergraduates learn the norms of the institution and acquire the skills necessary to succeed within college and beyond. The conceptual framework proposed by Weidman (1989) includes the socialization forces of student background characteristics, the normative pressures of the academic and social structures of the institution, and the influences of both parental and non-college peer groups. The background characteristics in the model are similar to other college impact models, including family socioeconomic status, aptitude, career preferences, aspirations, and values, all of which have been shown to be correlated with positive student outcomes. Weidman (1989) contends that while students enter college with these pre-determined characteristics, they ultimately feel the normative pressures of the academic and social environments, including pressures from faculty and peers, as well as pressures from non-college forces, including family and friends from home. Successful socialization, therefore, necessarily requires students to manage each of these forces.

Building on these concepts, Weidman and colleagues (Weidman et al., 2001) extended the undergraduate socialization model to graduate students, arguing that students in graduate and professional programs must learn the skills, knowledge, and dispositions of their fields in order to be successful once they graduate. Moreover, there is a required level of commitment and involvement that the graduate student is responsible for, yet it is reciprocated at the organizational and structural levels by varying socializing forces such as the graduate program and the professional field. There is a need for graduate students to understand their professional identity and commitment to their chosen field, which occurs through both formal and informal processes (Weidman et al., 2001). Similar to the undergraduate model of socialization, the graduate model takes into consideration background predispositions, the culture and socialization processes within the institution, and professional and personal communities that contribute to the development of a professional identity and commitment (Weidman et al., 2001).

While both models have meaning and relevance for all undergraduate and graduate students, regardless of social identities and positioning, we question the extent to which they are considerate of the unique ways in which Latinxs experience the process of socialization. As scholars who ground our work in Critical Race Theory (CRT) and Chicana feminist epistemologies, we can't help but notice the lack of acknowledgment of systems of oppression that affect Latinx students' socialization, including white supremacy and patriarchy. Moreover, we note that Weidman's normative processes are actually *white* normative processes, meaning they privilege whiteness and white people, while marginalizing racial/ethnic ways of being and People of Color (Cabrera, Franklin, & Watson, 2017). Although Weidman (2006) has since recognized and acknowledged differences in socialization processes by

race and gender, we believe there is more work to be done in order to scrutinize the systems of oppression and history of exclusion that affects the process for minoritized groups, as well as address the underlying ways in which whiteness is valued in postsecondary education. To better understand the socialization of Latinx undergraduate and graduate students, we draw from two theoretical frameworks, CCW and LatCrit. Together, these frameworks recognize racism as an omnipresent force that affects the experiences and success of racialized people and demonstrate the values that Latinxs bring with them to college campuses that assist them in surviving oppressive postsecondary environments.

Both of these frameworks are aligned with the early critical work of Rendon, Jalomo, and Nora (2000), who critiqued white normative student departure theories, arguing that minoritized groups should not have to assimilate into mainstream culture in order to succeed in their educational endeavors. Rendon et al. (2000) emphasized the importance of theoretical foundations and methodological approaches that more adequately account for the background and dispositions of Students of Color. Through the lenses of LatCrit and CCW, we suggest that higher education is an oppressive environment where Latinx students' successes are not predicated on white normative socialization processes, as suggested by the Weidman's race-neutral models. By this we mean that the models fail to acknowledge that racialized students must navigate larger systems of oppression and may not succeed by socializing in ways that are valued by white people, rules, policies, and practices (i.e. white normative processes). It is important to note that both theories are rooted within the larger framework of CRT, which in education is defined as "a theoretical and analytical framework that challenges the ways race and racism impact educational structures, practices, and discourses" (Yosso, 2005, p. 74). As such, this is a racial analysis, centered on race, racism, and racialized ways of knowing. While at times we mention gender and patriarchy and recognize the intersection of minoritized identities, as suggested by CRT, we felt this space was too limited to allow for an adequate analysis beyond race.

Latino Critical Theory

LatCrit stems from critical legal studies and CRT (Hernandez-Truyol, 1997; Solórzano & Yosso, 2001; Valdes, 1996; Yosso, 2005) but is centered on Latinx panethnicity. According to Hernandez-Truyol (1997),

> LatCrit uses Latina/o panethnicity, representative of race, gender, nationality, color, language, ethnicity, and cultural diversity, to stimulate and inspire the construction of a LatCrit matrix that places multidimensionality at the center of paradigm formation by plaiting a multicultural, multilingual, multiethnic fabric into its philosophy, construction, and logic (p. 885).

LatCrit allows researchers to understand the multidimensionality of Latinxs in order to address the manner in which racism, sexism, and other forms of oppression

intersect. LatCrit is considered an antiessentialist project that seeks to connect theory with practice, scholarship with teaching, and the academy with the community (LatCrit Primer, 2001; Solórzano & Delgado Bernal, 2001). Solórzano and Delgado Bernal (2001) posit that LatCrit challenges the dominant discourse by investigating the ways that educational theory and practice are used to marginalize Latinx students. Together, CRT and LatCrit make use of at least five tenets that serve as their foundation (Solórzano & Delgado Bernal, 2001). Firstly, race and racism are considered endemic and are understood at the intersection with other forms of oppression. Secondly, CRT and LatCrit challenge notions of meritocracy, race neutrality, and equal opportunity in the education system. The third tenet is a commitment to social justice, with a particular emphasis on race, class and gender oppression. Fourthly is the centrality and legitimization of the experiential knowledge of Students of Color. Lastly, CRT and LatCrit highlight the importance of an interdisciplinary perspective that challenges a one-dimensional focus of education research while placing race and racism in both a historical and more contemporary context.

Community Cultural Wealth

CCW is a framework that diverges from a deficit perspective and instead accounts for "an array of knowledge, skills, abilities and contacts possessed and utilized by Communities of Color to survive and resist macro and micro-forms of oppression" (Yosso, 2005, p. 77). Yosso (2005) identified six types of capital within CCW that enhance and facilitate the educational processes of Students of Color, including aspirational, linguistic, familial, social, navigational, and resistant capital. Jointly, these forms of capital build on one another, rather than working in isolation. *Aspirational* capital is the ability to hold on to hope despite structural oppression. Aspirations are "developed within social and familial contexts, often through linguistic storytelling and advice (*consejos*) that offer specific navigational goals to challenge (resist) oppressive conditions" (Yosso, 2005, p. 77), demonstrating the functioning of CCW as a dynamic process where different types of capital intertwine.

Linguistic capital refers to the intellectual and social skills learned through communication experiences with more than one language and which are brought to educational contexts. *Familial* capital is, "cultural knowledges nurtured among *familia* (kin) that carry a sense of community history, memory and cultural intuition" (Yosso, 2005, p. 79), often including extended family and friends. Similar to familial capital, *social* capital is defined as networks of people and community resources that provide the necessary support to navigate through various systems, including higher education. *Navigational* capital refers to the ability and skills to move through social institutions that were not created for People of Color, such as colleges and universities. Lastly, *resistant* capital is defined as "those knowledges and skills fostered through oppositional behavior that challenges inequality" (Yosso, 2005, p. 80). This form of capital is rooted in the fact that People of Color are consistently resisting racism and other structural forms of oppression. While these six

forms of capital are often unacknowledged and devalued in white normative college impact models, they are powerful tools of resistance and persistence for Latinxs.

Here we draw on both LatCrit and CCW as a way to rethink the Weidman socialization models for Latinx undergraduate and graduate students. While Weidman (1989) tried to make sense of the ways the college environment influences student socialization outcomes, he did not account for the assets and values that minoritized students bring with them to the institution and that in various ways influence those very same non-cognitive outcomes. Moreover, he did not consider racist institutional structures or oppressive environments that Latinx students encounter on a regular basis, which are products of the racist history of postsecondary education. According to Patton (2016), "The establishment of U.S. higher education is deeply rooted in racism/White supremacy, the vestiges of which remain palatable" (p. 317). Such establishment has manifested itself in multiple realms of the institution including faculty, administrator, and student demographics, which are mostly white; the curriculum, which operates under a white cannon; in the silencing of racially minoritized student voices; and in negative campus racial climates (Patton, 2016). As spaces that were never intended to serve Latinx students or other Students of Color, Weidman's socialization models need to acknowledge the historical legacy of exclusion and oppression in order to better understand the socialization processes of minoritized students. LatCrit helped us to make sense of oppressive academic and social normative contexts and the socialization processes that prevent the full socialization of Latinxs, while CCW helped us to understand how student background characteristics, parental socialization, and both college peers and non-college reference groups come to serve as assets to Latinxs as they struggle with socialization processes.

Socialization of Undergraduate Latinx Students

In order to rethink Weidman's socialization model through LatCrit and CCW lenses, we first turned to literature on the experiences of undergraduate Latinxs, focusing on their experiences with race and racism. While there is little written about the socialization experiences of Latinx college students, we reviewed research on integration, sense of belonging, and transition, which in many ways aligns with Weidman's ideas on socialization. Scholarship consistently demonstrates that Latinxs face numerous challenges throughout their collegiate journeys as a result of their socially minoritized position and racist institutional structures they continually navigate. We focus here on the institutional and sociological environments, since, as discussed by Weidman (1989), they often determine socialization, or lack thereof, and the types of experiences that students have. For Latinxs, navigating white normative spaces can have negative repercussions on socialization and overall success. While the literature suggests that Latinxs experience a number of challenges that may prevent them from becoming fully socialized, they often draw on various forms of capital to survive.

Racist Socializing Contexts

For undergraduate Latinxs, the college experience can be a complicated feat due to a range of factors, including toxic campus racial climates and recurring racist incidents (e.g., Hurtado, Carter, & Spuler, 1996; Hurtado & Carter, 1997; Solórzano, Villalpando, Oseguera, 2005; Yosso, Smith, Ceja, & Solórzano, 2009). While Weidman (2006) discusses normative contexts and socialization processes that shape the experiences of college students, he fails to address the racist socializing contexts that Latinx students experience in institutions of higher education. In reality, racist incidents on college campuses are prevalent across different types of institutions, including Minority Serving Institutions (Garcia & Johnston-Guerrero, 2015), making the socialization process a difficult one for minoritized students. Through a content analysis of newsmaking racially biased incidents that occurred between 2005–2010, Garcia and Johnston-Guerrero (2015) found that a considerable number of them were blatantly racist. Although they argued that some incidents were micoaggressive in nature, many were racially aggressive. These types of incidents are known to have psychological effects on the targets, subsequently leading them to feel invisible, othered, and criminalized by the same institutions that are supposed to protect them (Garcia & Johnston-Guerrero, 2015). Understanding this reality is essential to grasping the challenges that Latinx undergraduate students face, which ultimately affects their socialization.

In studying the factors that affect Latinx students and their adjustment to college, Hurtado et al. (1996) found that racism was one of several challenges they consistently faced. Students felt like they were prejudged by their peers due to their race/ethnicity, often times being viewed as inferior. Consequently, students felt less attached to their institution and struggled with academic and social socialization processes (Hurtado et al., 1996). Struggling to adjust to college and lacking a sense of belonging as a result of racist incidents can ultimately affect satisfaction, socialization, and persistence (Yao, 2015).

Yosso et al. (2009) investigated the racial oppression encountered by Latinx college students and the ways that they responded to racist incidents at three selective institutions. Through focus groups, they found that as a result of the racism experienced, Latinxs doubted their academic capabilities, felt their ethnic identity was demeaned, and perceived their cultural knowledge to be dismissed (Yosso et al., 2009). Students felt like their white peers excluded them from study groups, avoided contact with them in the classroom, called them racial slurs, and microaggressed them based on their phenotype. Undocumented Latinx students also struggle with integration and socialization as a result of their racial/ethnic and national status. In a study using LatCrit and racist nativism to investigate the educational experiences of undocumented Chicana college students, Perez Huber (2010) found that participants experienced varying levels of racist nativism intersecting with their class and gender identities. Paulina, for example, discussed how her classmates believed that Latinxs were criminals and only came to the U.S. for benefits and social services. Consequently, as a result of recurring racial incidents,

the Chicana students in the study stated that they felt uncomfortable, discouraged, and isolated on campus.

Drawing on Family & Peer Networks for Cultural Wealth

Weidman (1989) contends that parents and non-college peers are essential to successful socialization of undergraduates and claims that within college peer groups enhance the normative contexts for socialization. While we believe this is one of the strengths in the model as it relates to the socialization of Latinx students, it fails to recognize the unique cultural wealth that minoritized students draw on as a result of these relationships. Research has consistently demonstrated that family, extended kin (not just parents, as suggested by Weidman), and non-college peers are significant sources of support for Latinx students throughout the educational pipeline (e.g. Ceballo, 2004; Easley, Bianco, & Leech, 2012; Hurtado et al., 1996), particularly when it comes to dealing with experiences of racism and discrimination.

In a qualitative study on resilient Latino male collegians, Patrón and Garcia (2016) found that one student (Bruno) was stigmatized for simply wearing apparel that revealed his Mexican identity, and ultimately was the target of racist incidents. As a result, Bruno struggled to become socialized within the academic context. To counter these adverse experiences, he drew on his church and family for support. While the church provided a space for him to develop a support network, his family provided encouragement. Similarly, Morales and Trotman (2010) found that family and church were significant sources of support for Latinx undergraduate students confronted with both blatant and subtle racism. For another participant in their study, Patrón and Garcia (2016) found that non-college peers (accessed through a skateboarding crew) were also important for students as they developed academic aspirations and avoided activities (such as gangs) that may hinder academic socialization.

Literature suggests that informal social contexts within the college environment are particularly important for Latinx college students' socialization process and for dealing with racialized contexts. In a study examining the academic and social experiences of Latinx students involved in Latinx Greek-letter organizations (LGLOs), Moreno and Banuelos (2013) found that fraternities and sororities provided welcoming spaces for students who felt like they were treated differently because of their race/ethnicity or those who felt isolated on campus as a result of their minoritized positions. Some students in the study felt like they were treated differently than their white peers on campus due to their race, while other students talked about the campus not being welcoming to the Latinx community overall. Joining fraternities and sororities, however, provided them with a sense of belonging, and enhanced their feelings of having a second home. LGLOs can be important informal contexts that enhance the socialization of Latinx students as the spaces provided a sense of shared cultural values, practices, and traditions (Guardia & Evans, 2008; Moreno & Banuelos, 2013).

Villalpando (2002) also found that when Latinx students socialize with others who share their racial/ethnic background, their social consciousness is enhanced, they are more likely to pursue careers that will allow them to serve their communities, and they experience increased opportunities for educational success. Latinx student groups, in particular, possess cultural resources that nurture and empower them, allowing them to work closely with one another in educational settings. Although academic environments are not always conducive to a successful socialization process, Latinx students find support within their college peer groups. Instead of segregating themselves, as it may be perceived by some campus administrators, Latinx students tend to stick together, particularly in the face of racism and discrimination on campus (Villalpando, 2002). In responding to racialized college contexts, Latinx students build social and academic communities from the cultural wealth of their homes and culture, which enhances their socialization experiences (Yosso et al., 2009). Here we note not just the importance of drawing on family and peer networks for successful socialization, but recognize the cultural wealth and investment in education that Latinx families and peers provide. While the Weidman model privileges white normative ways of becoming socialized, Latinxs value and rely on collective relationships that are grounded in racial and cultural ways of knowing.

Socialization of Latinx Graduate Students

Next, we turned to literature on the experiences of graduate Latinxs, centering race and racism in our analysis. Again, there is minimal research on the socialization processes of Latinx graduate students, so we reviewed research on their overall experiences that aligned with Weidman's ideas on graduate socialization. Moreover, we focused on the institutional and sociological environments and the ways in which they hinder Latinxs from becoming fully socialized within white normative spaces. Like undergraduates, Latinx graduate students draw on various forms of capital in order to thrive in the academy.

Racialized Institutional Culture

Weidman et al. (2001) argue that the institutional culture, inclusive of academic programs and the peer climate, are core socializing forces for graduate students. Yet they fail to note the numerous ways in which racially minoritized graduate students experience isolation within this culture. To start, the lack of racial diversity in graduate programs and in the university at large is detrimental to the graduate experience of Latinxs (Daniel, 2007; Ramirez, 2014). The absence of other Latinxs and other Students of Color lead to feelings of isolation for Latinx graduate students (Daniel, 2007), making their adjustment to graduate school, and consequently the

socialization process challenging. Institutional factors that contribute to Latinxs' feelings of isolation in graduate school include the presence of predominantly white faculty, as well as white curricula and academic culture (González, 2006; Ramirez, 2014). Predominantly white peers, white faculty, and white curricula and culture interact to create white normative socialization expectations, which can be detrimental to the educational experiences of Latinx graduate students.

White Faculty Faculty essentially shape the academic program for graduate students by setting the norms for research, teaching, and service (Weidman et al., 2001). Faculty mentoring in these core areas, therefore, is a critical part of graduate school. Latinx graduate students find that the most effective and meaningful mentorship relationships are with Faculty of Color (Aguirre-Covarrubias, Arellano, & Espinoza's, 2015; Daniel, 2007). This is the case because Latinxs feel they can relate to and be more vulnerable about their graduate school experiences with Faculty of Color whom they perceive to share common cultural experiences (Daniel, 2007; González, 2006). Beyond the influence of race, Latinxs value specific qualities within the mentor-mentee relationships including openness, availability, trustworthiness, and shared common values (Rudolph et al., 2015). Yet Latinx graduate students struggle to find faculty mentors from shared backgrounds and who offer these qualities because there are so few Faculty of Color in the academy.

White-Dominant Curriculum The curriculum is also essential to the successful socialization of graduate students (Weidman et al., 2001). Yet Latinxs report feeling tension, conflict, and disconnection in their graduate school experience as a result of the white-dominant curriculum (Daniel, 2007; González, 2006). The reason for the disconnection and conflict is due to a lack of Latinx perspectives in the curriculum. The lack of perspectives based on Latinx ways of knowing within the curriculum leads Latinx graduate students to feel tension between their racial identity and their scholar/professional identity (Daniel, 2007; González, 2006), which ultimately affects their scholarly/professional socialization. Moreover, the lack of Latinx perspectives in the curriculum reinforces discrimination and minoritization for Latinx graduate students within white normative higher educational spaces. Latinxs report that the potential for faculty mentoring relationships begin when they approach faculty about the curriculum taught in their graduate programs (Rudolph et al., 2015). Considering the connection between curricula and mentorship, along with the lack of Faculty of Color in the academy, the socialization process for Latinx graduate students is highly constrained by the institutional culture.

Drawing on Peers & Personal Identity for Cultural Wealth

The literature suggests that as a result of the racialized contexts of graduate schools, peers are a critical source of support for Latinx graduate students (Daniel, 2007; González, 2006; Leyva, 2011; Veal, Bull, & Miller, 2012). Weidman et al. (2001)

and Weidman (2006) do in fact discuss the normative influences that peers have on students in graduate school. Although Weidman (2006) reviews some of the differences that racialized students experience as they adapt to normative culture in higher education, he does not investigate the racialized culture of departments and fields or the significance of same-race peer relationships. Latinxs rely heavily on graduate school peers to assist with the socialization process; however, these peer networks are often composed of other Latinxs and Peers of Color (Daniel, 2007; González, 2006; Veal et al., 2012). Latinxs report that their relationships with other graduate Peers of Color offer them validation and support through the graduate experience, particularly when it comes to navigating racialized spaces (Daniel, 2007; González, 2006). These connections are essential, particularly as Latinx graduate students experience tension with white peers.

Some of the tensions that Latinxs experience include, but are not limited to, white peers making racist comments inside and outside of the classroom, white peers not understanding the cultural perspectives of graduate Students of Color, graduate Students of Color having to initiate interactions with white peers "or risk being ignored," and white peers questioning the qualifications of graduate Students of Color (Daniels, 2007; Leyva, 2011; González, 2006). Latinxs report that the conflicts they experience with white peers make their relationships with Peers of Color "essential for their survival" in graduate school (Daniel, 2007, p. 37). Beyond necessary for survival in graduate school, forming a Latinx peer network is a form of resistance against the white dominant context of higher education for Latinxs (Ramirez, 2014). Forming a Latinx peer support network is key as Latinxs challenge white curricula and white scholarly/professional spaces (Ramirez, 2014), a necessary step towards the complementary development of their professional/scholarly and personal identities, and ultimate socialization.

In addition to essential peer connections, Latinx graduate students also draw heavily on their social identities as forms of capital in graduate school. Research indicates that Latinxs enter graduate school with a sense of purposes that is related to their racial/ethnic identities (González, 2006, 2007; Ramirez, 2014). Yet white normative socialization processes often ignore cultural ways of knowing and the influence of racial/ethnic identities on professional/scholarly purpose. Embracing and developing an academic sense of purpose that is related to racial/ethnic identity can be challenging for Latinxs because of white normative graduate socialization processes (González, 2006; Veal et al., 2012); however, by embracing and developing their ethnicity centered sense of purpose, Latinxs enact a form of resistance capital (Yosso, 2005). To resist white normative graduate socialization processes while developing their ethnicity centered sense of self, Latinxs draw from Latinx peers and faculty members who validate their sense of purpose (González, 2006, 2007; Ramirez, 2014). As Latinxs form validating and supportive Latinx networks, they enact navigational capital, forging the spaces and supportive networks they need to thrive, despite white normative socialization processes.

Theoretical Argument

Socialization essentially calls on undergraduate and graduate students to accept the normative functions of the postsecondary environment. Yet this concept fails to recognize the extent to which the postsecondary environment is and has historically been oppressive, racist, and exclusionary. Moreover, socially normative functions and processes are centered on whiteness, meaning they value race-neutrality, racial ignorance, and whiteness as property (Cabrera et al., 2017). In theorizing that students must integrate into postsecondary environments in order to be successfully socialized, Weidman (1989) failed to acknowledge that minoritized students would struggle to adapt to spaces that have never been for them. It's egregious to ask minoritized students to "act white" in order to be successful in college, which is essentially what socialization is suggesting. Instead, there is a need for new approaches and models that recognize the historical legacy of exclusion rampant within postsecondary education and that allow and encourage Latinx students to draw on and utilize their racial and cultural ways of knowing and being in order to succeed. In doing so, revised models should emphasize institutional accountability, calling on faculty, staff, and administrators to disrupt the legacy of discrimination, exclusion, and white supremacy.

Weidman (2006) argues that "socialization outcomes are the resultant changes (values, beliefs, and knowledge) that occur in students" (p. 256). The changes in student values and beliefs occur through their engagement in the collegiate environment and through their interpersonal interactions with people on campus. As highlighted in our literature review, however, the institutional climates, norms, and traditions that are conducive to successful socialization processes also produce environments conducive to racism and microaggressions against Latinx students (Garcia & Johnston-Guerrero, 2015), leading to their sense of isolation, homesickness, lack of belonging, and disengagement (e.g., Hurtado et al., 1996; Hurtado & Carter, 1997; Solórzano et al., 2005; Yosso et al., 2009). Socializing to institutional white cultures can in fact be detrimental to Latinx students' psychosocial well-being, academic advancement, institutional commitment, and persistence (e.g., Perez Huber 2010; Hurtado et al., 1996; Yao, 2015; Yosso et al., 2009). While Weidman (1989, 2006) argues that college influences and socialization processes are necessary for students' development, persistence, and success, he ignores that for Latinx students, socialization can actually have the opposite effect—decreased institutional commitment and attrition (Yao, 2015). Moreover, the intrapersonal and interpersonal conflict and dissonance that Latinx undergraduate and graduate students experience occur within these racialized contexts. The conflict and dissonance that hinders Latinx students' socialization processes in oppressive postsecondary environments should be considered in a more racially critical version of the model.

Furthermore, Weidman (2006) relies on the perspective that, through socialization processes, the institution can change students, such that "colleges can serve as climates for the technical (acquisition of knowledge and skills) and moral (acquisition of values, beliefs, and commitments) socialization of students" (p. 258).

Arguably, Weidman (2006) suggests that college impact positively influences the development of students' values, beliefs, and institutional commitments. The problem is that this perspective ignores students' agency and abilities to impact college culture and climate. A revised model should consider how Latinxs' presence, the cultural capital they bring to college, and their on-campus activism in various forms can change and enhance the institutional culture while simultaneously enhancing their own identity development and critical consciousness (Torres & Hernandez, 2007; Yosso, 2005). Beyond considering how Latinxs can be a force of change via their community cultural wealth and racial/ethnic ways of knowing, a revised Weidman model should consider how institutional agents can revise institutional structures and policies to enhance the development of Latinxs' personal, academic, and professional goals and sense of purpose (Garcia & Ramirez, 2018).

While Weidman's (2006) discussion on the influences of personal and professional communities on students' socialization processes is important for Latinxs, his approach lacks a necessary focus on race and systems of oppression, and fails to account for the nuanced ways that family and peer contexts help Latinx develop resistance capital in order to succeed. Research on the experiences of Latinx undergraduate and graduate students supports that personal and professional communities are critical factors in Latinx students' trajectories into and through postsecondary education (e.g., González, 2006; Ponjuan, 2011; Rudolph et al., 2015; Villalpando, 2002). Latinx students are also more likely to develop meaningful mentoring relationships with faculty who share their racial/ethnic background and who support their racial/ethnic identity development, just as much as their academic development (Aguirre-Covarrubias, Arellano, & Espinoza, 2015; Daniel, 2007; Villalpando, 2002). Yet socialization models seem to silo personal communities from professional communities, and academic and professional identities from racial/ethnic identities. A revised model should not place value on binaries, as binary thinking is the opposite of how Latinxs understand themselves and their sense of purpose (González, 2006; Lara, 2002; Yosso, 2005). Rather, developing a model that represents holistic support and socialization practices that acknowledge and embrace the interconnection between Latinxs' scholarly, professional, and social identities may be more representative of how socialization actually happens for Latinxs. Moreover, a revised model should acknowledge that family and non-college peers influence and inform the particular values and assets that Latinx students draw on as they navigate oppressive postsecondary spaces. As is, Weidman's models fail to acknowledge the unique racial/cultural contributions of Latinx cultural wealth and familial relationships.

Lastly, in his most recent socialization model, Weidman (2006) does acknowledge that Black students' socialization experiences may diverge from those of white students, and that institutional types (predominantly white institutions vs. Historically Black Colleges and Universities) may differently influence socialization; however, the model and review of related socialization research upon which it is based do not mention the socialization processes of Latinx students specifically, or the unique ways in which they may become socialized at Hispanic-Serving Institutions (HSIs, postsecondary institutions that enroll at least 25% Latinx stu-

dents). This is an oversight, as there was already a growing body of literature, at the time of publication, highlighting the unique culture at HSIs and the ways in which it helps Latinx students feel an increased sense of belonging and connectedness (e.g., Dayton, González-Vasquez, Martinez, & Plum, 2004; Laden, 2001, 2004). A revised socialization model, specifically for Latinxs, must take into consideration the unique culture and curricular experiences at HSIs (Garcia, 2016, 2017) and the ways in which they affect socializing outcomes. Moreover, research suggests that HSIs play an important role in enhancing non-cognitive outcomes for Latinx such as academic self-concept (Cuellar, 2014) and civic engagement (Garcia & Cuellar, 2018). A revised socialization model should consider these outcomes.

A Revised Socialization Model for Latinxs

Based on our review of the literature and through the lenses of CRT and CCW, we propose a revised model (Fig. 4.1) of socialization for Latinx students that takes into consideration white supremacy and all its manifestations (i.e., discrimination, white normative standards, overt racial incidents). Moreover, the revised model considers various forms of cultural wealth that Latinx students bring to postsecondary education and suggests ways that the university can embrace and enhance those racial/ethnic ways of knowing and being. Finally, we propose additional outcomes that are important for Latinx students.

With the demographics of postsecondary education now reflecting the reality that Latinx people have become the largest racial/ethnic group in the U.S., we can no longer expect college impact, retention, and socialization models developed based on white normative standards to work for Latinx undergraduate and graduate students. The literature reviewed in this chapter suggests that this has not and will not work for Latinx students. Through the lens of LatCrit, we highlighted the challenges that Latinx undergraduates and graduates experience in contentious white postsecondary spaces. Our hope is that administrators, faculty, and staff will recognize that they have the power to reconfigure the postsecondary environment so that Latinx students can fully engage in relevant academic and social contexts that will lead to successful outcomes. Understanding how Latinx students navigate white normative structures, however, is an essential first step in making change to policy and practice. Through a lens of CCW, we also presented the various ways that Latinx undergraduate and graduate students utilize their own forms of capital in order to survive and thrive in the postsecondary setting. As argued by Solórzano et al. (2005), postsecondary institutions must break away from the notion that minoritized students must detach from their families, community, and culture in order to be successful, as these are significant sources of capital for Latinx students. Here we remind scholars and practitioners of this reality.

With this chapter, we sought to rethink Weidman's socialization models using two theoretical frameworks that center race and racism (LatCrit) and the racialized ways of knowing and being of Latinx people (CCW). We urge higher education

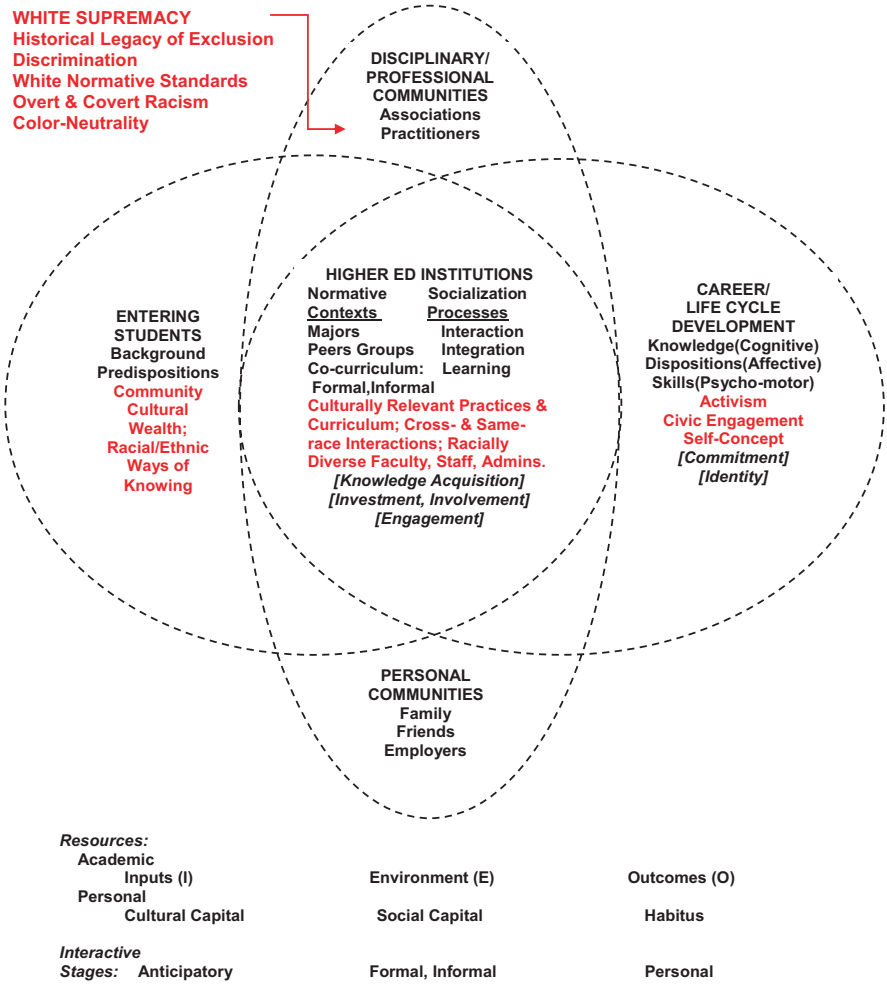

Fig. 4.1 Conceptualizing Socialization of Latinx Students in Higher Education. (Adapted from Weidman, 2006, 2015; Weidman, et al., 2001; Twale et al., 2016)

scholars and theorists to be bolder about the current condition of racism embedded within colleges and universities and to recognize that Latinx students (along with other racially minoritized students) cannot and will not fit into white normative persistence, retention, and socialization models. Improving socialization models to make them more applicable to the realities, identities, and experiences of Latinxs and more representative of the influences of racism on institutional cultures and socialization processes is necessary, now more than ever before. As the fastest growing population in postsecondary education, the success of Latinx undergraduate and graduate students is imperative to the advancement of the nation as a whole.

References

Aguirre-Covarrubias, S., Arellano, E., & Espinoza, P. (2015). "A pesar de todo" (despite everything): The persistence of Latina graduate engineering students at a Hispanic-serving institution: "A pesar de todo" (despite everything). *New Directions for Higher Education, 2015*(172), 49–57. https://doi.org/10.1002/he.20152

Cabrera, N. L., Franklin, J. D., & Watson, J. S. (2017). Whiteness in higher education: The invisible missing link in diversity and racial analyses. *ASHE Higher Education Report, 42*(6), 7–125.

Carnevale, A. P., & Strohl, J. (2013). *Separate and unequal: How higher education reinforces the intergenerational reproduction of white racial privilege*. Retrieved from Georgetown University: Center on Education and the Workforce: cew.georgetown.edu/separateandunequal

Ceballo, R. (2004). From barrios to Yale: The role of parenting strategies in Latino families. *Hispanic Journal of Behavioral Sciences, 26*(2), 171–186.

Cuellar, M. (2014). The impact of Hispanic-Serving Institutions (HSIs), emerging HSIs, and non-HSIs on Latina/o academic self-concept. *The Review of Higher Education, 37*, 499–530. https://doi.org/10.1353/rhe.2014.0032

Daniel, C. (2007). Outsiders-within: Critical race theory, graduate education and barriers to professionalization. *Journal of Sociology & Social Welfare, 34*(1), 25–42.

Dayton, B., González-Vasquez, N., Martinez, C. R., & Plum, C. (2004). Hispanic-serving institutions through the eyes of students and administrators. *New Directions for Student Services, 105*, 29–40.

Easley Jr., N., Bianco, M., & Leech, N. (2012). Ganas: A qualitative study examining Mexican heritage students' motivation to succeed in higher education. *Journal of Hispanic Higher Education, 11*(2), 164–178.

Garcia, G. A. (2016). Complicating a Latina/−o serving identity at a Hispanic Serving Institution. *The Review of Higher Education, 40*(1), 117–143.

Garcia, G. A. (2017). Defined by outcomes or culture? Constructing an organizational identity for Hispanic-Serving Institutions. *American Education Research Journal, 54*(1S), 111S–134S. https://doi.org/10.3102/0002831216669779

Garcia, G. A., & Cuellar, M. (2018). Exploring curricular and cocurricular effects on civic engagement at emerging Hispanic-Serving Institutions. *Teachers College Record, 120*(4), 4.

Garcia, G. A., & Johnston-Guerrero, M. P. (2015). Challenging the utility of a racial microaggressions framework through a systematic review of racially biased incidents on campus. *Journal of Critical Scholarship on Higher Education and Student Affairs, 2*(1), 26–66.

Garcia, G. A., & Ramirez, J. J. (2018). Institutional agents at a Hispanic Serving Institution (HSI): Using social capital to empower students. *Urban Education, 53*(3), 355–381. https://doi.org/10.1177/0042085915623341

González, J. C. (2006). Academic socialization experiences of Latina doctoral students: A qualitative understanding of support systems that aid and challenges that hinder the process. *Journal of Hispanic Higher Education, 5*(4), 347–365. https://doi.org/10.1177/1538192706291141

González, J. C. (2007). Surviving the doctorate and thriving as faculty: Latina junior faculty reflecting on their doctoral studies experiences. *Equity & Excellence in Education, 40*(4), 291–300. https://doi.org/10.1080/10665680701578613

Guardia, J. R., & Evans, N. J. (2008). Factors influencing the ethnic identity development of Latino fraternity members at a Hispanic Serving Institution. *Journal of College Student Development, 49*, 163–181.

Hernandez-Truyol, B. (1997). Borders (en)gendered: Normativities, Latinas and a LatCrit paradigm. *New York University Law Review, 72*, 882–927.

Hurtado, S., Alvarez, C. L., Guillermo-Wann, C., Cuellar, M., & Arellano, L. (2012). A model for diverse learning environments: The scholarship on creating and assessing conditions for student success. In J. C. Smart & M. B. Paulsen (Eds.), *Higher education: Handbook for theory and research* (pp. 41–122). New York: Springer.

Hurtado, S., & Carter, D. F. (1997). Effects of college transition and perceptions of the campus racial climate on Latino college students' sense of belonging. *Sociology of Education, 70*(4), 324–345.

Hurtado, S., Carter, D. F., & Spuler, A. (1996). Latino student transition to college: Assessing difficulties and factors in successful college adjustment. *Research in Higher Education, 37*(2), 135–157.

Laden, B. V. (2001). Hispanic-Serving Institutions: Myths and realities. *Peabody Journal of Education, 76*(1), 73–92.

Laden, B. V. (2004). Hispanic-serving institutions: What are they? Where are they? *Community College Journal of Research and Practice, 28*, 181–198.

Lara, I. (2002). Healing sueñios for academia. In G. Anzaldua & A. Keating (Eds.), *This bridge we call home: Radical visions for transformation* (pp. 433–438). New York: Routledge.

LatCrit Inc. (2001). *Appendix 1: LatCrit fact sheet*. Retrieved from http://latcrit.org/media/medialibrary/2014/01/lcprimerii.pdf

Leyva, V. L. (2011, 2011). First-generation Latina graduate students: Balancing professional identity development with traditional family roles. *New Directions for Teaching and Learning*, (127), 21–31. https://doi.org/10.1002/tl.454

Morales, E. E., & Trotman, F. K. (2010). A focus on hope. In *Fifty resilient students speak*. New York: University Press of America.

Moreno, D., & Banuelos, S. (2013). The influence of Latina/o Greek sorority and fraternity involvement on Latina/o college student transition and success. *Journal of Latino/Latin American Studies, 5*(2), 113–125.

National Center for Education Statistics. (2016). *The Condition of Education 2016 (NCES 2016–144), Characteristics of Postsecondary Faculty*. Percentage distribution of full-time instructional faculty in degree-granting postsecondary institutions, by academic rank, selected race/ethnicity, and sex: Fall 2013. Retrieved from https://nces.ed.gov/fastfacts/display.asp?id=61

National Center for Education Statistics. (2017). *The condition of education 2017 (NCES 2017–144)*. Washington, DC: U.S. Department of Education.

Patrón, O. E., & Garcia, G. A. (2016). The convergence of social identities and environmental contexts in facilitating Latino male resilience. *Hispanic Journal of Behavioral Sciences, 38*(4), 523–545.

Patton, L. D. (2016). Disrupting postsecondary prose: Toward a critical race theory of higher education. *Urban Education, 51*(3), 315–342.

Perez Huber, L. (2010). Using Latina/o critical race theory (LatCrit) and racist nativism to explore intersectionality in the educational experiences of undocumented Chicana college students. *The Journal of Educational Foundations, 24*(1/2), 77–96.

Ponjuan, L. (2011). Recruiting and retaining Latino faculty members: The missing piece to Latino student success. *Thought & Action, 27*, 99–110.

Ramirez, E. (2014). "¿Qué estoy haciendo aquí?(what am I doing here?)": Chicanos/Latinos(as) navigating challenges and inequalities during their first year of graduate school. *Equity & Excellence in Education, 47*(2), 167–186. https://doi.org/10.1080/10665684.2014.900394

Rendon, L. I., Jalomo, R. E., & Nora, A. (2000). Theoretical considerations in the study of minority student retention in higher education. In J. M. Braxton (Ed.), *Reworking the student departure puzzle* (pp. 127–156). Nashville, TN: Vanderbilt University Press.

Rudolph, B. A., Castillo, C. P., Garcia, V. G., Martinez, A., & Navarro, F. (2015). Hispanic graduate students' mentoring themes: Gender roles in a bicultural context. *Journal of Hispanic Higher Education, 14*(3), 191–206. https://doi.org/10.1177/1538192714551368

Sensoy, O., & DiAngelo, R. (2012). *Is everyone really equal? An introduction to key concepts in social justice education*. New York: Teachers College.

Solórzano, D. G., & Bernal, D. D. (2001). Examining transformational resistance through a critical race and LatCrit theory framework: Chicana and Chicano students in an urban context. *Urban Education, 36*(3), 308–342.

Solórzano, D. G., Villalpando, O., & Oseguera, L. (2005). Educational inequities and Latina/o undergraduate students in the United States: A critical race analysis of their educational progress. *Journal of Hispanic Higher Education, 4*(3), 272–294.

Solórzano, D. G., & Yosso, T. J. (2001). Critical race and LatCrit theory and method: Counter-storytelling. *International Journal of Qualitative Studies in Education, 14*(4), 471–495.

Torres, V., & Hernandez, E. (2007). The influence of ethnic identity on self-authorship: A longitudinal study of Latino/a college students. *Journal of College Student Development, 48*(5), 558–573.

Twale, D. J., Weidman, J. C., & Bethea, K. (2016). Conceptualizing socialization of graduate students of color: Revisiting the Weidman-Twale-Stein framework. *Western Journal of Black Studies, 40*(2), 80–94.

Valdes, F. (1996). Latina/o ethnicities, critical race theory, and post-identity politics in postmodern legal culture: From practices to possibilities. *La Raza Law Journal, 9*(1), 1.

Veal, J. L., Bull, M. J., & Miller, J. F. (2012). A framework of academic persistence and success for ethnically diverse graduate nursing students. *Nursing Education Perspectives, 33*(5), 322–327.

Villalpando, O. (2002). Self-segregation or self-preservation? A critical race theory and Latina/o critical theory analysis of a study of Chicana/o college students. *International Journal of Qualitative Studies in Education, 16*(5), 619–646.

Villalpando, O. (2004). Practical considerations of critical race theory and Latino critical theory for Latino college students. In Ortiz, A. M. (Ed.), *New Directions for Student Services: Addressing the Unique Needs of Latino American Students* (No. 105, pp. 41–50). Hoboken, NJ: Wiley

Weidman, J. C. (1989). Undergraduate socialization: A conceptual approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5, pp. 289–322). New York: Agathon Press.

Weidman, J. C. (2006). Socialization of students in higher education: Organizational perspectives. In C. C. Conrad & R. C. Serlin (Eds.), *The Sage handbook for research in education: Engaging ideas and enriching inquiry* (pp. 253–262). Thousand Oaks, CA: Sage.

Weidman, J. C. (2015). *Graduate student socialization: Re-visiting the Weidman-Twale-Stein model*. Presentation at the 16th International Conference on Educational Research (ICER), Seoul National University, Korea, October. https://www.researchgate.net/publication/305397166_Graduate_Student_Socialization_Re-visiting_the_Weidman-Twale-Stein_Model

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Yao, C. W. (2015). Sense of belonging in international students: Making the case against integration to US institutions of higher education. *Comparative and International Higher Education, 7*, 6–10.

Yosso, T., Smith, W., Ceja, M., & Solórzano, D. (2009). Critical race theory, racial microaggressions, and campus racial climate for Latina/o undergraduates. *Harvard Educational Review, 79*(4), 659–690.

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity and Education, 8*(1), 69–91.

Chapter 5
Creating Porous Ivory Towers: Two-Way Socialization Processes that Embrace Black Students' Identities in Academia

Rachelle Winkle-Wagner, Dorian L. McCoy, and Jamila Lee-Johnson

For many Black students and their families, education has long been seen as a way to achieve upward mobility as a great equalizer, even if the path towards mobility has often been difficult (Brown II & Davis, 2001; Du Bois, 1903; Jackson & Moore, 2006). We use the term Black to refer to people who have African, Afro Caribbean, Black Latina/o/x ancestry as a way to include all those who identify in part or in total with this heritage. This includes those who identify as multiracial where Black is one of their identities.

The doctoral degree stands as the pinnacle of academic achievement; and yet, aside from a few disciplines such as education, there are severe racial disparities in the enrollment and completion of PhD programs for Black doctoral students (Antony & Taylor, 2001, 2004; Gardner, 2008; Gildersleeve, Croom, & Vasquez, 2011). Despite many graduate programs across the nation being similar in terms of the academic disciplinary norms, student experiences vary across campuses (Golde, 1998; Walker, Golde, Jones, Bueschel, & Hutchings, 2008). A growing number of scholars argue that graduate students' socialization experiences vary by discipline, gender, race, and campus context (Antony, 2002; Antony & Taylor, 2001, 2004; Gardner, 2008; Gildersleeve et al., 2011; McCoy & Winkle-Wagner, 2015; Turner & Thompson, 1993; Winkle-Wagner & McCoy, 2016a). The primary constant on

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many of these campuses, particularly if the campus is a predominantly White institution (PWI), is racial inequities in enrollment, persistence, and pathways to the professoriate (Daniel, 2007; Ellis, 2001; Turner & Thompson, 1993; Winkle-Wagner & McCoy, 2016b).

It is within the long history of racial disparities in doctoral education that we consider the doctoral socialization process for Black students in this chapter. We argue that one reason for the persistence of racial inequities is the often used one-way socialization process in graduate programs that assumes that students must set aside their differences to integrate themselves and their ideas into the norms of their discipline. Throughout the chapter, we consider doctoral student socialization as it relates to Black students. We use Black students as our reference so that we can situate our ideas within existing findings about a particular group of students as a way to contemplate what might happen if the graduate school socialization models changed. First, we examine some of the trends related to Black graduate students' doctoral or graduate school experiences. Then, we examine some of the primary models for graduate school socialization, including the Weidman et al. (2001) model, and the since revisited version of the model by Twale, Weidman, and Bethea (2016) which considered socialization for Students of Color. Terms such as "White" or "Black" are often capitalized. For similar reasons, we choose to capitalize terms like "Students of Color, People of Color" in our writing to reaffirm the voice, experience, and history of exclusion of students and faculty who are represented by these phrases.

Next, we consider how social reproduction theory (Bourdieu, 1979), and the concepts of cultural capital, social capital, habitus, and *field* (all defined in more detail below) might be useful in considerations about doctoral student socialization, particularly for Black graduate students. In so doing, we review some of our earlier work that used social reproduction theory with Students of Color (McCoy & Winkle-Wagner, 2015; McCoy, Luedke, & Winkle-Wagner, 2017; McCoy, Winkle-Wagner, & Luedke, 2016; Winkle-Wagner & McCoy, 2016a, 2016b). While our focus in the chapter is on Black graduate students in particular, we also reviewed scholarship that emphasized Students of Color as a larger group because that is often where Black students are included in the research (Gay, 2004; McCoy, Winkle-Wagner, Luedke, 2016; Twale et al., 2016; Winkle-Wagner & McCoy, 2016a, 2016b). We use the term (i.e., African American, Black, Student of Color, etc.) that the researchers used in their scholarship and point out specific studies that focused on Black students. Finally, we offer ideas for how social reproduction theory could be used to both disrupt the idea of a one-way socialization process for Black doctoral students and to offer thoughts on a possible two-way socialization process. We make an argument for future research and theory to consider new ways of creating socialization in graduate programs such that Black graduate students can become centrally included in academia. Our premise is that academia itself must change to a more inclusive, welcoming, and supportive space for all people from historically underrepresented and marginalized backgrounds (Gildersleeve et al., 2011).

Graduate School Socialization and Black Graduate Students

The doctoral degree stands as the pinnacle of academic achievement. Yet, aside from a few disciplines such as education, there are severe racial disparities in the enrollment and completion of PhD programs for Black doctoral students (Gardner, 2008; Gildersleeve et al., 2011). Despite many graduate programs across the nation being similar in terms of their academic disciplinary norms, student experiences vary across campuses (Golde, 1998; Walker et al., 2008). While individual graduate students' socialization experiences vary, racial inequities in outcomes for graduate students appear to be a commonality on many campus (Antony, 2002; Daniel, 2007; Gardner, 2008; Gildersleeve et al., 2011; McCoy & Winkle-Wagner, 2015; Turner & Thompson, 1993; Winkle-Wagner & McCoy, 2016a).

Understanding the influence race has on the doctoral student socialization process is important, especially for Black students (Antony, 2002; Felder, Stevenson, & Gasman, 2014; Gardner, 2008). Race has been evidenced as a major factor on Black doctoral students' experiences in some studies (Daniels, 2007; Ellis, 2001; Gildersleeve et al., 2011; Turner & Thompson, 1993). These findings can help many universities to understand why graduate student socialization for Black graduate/professional students is important to their respective campuses. Our work is grounded in an assets-based idea of socialization for Black graduate students. In particular, we focus on ways to socialize Black graduate students as a means for offering specific ideas as to how socialization models, and newer approaches, might influence particular populations.

Ellis (2001) found that race was a salient factor in the doctoral experience, identifying four major areas of concern: (1) mentoring and advising, or the lack thereof, for some Black students; (2) the departmental environment excluding Black students; (3) interaction with peers being tinged with racial micro-aggressions; and (4) research and teaching training being inaccessible for some Black students. In addition to Black graduate students managing experiences of discrimination and marginality across their graduate programs (e.g., in the classroom, in teaching, during advising and mentoring, etc.), they also have to gain research and other practical skills while navigating graduate education. Graduate program skills will help Black students persist and will serve them well on the path to becoming faculty. In a call for more culturally responsive models of graduate student socialization, Gay (2004) noted that graduate Students of Color experience three major forms of isolation on their path to academia. She suggested *physical* and *cultural isolation*, *benign neglect*, and *problematic popularity* (the idea of being overly noticeable) all affect doctoral Students of Color and lead to a feeling of general isolation. Navigating this isolation is paramount to Students of Color being able to make it to degree completion (see also, Antony & Taylor, 2004; Gonzàlez, 2006; Taylor & Antony, 2000).

One reason for isolation among Black doctoral students is likely the treatment they receive by faculty in their academic disciplines (Jones, Wilder, & Osborne-Lampkin, 2013). Prior research has maintained the crucial importance of faculty mentoring for Black graduate students in particular (Antony & Taylor, 2004; Cole

& Griffin, 2013; Daniel, 2007; Gildersleeve et al., 2011; Taylor & Antony, 2000). Scholarship on the experiences of Black doctoral students argues that they do not receive the same mentoring as their White colleagues, particularly within PWIs (Jones et al., 2013; McCoy et al., 2017; Patton 2009; Patton & Harper, 2003). Other research suggests that even when White faculty attempted to be "race neutral" (McCoy et al., 2016, p. 236) in the way they engaged with Students of Color, the faculty mentoring might be perceived as racialized. In other words, race neutral or "colorblind" attempts in mentoring where faculty attempt to ignore race might be more likely to be received as racist and discriminatory because students' backgrounds are not as likely to be embraced (McCoy et al., 2016). Sometimes, in the absence of positive faculty mentoring, Black doctoral students have found it necessary to supplement faculty mentoring with peer mentoring, which can be beneficial but is likely not as connected to preparation for the academic discipline (Patton, 2009).

In sum, the disparate treatment of Black doctoral students indicates that socialization processes may not be implemented in equal ways, even if these socialization processes are considered as one-way and the same for all students who enter a particular discipline. That is, it might be the case that the more that faculty, administrators, and leaders within academic disciplines attempt to be race-neutral and avoid consideration of students' individual backgrounds, the more likely the students might be to experience graduate school as an exclusionary and isolating place. Given the disparities that Black students often experience in their doctoral programs, we consider a metaphor for how academia is responding to new groups of students and a way that institutional and disciplinary change might occur. Ultimately, it is our argument that through better and more inclusive models of doctoral students' socialization, racial equity in the academy might be made more tangible.

A Metaphor of Water Resistance and Permeability in Academia

Rooted in the notion that Black graduate students in particular have had and are continuing to have disparate experiences than their White peers, we consider a metaphor for the academy. Throughout our analysis, we use a metaphor of ivory towers, in part because this metaphor points out the way in which most higher education institutions were created by and for White people, and particularly, by and for White men (Dancy, Edwards, & Davis, 2018). The towers are considered "ivory" in that they have not fully included the racial and ethnic diversity that exists and that is possible. We also use a metaphor of water resistance and permeability, as we make an argument for the need for "porous" ivory towers that allow some water (which is a metaphor for new ideas and new types of people) to pass through. The ivory towers of academia have been historically, and arguably still are, resistant to new ways

of thinking and conducting work – they are impermeable, water resistant, and tightly sealed. However, as is the case when a major storm (i.e., tornado) hits, sometimes it is necessary to open the windows to let some of the wind and water pass through or the pressure will implode the building. The same goes for academia. As academic disciplines hold tightly to old norms and ways of performing the work, and to the idea that only one or two kinds of people can be fully included, they may implode from the pressure. Thus, we argue that the ivory towers must become more porous, allowing new ideas and people to come through and to be fully included.

This metaphor helps us to contemplate how disruptive it might be to offer inclusion in such a way that it actually leads to change in the academy. For many who hold tightly to the norms of their academic disciplines and the (White/Eurocentric) norms of the academy, this may feel as if the ivory tower is flooding, changing, and becoming permeable in ways that are uncomfortable, disruptive, and even terrifying. Thus, our metaphor of water resistance versus water permeability helps us to demonstrate the immense challenge that true racial/ethnic inclusion can be difficult for many academic disciplines. We maintain that if academic disciplines continue to try to "seal out" new ideas and new people, the ivory tower they hold dear will crumble from the pressure. First, we explain how the ivory towers became so impermeable, through the very socialization processes that we might have held up as an exemplar.

Impervious Academia? Socialization Models for Graduate Programs

Research about the doctoral student experience considers socialization as a critical aspect of academic success (Austin & McDaniels, 2006; Gardner, 2010; Gardner & Barnes 2007; Golde, 1998; Lovitts, 2001; McGaskey, Freeman, Guyton, Richmond, & Guyton, 2016; Nettles & Millett, 2006; Taylor & Antony, 2000; Walker et al., 2008; Weidman & Stein, 2003; Weidman et al., 2001). For example, the ways that socialization have been described and defined often assumes that students are being socialized into existing norms, behaviors, and ways of thinking in their academic discipline (Golde, 1998; Weidman et al., 2001). While there is sometimes a description of the different identities that students bring with them, there is still an assumption that socialization is a one-way process: students come to campus or to an academic department and are taught what they need to know to engage in that discipline. There is little discussion of, or room for, ideas about how departments, institutions, and disciplines might change based on the students' identities and backgrounds. While there are a few major models of graduate student socialization (Austin, 2002; Austin & McDaniels, 2006; Weidman, Twale & Stein, 2001), we focus specifically on the Weidman, Twale & Stein model here.

The Weidman, Twale, and Stein (2001) Doctoral Student Socialization Model

One of the most often used models for doctoral student socialization is the model advanced by Weidman, Twale, and Stein (2001). A recent search (10 January 2020) suggested that the model has been cited and used more than 1050 times (https://scholar.google.com/citations?user=AV29yF0AAAAJ&hl=en).Labeled as an interactive socialization model, Weidman et al. (2001) described the socialization process through which graduate students progress as developmental, meaning that there is a process of growth and change. The model has been used to understand topics such as graduate students' professional identity development (Sweitzer, 2009), the role of doctoral students' advisors (Barnes & Austin, 2009), graduate students' experiences during their programs (Gardner, 2008; Gardner & Barnes, 2007) and pathways to the professoriate (Austin & McDaniels, 2006).

Weidman, et al. (2001) described the graduate school experience as a process of knowledge acquisition and the processes of socialization. In this model, they modified their earlier socialization framework that Stein and Weidman (1989), Weidman and Stein (1990) presented at national conferences and incorporated a developmental stage model of socialization (Thornton & Nardi, 1975). Weidman et al.'s (2001) model was extended from a model developed by Thornton and Nardi (1975) for undergraduate students. The model assumes that stages can be duplicated and can be present any time during the student's matriculation. The four stages: (1) anticipatory, (2) formal, (3) informal, and (4) personal, present a developmental framework for understanding the process that graduate and professional students experience during their graduate education (Weidman et al., 2001). Each stage contains a progression where each element of socialization *leads* to more involvement of students being engaged in their academic program, and with faculty. The four stages are explained in more detail below.

Anticipatory Socialization This is the stage in which the prospective students begin learning about the expectations, and attitudes of graduate programs. This stage serves as the preparatory and exploratory stage, where the prospective students begin to explore what it is like to be a graduate student and researches graduate programs. Prospective students have preconceived notions about their particular area of study, but these notions are usually modified based on the students' understanding of what they need to succeed. Prospective students at the anticipatory stage learn about the rules, department and university jargon, departmental norms, and what is deemed acceptable behavior for success in that particular program (Weidman et al., 2001).

Formal Socialization The primary difference between this stage and anticipatory stage is that the prospective student becomes a student and has been accepted into their program. The student begins to determine whether they are a good fit for that particular program and institution and they begin engaging in "role-rehearsal"

(Weidman et al., 2001, p. 13). In role-rehearsal, the students begin to observe and imitate other students who are enrolled in their program. For example, they initiate a research agenda and present at academic conferences.

Informal Socialization The informal stage of acquisition occurs when the graduate student learns informally the expectations for connecting with other graduate students. The new graduate students begin to receive behavioral cues, learn what is acceptable behavior, and are taught how to react and respond accordingly (Weidman et al., 2001). The students are then encouraged by faculty to develop their own relationships with peers, and to develop a social and emotional support system with classmates (Staton & Darling, 1989; Weidman et al., 2001). Weidman et al. (2001) reinforced that there is often social anxiety with fitting in and assigning status to individual departmental members. Peer support groups are highly encouraged at this level because it allows the students to support and communicate with each other. Having peer support is important, and at this stage it allows for community, social and emotional identification, cohesiveness, and connectedness (Twale & Kochan, 2000; Weidman et al., 2001).

Personal Socialization In the personal stage of socialization for graduate students, the student begins to develop a professional identity, and tend to stray away from their former self (Bullis & Bach, 1989). The graduate students begin to develop a new professional image, avoid old habits, and initiate development of a scholar identity. As a scholarly identity is initiated, it allows for the graduate students to understand that their program is developing them for their new profession and career (Weidman et al., 2001). Finally, the graduate students begin to establish higher expectations for themselves and begin to apply for competitive fellowships, scholarships, and assistantships. Students become more involved with professional associations within their discipline at this stage, and they often engage in research and presentations (Weidman et al., 2001, p. 15).

The Weidman, Twale, and Stein (2001) model has been one of the most widely applied ideas for understanding the process by which graduate students become scholars (Gardner, 2007, 2010; Langrehr, Green, & Lantz, 2018). Yet, as is the case with most models that are meant to be universalized, the model may not work for *all* students. This model of doctoral student socialization has been criticized for not applying as well to Students of Color in particular (Cole & Griffin, 2013; Daniel, 2007; Dortch, 2016a, 2016b; Felder & Barker, 2013; Griffin, Muniz, & Espinosa, 2012; Sallee, 2011; Winkle-Wagner & McCoy, 2016b).

The Weidman, Twale, and Stein (2001) model does not include race and stereotypes as factors. These factors are likely to be impactful for Black graduate students. For example, in Taylor and Antony's (2000) qualitative study, they found that stereotyping and racism were key factors that hinder the socialization of Black doctoral and professional students and other minoritized populations. Similarly, in Gildersleeve et al.' (2011) critical race analysis of doctoral education, they found that Black students dealt with perceived individual and institutional racism when

socializing with assistantship supervisors and their academic advisors. Another factor, that is not included in the model is funding. Often times, funding is a major aspect of the student's experience (Ehrenberg, Jakubson, Groen, So, & Price, 2007; Ehrenburg & Mavros, 1992). Some Black doctoral students have reported the necessity of leaving their doctoral program due to increasing debt or a lack of funding (Mendoza, Villareal, & Gunderson, 2014). Finally, while the Weidman et al. (2001) model does suggest the importance of mentoring, it is worth considering which mentoring practices work well for Black graduate students. An absence of culturally responsive mentoring can influence Black doctoral students' success in graduate programs (Cole & Griffin, 2013; Jones et al., 2013; McCoy et al., 2017; Winkle-Wagner & McCoy, 2016a, 2016b). Dortch's (2016a, 2016b) phenomenological study asserted that administrators and other professionals should implement support systems that focus on the experiences of Women of Color, specifically Black women, as a way to promote mentoring practices that are more likely to be culturally responsive. Ultimately, these critiques led Weidman and his colleagues to contemplate ways to revise the initial model, which is a testament to their scholarship more generally. The revised model attended to some of these criticisms, as we demonstrate below.

Weidman and Colleague's Revised Socialization Theory

Twale, Weidman, and Bethea (2016) advanced a revision of the earlier Weidman et al. (2001) model. The revised model focused particularly on Black graduate students and their socialization needs. A strength of this revised model is that there is some consideration of inequitable resources such as student-faculty interactions and mentoring for Black students in graduate programs, or a lack of funding to complete their degree programs (Twale et al., 2016). Many of the concerns that we mentioned above, such as the cultural responsiveness of the initial model or the lack of attention toward financial resources, were considered in the model's revision. In Twale et al.'s reflection on the older model, the authors recommended resource redistribution in the form of increased demographic diversity in students and faculty within programs, incorporating a multicultural perspective in pedagogy and learning, following students' access to financial or socialization resources (e.g., opportunities to collaborate with faculty or attend conferences). These recommendations would likely aid in some of the inequities that Black students report experiencing in graduate programs. For instance, if a multicultural perspective were incorporated into graduate programs, Black graduate students might not feel as isolated intellectually or relative to their backgrounds (Dortch, 2016a, 2016b; Jones et al., 2013). A more diverse student and faculty population might help relieve some of the lack of support that Black students have reported with their academic advisors and other staff or faculty (McCoy et al., 2016). A clearer and more transparent funding model within graduate programs, as prescribed by Twale et al. (2016), would likely aid in the experience of funding disparities too.

The revised model specifically included some emphasis on faculty climates, entering students' preparation and dispositions, and the need to teach knowledge, skills, and dispositions (Twale et al., 2016). The notion of embracing students' backgrounds would likely help students to feel less like "aliens" (Winkle-Wagner & McCoy, 2016b, p. 9) especially on predominantly White campuses. The revised model is ultimately more responsive to students' background and dispositions in ways that could lead to a more nuanced and bi-directional approach to socializing doctoral students.

Cracking the Ivory Tower: Assets-Based Approaches to Bourdieu

In our larger body of research, we often use Bourdieu's (1979) social reproduction theory to guide our thinking about inequality and how inequalities can be intergenerationally transmitted. Bourdieu (1979) was concerned with how status and privilege is passed from one generation to the next, such as through families and schools. Bourdieu (1979) identified four theoretical concepts through his research on French class status and class mobility: *field* (the social context, such as a school or a community); cultural capital (knowledge, skills, abilities or competencies that are rewarded in particular setting such as educational contexts); social capital (social relationships and obligations that can be rewarded in social settings); and habitus (a set of dispositions or tastes that structure what actions seem viable for a person to take). These concepts are useful to explore how some students may enter educational settings with backgrounds that more closely align to the educational setting than other students. For example, if a student begins graduate school and they have parents/guardians who earned terminal degrees, that student may initially have advantages over students whose parents/guardians do not possess advanced degrees.

The one-way graduate school socialization processes are solidly embedded in academia and in many academic disciplines. It is unsurprising that many scholars have used theorists such as Bourdieu (1979) to reinforce the "necessity" of these approaches (Winkle-Wagner, 2010). For instance, when education scholars began to apply Bourdieu's concepts, they often framed the statistical modeling in a zero sum game way where the concept of cultural capital was defined as something that was *only* possessed by people in elite statuses (DiMaggio, 1982). Subsequent scholarship, mirroring the initial adapters of Bourdieu's concepts, and DiMaggio in particular, continued to frame concepts such as cultural capital as something that was owned by the elite group, and was not a possession of those in low-income or less elite backgrounds (DiMaggio & Mohr, 1985; Katsillis & Rubinson, 1990; Mohr & DiMaggio, 1995; Noble & Davies, 2009; Roscigno & Ainswoth-Darnell, 1999). Social capital scholarship took a similar path where scholars began to frame studies in ways that maintained an individual either possessed high-status social capital, or they did not. Thus, the concepts began to shift and were considered as either an advantage or a deficiency: students either had possession of cultural and social capital, or they lacked cultural and social capital (Musoba & Baez, 2009).

The outcome of this framing of Bourdieu's concepts was that many students who were from low-income backgrounds or who identified as Black or African American began to be viewed as students who needed to be given *more* social and cultural capital. They were considered students who were *lacking* in important skills, competencies, abilities, and social networks (Yosso, 2005). Concepts such as socialization became one way to contemplate how to provide for underrepresented students "lacking" of social and cultural capital. Eventually, the emphasis is pushed to the individual student, and if the student is somehow different from other students, there is an assumption *that particular student* should change.

It is important to note that Bourdieu's concepts are most useful when used as a full theoretical apparatus, with analysis of *field*, cultural capital, social capital, and habitus (Winkle-Wagner, 2010). When Bourdieu's concepts are used together, it is clear that the initial intent of these concepts are to explore how some forms of cultural and social capital might be valued more than others in particular settings (Olneck, 2000). If a student were to enter a setting (i.e., a college or university) and find that their cultural capital was not valued, this would not necessarily imply that the student did not possess cultural capital. Rather, it could imply that the *form* of cultural capital the student already possessed entering their program was not valued in that setting (*field*). An analysis that considered a student to already possess useful forms of background capital that were not valued in a particular setting such as a college campus would then place more emphasis on the campus and not the individual student (see Carter, 2003; Olneck, 2000 Winkle-Wagner, 2009; Yosso, 2005).

Scholars have considered ways to highlight the forms of capital that students might bring with them to campus (Carter, 2003; Yosso, 2005). For instance, Carter (2003) considered dominant and non-dominant forms of capital as a way to show how all people have capital, but some forms of capital are considered dominant and some are not. Yosso (2005) developed the theoretical concept of Community Cultural Wealth (CCW) as a way to demonstrate the varied ways that Students of Color bring experiences and talents to their respective college campuses as a form of capital. Yosso (2005) argued that Communities of Color "nurture" (p. 77) cultural wealth (capital) through six forms of capital: aspirational, navigational, social, linguistic, familial, and resistance. In this chapter, we focus on each form of capital, with the exception of linguistic capital, and its relevance to graduate Student of Color, particularly Black graduate students.

Aspirational capital is one's desire to maintain a hope/dream for the future, despite obstacles they may have or have not experienced (Yosso, 2005). In a doctoral context, aspirational capital has significant influence because pre-doctoral students who desire to attend a doctoral program must have the motivation and initiative to apply and enroll in their programs and these aspirations can be assets in the process. Additionally, while many pre-doctoral students desire to attend graduate programs they may have also experienced some challenges before applying (i.e., low GRE scores and/or lower grade point averages throughout their undergraduate careers). *Familial capital* is cultural knowledge that is gathered from family, and even from communities (Yosso, 2005). It is embodied in the quote "It takes a village to raise a child." Familial capital is important during the doctoral phase because

many doctoral students are often the first in their families and communities to pursue a degree beyond a bachelor's degree. Often, familial capital is imperative in graduate education because many doctoral students' families have encouraged them to pursue this degree, but may not understand how the pursuit of a graduate degree works. *Social capital* is the network of people and resources one has built which helps them navigate the institutions they choose to attend (Yosso, 2005). Social capital is significant in the context of graduate education because this is often how graduate students are connected to internships, jobs, and publishing opportunities; and is based on the advisor's personal network, reputation in the university environment, or even who they may know. *Navigational capital* refers to students' skills and abilities to navigate "social institutions," which includes educational spaces (Yosso, 2005). Navigational capital is critical because it plays a major role in the type of experience the doctoral student will have: negative or positive. This capital is critical during the doctoral student's matriculation, because it is how graduate students learn to engage with faculty, administrators, and staff at the institution they are attending. *Resistance capital* is the knowledge and skills fostered through oppositional behavior that challenges inequality. This type of capital is centered in Communities' of Color legacies of resistance as a way to successfully pursue education without losing a sense of self. Part of Yosso's (2005) critique was grounded in the way in which Bourdieu's concepts had been translated in academia and Bourdieu's ideas have been used in educational research in ways that promote deficiency thinking or the idea that some groups are lacking particular skills (Winkle-Wagner, 2010). Yosso's (2005) idea is an assets-based approach: a way to counter deficit thinking and assert the valuable aspects of students' backgrounds before and when they enter graduate school.

A Porous Academia? Social Reproduction Theory and Two-Way Socialization Models for Graduate Programs

We identified socialization processes that are less rigid, more inclusive, and reciprocal; meaning that socialization into graduate programs can be conducted in a way that allows students to assert the importance of their identities and backgrounds. Previous research has framed this as a two-way or bi-directional socialization process (McCoy, 2007; McCoy & Winkle-Wagner, 2015; Tierney, 1997). For example, in a multisite critical case study project of summer institutes in the humanities disciplines, socialization processes were found to be two-way (McCoy & Winkle-Wagner, 2015). Students of Color were encouraged to find and make space for their background identities and their ideas within the academy. The summer institutes not only helped students to gain socialization into the "traditional" humanities disciplines; but the students were also socialized so that they should and could bring their identities into academia and work to change the norms of their discipline (Winkle-Wagner & McCoy, 2016a).

One way we argue that Bourdieu's theoretical apparatus, when used in its entirety, might work well as a socialization model is through the concept of *field* or social setting. That is, if research and practice were to thoroughly understand the *field* of origin for a doctoral student, the process of socialization could be more bi-directional. The *field* of a student's origin, if better understood, could be connected. For instance, in our research on summer institutes in the humanities disciplines, there were deliberate attempts to connect students' backgrounds with the academy and preparation for graduate school, and this connection was primarily achieved through overlapping the *field* of origin with the *field* of the academy (Winkle-Wagner & McCoy, 2016a). One way that this connection of the *field* of origin and the *field* of the academy was achieved was through a deliberate selection of readings authored by Scholars of Color. Students within the institutes were then deliberately encouraged to compare the readings authored by Scholars of Color that may have reflected some of their own backgrounds, with the other forms of scholarship (with primarily White authors), in their disciplines (Winkle-Wagner & McCoy, 2016a).

Another way that Bourdieu's concepts can be used in a bi-directional socialization approach is to evaluate which form of cultural capital is valued within an academic discipline. Using our metaphor of a porous academia, these efforts are ways to ensure that the academy is more easily able for variations and differences to flow through the walls. For example, it is eminently doable to list some of the important theories, terms, approaches to writing, methods, and general norms within a particular discipline. While these are the areas of training that are often held back until a student arrives in a particular department for graduate school, if programs were to do this work beforehand (i.e., before students matriculate), faculty and staff could then gauge what "cultural capital" they were actually valuing as a department or a discipline. The norms of a particular discipline could be taught and disrupted in summer bridge programs, doctoral inquiry courses, prospective student visit days, or during seminars and colloquiums within the programs. By making the cultural capital that has been historically valued in the discipline more transparent, we argue that it is more likely that the relevant/valued cultural capital could be expanded. Students could be honored relative to their backgrounds and perhaps new forms of cultural capital could begin to be valued. Departments could host listening sessions to hear about students' backgrounds, ideas, and assets they bring with them into their programs. However, the reality is that some reshaping of cultural capital will be on an individual level between faculty and students through culturally responsive mentoring practices (see for example, Jones et al., 2013). These individual mentoring practices would still have the power to eventually reshape departments and disciplines if deliberately articulated and expanded (e.g., brought to faculty meetings as exemplars for their peers).

Finally, relative to social capital, there might be better ways to connect the social capital of origin (families, communities) with academic disciplines. Community engaged scholarship, where scholars conduct research closely with community members, is an idea that is moving in this direction. But there are likely creative ways that departments could better connect with students' communities and families of origin. This too might occur on an individual faculty or staff level. More

holistic forms of mentoring are often described by students as being connected to their families or communities, at least at the level of asking students about their significant others (Jones et al., 2013). For example, in our research on mentoring, some faculty consistently asked students about their parents, sibling, and communities; and students experienced this as a more holistic form of mentoring (McCoy et al., 2016).

Ultimately, we are calling for a different type of socialization within graduate programs, one that we focused toward Black students, but one that we argue could be adapted for work with multiple groups of underrepresented students over time. A two-way socialization process implies that an academic discipline is porous enough to be changed by the inclusion of new types of students. Our point is not to universalize and say that there is only one way to socialize students into the academy. Rather, we are taking issue with any model that attempts to be a one-way or one-size-fits-all (Feagin, Vera, & Imani, 2014/1996) model in higher education. Thus, while we maintain that the two-way socialization model could apply to multiple populations, to dogmatically apply the idea to any population would miss the point of the two-way process. The implication is that the discipline, and those within it, would be open and willing to change as new populations, and the resulting ideas and knowledge that could come from these new groups, enter the fields. New populations of graduate students *and* existing faculty, staff, and students must all have openness to learning and to change for a two-way model to work.

Our hope with a two-way socialization model is that as students mature into scholars, the discipline begins to represent new ways of thinking, new ways of writing, new approaches to mentoring students, and new approaches to conducting research. These new approaches would be identified through the two-way socialization process – a more porous academy. That is, as students enter academic disciplines, the discipline would be open to socialization from students on the experiences and assets (the Community Cultural Wealth) they bring with them into their graduate programs. As Black graduate students ultimately create change in the discipline, they would also be socialized into the "traditional" norms of the discipline. But, the traditional norms of campus would be changed too. That is, after engagement with Black students, the campus would change and so would the students. As Black graduate students are exposed to the traditional norms of the academy, they would also need to be actively encouraged to criticize traditions as racist, sexist, classist, etc. (Dancy et al., 2018). Some of these criticisms would need to come from faculty, administrators, and those who are socializing the students such that students could then feel empowered to launch their own critiques. The socialization process would be conducted in such a way that there was openness to the idea that the disciplinary and departmental norms could also change. Socialization that came from academic disciplines would be almost historical in manner (i.e., this is how things were done and we are continuing to change).

We assert that a new model of graduate student socialization would allow space for students' backgrounds to be viewed as assets. Faculty, staff, and administrators would need to make their mentoring, teaching, and learning practices flexible enough to allow for changes based on students' backgrounds, needs, and assets.

While we emphasize Black graduate students in this chapter, we recognize that socialization may need to differ among various racial/ethnic groups, gender, and socioeconomic groups. While our focus is on the needs of Black graduate students more generally, we realize that Black men and women may have very different experiences and needs in graduate programs (see for example, Dortch, 2016a, 2016b). We also need to point out the importance of carefully assessing the needs of students with various racial/ethnic backgrounds. That is, Black students may have very different needs, background assets, and experiences than Latinx, Asian American, or Native American students. Ultimately, a two-way socialization model allows for space, flexibility, and change in a way that current (i.e., historical or traditional) models may not.

References

Antony, J. S. (2002). Reexamining doctoral student socialization and professional development: Moving beyond the congruence and assimilation orientation. In *Higher education: Handbook of theory and research* (pp. 349–380). Dordrecht, The Netherlands: Springer.

Antony, J. S., & Taylor, E. (2001). Graduate student socialization and its implications for the recruitment of African American education faculty. In W. G. Tierney (Ed.), *Faculty work in schools of education: Rethinking roles and rewards for the twenty-first century* (pp. 189–209). Albany, NY: State University of New York Press.

Antony, J. S., & Taylor, E. (2004). Theories and strategies of academic career socialization: Improving paths to the professoriate for Black graduate students. In D. H. Wulff & A. D. Austin (Eds.), *Paths to the professoriate: Strategies for enriching the preparation of future faculty* (pp. 92–114). San Francisco: Jossey- Bass.

Austin, A. E. (2002). Preparing the next generation of faculty: Graduate school as socialization to the academic career. *The Journal of Higher Education, 73*(1), 94–122.

Austin, A. E., & McDaniels, M. (2006). Preparing the professoriate of the future: Graduate student socialization for faculty roles. In *Higher education: Handbook of theory and research* (pp. 397–456). Dordrecht, The Netherlands: Springer.

Barnes, B. J., & Austin, A. E. (2009). The role of doctoral advisors: A look at advising from the advisor's perspective. *Innovative Higher Education, 33*, 297–315.

Bourdieu, P. (1979). *Distinction. A social critique of the Judgment of taste*. (R. Nice, Trans.). Cambridge, MA: Harvard University Press.

Brown, M., & Davis, J. (2001). The historically Black college as social contract, social capital, and social equalizer. *Peabody Journal of Education, 76*(1), 31–49. Retrieved from http://www.jstor.org/stable/1493004

Bullis, C., & Bach, B. W. (1989). Socialization turning points: An examination of change in organizational identification. *Western Journal of Communication, 53*, 273–293.

Carter, P. L. (2003). " Black" cultural capital, status positioning, and schooling conflicts for low-income African American youth. *Social Problems, 50*(1), 136–155.

Cole, D., & Griffin, K. A. (2013). Advancing the study of student-faculty interaction: A focus on diverse students and faculty. In *Higher education: Handbook of theory and research* (pp. 561–611). Dordrecht, The Netherlands: Springer.

Dancy, T. E., Edwards, K. T., & Davis, J. E. (2018). Historically White universities and plantation politics: Anti-blackness and higher education in the Black Lives Matter era. *Urban Education, 53*(2), 176–195.

Daniel, C. (2007). Outsiders-within: Critical race theory, graduate education and barriers to professionalization. *Journal Sociology & Social Welfare, 34*(1), 25.
DiMaggio, P. (1982). Cultural capital and school success: The impact of status culture participation on the grades of US high school students. *American Sociological Review, 47*, 189–201.
DiMaggio, P., & Mohr, J. (1985). Cultural capital, educational attainment, and marital selection. *American Journal of Sociology, 90*, 1231–1261.
Dortch, D. (2016a). The strength from within: A phenomenological study examining the academic self-efficacy of African American women in doctoral studies. *The Journal of Negro Education, 85*, 350–364.
Dortch, D. (2016b). The strength from within: A phenomenological study examining the academic self-efficacy of African American women in doctoral studies. *The Journal of Negro Education, 85*(3), 350–364.
Du Bois, W. E. B. (1903). *The Souls of Black Folk*. New York: Penguin.
Ehrenberg, R. G., Jakubson, G. H., Groen, J. A., So, E., & Price, J. (2007). Inside the black box of doctoral education: What program characteristics influence doctoral students' attrition and graduation probabilities? *Educational Evaluation and Policy Analysis, 29*(2), 134–150.
Ehrenberg, R. G., & Mavros, P. G. (1992). *Do doctoral students' financial support patterns affect their times-to-degree and completion probabilities* (No. w4070). National Bureau of Economic Research.
Ellis, E. M. (2001). The impact of race and gender on graduate school socialization, satisfaction with doctoral study and commitment to degree completion. *Western Journal of Black Studies, 25*(1), 30.
Feagin, J. R., Vera, H., & Imani, N. (2014/1996). *The agony of education: Black students at a White university*. Routledge.
Felder, P. P., Stevenson, H. C., & Gasman, M. (2014). Understanding race in doctoral student socialization. *International Journal of Doctoral Studies, 9*, 21–42.
Felder, R., & Barker, M. (2013). Extending Bell's concept of convergence: A framework for understanding the African American doctoral student experience. *International Journal of Doctoral Studies, 8*, 1–20. Retrieved from. https://doi.org/10.28945/1754
Gardner, S. K. (2007). "I heard it through the grapevine": Doctoral student socialization in chemistry and history. *Higher Education, 54*(5), 723–740.
Gardner, S. K. (2008). Fitting the mold of graduate school: A qualitative study of socialization in doctoral education. *Innovative Higher Education, 33*(2), 125–138.
Gardner, S. K. (2010). Faculty perspectives on doctoral student socialization in five disciplines. *International Journal of Doctoral Studies, 5*, 39–53.
Gardner, S. K., & Barnes, B. J. (2007). Graduate student involvement: Socialization for the professional role. *Journal of College Student Development, 48*, 369–387.
Gay, G. (2004). Navigating marginality en route to the professoriate: Graduate students of color learning and living in academia. *International Journal of Qualitative Studies in Education, 17*(2), 265–288.
Gildersleeve, R. E., Croom, N. N., & Vasquez, P. L. (2011). "Am I going crazy?!": A critical race analysis of doctoral education. *Equity & Excellence in Education, 44*(1), 93–114.
Golde, C. M. (1998). Beginning graduate school: Explaining first-year doctoral attrition. *New Directions for Higher Education, 1998*(101), 55–64.
González, J. C. (2006). Academic socialization experiences of Latina doctoral students: A qualitative understanding of support systems that aid and challenges that hinder the process. *Journal of Hispanic Higher Education, 5*, 347–365.
Griffin, K., Muniz, M., & Espinosa, L. (2012). The influence of campus racial climate on diversity in graduate education. *Review of Higher Education, 35*, 535–566.
Jackson, J. F., & Moore, J. L. (2006). African American males in education: Endangered or ignored? *Teachers College Record, 108*, 201–205.

Jones, T. B., Wilder, J., & Osborne-Lampkin, L.'. T. (2013). Employing a Black feminist approach to doctoral advising: Preparing Black women for the professoriate. *The Journal of Negro Education, 82*(3), 326–338.

Katsillis, J., & Rubinson, R. (1990). Cultural capital, student achievement, and educational reproduction: The case of Greece. *American Sociological Review, 55*, 270–279.

Langrehr, K. J., Green, C. E., & Lantz, M. (2018). *The implications of doctoral students' professional socialization experiences in graduate training*. The Counseling Psychologist, 0011000017748588.

Lovitts, B. E. (2001). *Leaving the ivory tower: The causes and consequences of departure from doctoral study*. Lanham, MD: Rowman & Littlefield.

McCoy, D. L. (2007). Entering the academy: Exploring the socialization of African American male faculty at HBCUs and PWIs. *Journal of the Professoriate, 2*(2), 75–91.

McCoy, D. L., Luedke, C. L., & Winkle-Wagner, R. (2017). Encouraged or "weeded out" in the STEM disciplines: Students' perspectives on faculty interactions within a predominantly white and a historically black institution. *Journal of College Student Development, 58*(5), 657–673.

McCoy, D. L., & Winkle-Wagner, R. (2015). Bridging the divide: Developing a scholarly habitus for underrepresented students through summer bridge programs participation. *Journal of College Student Development, 56*(5), 423–439.

McCoy, D. L., Winkle-Wagner, R., & Luedke, C. (2016). Colorblind mentoring?: Exploring white faculty mentoring of students of color. *Journal of Diversity in Higher Education, 8*(4), 225–242.

McGaskey, F., Freeman Jr., S., Guyton, C., Richmond, D., & Guyton, C. W. (2016). The social support networks of Black males in higher education administration doctoral programs: An exploratory study. *Western Journal of Black Studies, 40*(2), 141–158.

Mendoza, P., Villarreal, P., & Gunderson, A. (2014). Within-year retention among Ph. D. students: The effect of debt, assistantships, and fellowships. *Research in Higher Education, 55*(7), 650–685.

Mohr, J., & DiMaggio, P. (1995). The intergenerational transmission of cultural capital. *Research in Social Stratification and Mobility, 14*, 167–200.

Musoba, G., & Baez, B. (2009). The cultural capital of cultural and social capital: An economy of translations. *Higher education: Handbook of theory and research, 24*, 151–182. Springer Netherlands.

Nettles, M. T., & Millett, C. M. (2006). *Three magic letters: Getting to Ph. D*. Baltimore: Johns Hopkins University Press.

Noble, J., & Davies, P. (2009). Cultural capital as an explanation of variation in participation in higher education. *British Journal of Sociology of Education, 30*(5), 591–605.

Olneck, M. (2000). Can multicultural education change what counts as cultural capital? *American Educational Research Journal, 37*(2), 317–348.

Patton, L. D. (2009). My sister's keeper: A qualitative examination of mentoring experiences among African American women in graduate and professional schools. *The Journal of Higher Education, 80*(5), 510–537.

Patton, L. D., & Harper, S. R. (2003). Mentoring relationships among African American women in graduate and professional schools. *New Directions for Student Services, 2003*(104), 67–78.

Roscigno, V. J., & Ainsworth-Darnell, J. W. (1999). Race, cultural capital, and educational resources: Persistent inequalities and achievement returns. *Sociology of Education, 72*, 158–178.

Sallee, M. (2011). Performing masculinity: Considering gender in doctoral student socialization. *Journal of Higher Education, 82*(2), 187–216.

Staton, A., & Darling, A. (1989). Socialization of teaching assistants. In J. Nyquist, R. Abbott, & D. Wulff (Eds.), *Teaching Assistant Training in the 1990s* (New Directions for Teaching and Learning, No. 39) (pp. 15–22). San Francisco: Jossey-Bass.

Stein, E. L., & Weidman, J. C. (1989). *Socialization in graduate school: A conceptual framework*. Paper presented at the annual meeting of the association for the study of higher education, Atlanta, GA.

Sweitzer, V. (2009). Towards a theory of doctoral student professional identity development: A developmental networks approach. *The Journal of Higher Education, 80*(1), 1–33.

Taylor, E., & Antony, J. S. (2000). Stereotype threat reduction and wise schooling: Towards the successful socialization of African American doctoral students in education. *Journal of Negro Education, 69*(3), 184–198.

Thornton, R., & Nardi, P. M. (1975). The dynamics of role acquisition. *The American Journal of Sociology, 80*(4), 870–885.

Tierney, W. G. (1997). Organizational socialization in higher education. *Journal of Higher Education, 68*(1), 1–16.

Turner, C. S. V., & Thompson, J. R. (1993). Socializing women doctoral students: Minority and majority experiences. *The Review of Higher Education, 16*(3), 355–370.

Twale, D., & Kochan, F. (2000). Assessment of an alternative cohort model for part-time students in an educational leadership program. *Journal of School Leadership, 10*, 188–208.

Twale, D. J., Weidman, J. C., & Bethea, K. (2016). Conceptualizing socialization of graduate students of color: Revisiting the Weidman-Twale-Stein framework. *Western Journal of Black Studies, 40*(2), 80–94.

Walker, G. E., Golde, C. M., Jones, L., Bueschel, A. C., & Hutchings, P. (2008). *The formation of scholars: Rethinking doctoral education for the 21st century*. San Francisco, CA: Jossey-Bass.

Weidman, J. C., & Stein, E. L. (1990). *The professional socialization of graduate students in educational administration*. Paper presented at the annual meeting of the University Council for Educational Administration, Pittsburgh, PA.

Weidman, J. C., & Stein, E. L. (2003). Socialization of doctoral students to academic norms. *Research in Higher Education, 44*, 641–656.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Winkle-Wagner, R. (2009). *The unchosen me: Race, gender, and identity among Black women in college*. Baltimore, MD: Johns Hopkins University Press.

Winkle-Wagner, R. (2010). *Cultural capital: The promises and pitfalls in education research: ASHE Higher Education Report* (Vol. 36, p. 1). San Francisco: Jossey-Bass.

Winkle-Wagner, R., & McCoy, D. L. (2016a). Entering the (postgraduate) field: Underrepresented students' acquisition of cultural and social capital in graduate school preparation programs. *Journal of Higher Education, 87*(2), 178–205.

Winkle-Wagner, R., & McCoy, D. (2016b). Feeling like an "alien" or "family"? Comparing students and faculty experiences of diversity in STEM disciplines at an HBCU and a PWI. *Race Ethnicity and Education.* https://doi.org/10.1080/13613324.2016.1248835 Available online first at: https://doi.org/10.1080/13613324.2016.1248835

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity and Education, 8*, 69–91.

Part III
Socialization into Professional Careers

Chapter 6
The Professoriate in Liberal Arts Colleges: Early Career Faculty Socialization and Learning

Vicki L. Baker

In 2001, Golde and Dore shared ground-breaking findings from *The Survey on Doctoral Education and Career Preparation*, in which they illuminated a "three-way mismatch between student goals, training, and actual careers." The authors further noted, "Students are not well prepared to assume the faculty positions that are available, nor do they have a clear concept of their suitability for work outside of research" (p. 5). Their research findings raised important questions about the purpose of doctoral education (Park, 2005), the skill development that occurs as part of doctoral educational experiences (Walker, Golde, Jones, Bueschel, & Hutchings, 2009), and the role of discipline and context to the doctoral student experience (Gardner, 2007; Golde, 2005; Stevens-Long, Schapiro, & McClintock, 2012; Walker & Golde, 2006).

Findings from *The Survey on Doctoral Education* (Golde & Dore, 2001) resulted in increased calls for a re-examination of the purpose and culture of doctoral education (Austin, 2011; Pruitt-Logan & Gaff, 2004) and the ways in which doctoral students are prepared for the academy (including positions beyond research universities) and beyond, domestically and abroad (Watson & Lyons, 2012). Over fifteen years after the Golde and Dore (2001) report was published, issues about purpose (Durette, Fournier, & Lafon, 2016), effective socialization (Acker & Haque, 2015; Johnson, Ward, & Gardner, 2017), disciplinary and institutional considerations

Findings included in this chapter are from a broader research effort which explored the professoriate in LACs (Baker, Lunsford, & Pifer, Developing faculty in liberal arts colleges: aligning individual needs and organizational goals. Rutgers University Press, New Brunswick, 2017a). I wish to acknowledge my collaborators in that work, Drs. Laura Gail Lunsford and Meghan J. Pifer. I also want to thank Benjamin Espinoza, Amy Everhart, the editorial team and an anonymous reviewer for their review and feedback during the writing of this chapter.

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(Barnes & Randall, 2012; DeAngelo, 2010; Jalongo, Boyer & Ebbeck, 2014), and job placement trends are still on the forefront of doctoral education research and practice (Bedeian, Cavazos, Hunt, & Jauch, 2010; Jaschik, 2016). Further, this line of inquiry has led to a closer examination about the ways in which training and development in doctoral education prepares future faculty early in their careers across a range of institution types (Albertine, 2013).

This chapter returns to a conversation initiated by Clark (1997) in which he noted, "We deceive ourselves every time we speak of the college professor, a common habit among popular critics of the professoriate who fail to talk to academics in their varied locations and to listen to what they say" (p. 22). One such institution type that has received less attention in the faculty development and faculty socialization literature is in liberal arts colleges (LACs). As such, the purpose of this chapter is to shed light on the socialization experiences of early career faculty member in LACs in an effort to continue the work of Clark (1997) and later Rhoades (2007) as a means of exploring socialization and learning for early career faculty members beyond the research university setting. To that end, I discuss research in which the faculty experience in LACs is explored, followed by a review of graduate student socialization (Weidman et al., 2001) and career cycles and learning (Baker & Terosky, 2017; Hall & Chandler, 2007) frameworks to test the applicability and extendibility of the Weidman and colleagues socialization framework to the early career faculty experience in LACs. Additionally, I share a comparison of the individual and contextual factors found to influence socialization for graduate students (Weidman et al., 2001) and early career faculty members in LACs (Baker, Lunsford, et al., 2017a; Baker, Terosky, & Martinez, 2017b). To conclude, I offer recommendations and implications for the study and support of early career faculty members in this institutional setting.

The Professoriate in LACs

Liberal arts colleges are a unique context in which to explore the professoriate. Michael Reder (2017) captured the distinctive nature quite appropriately, while also noting the lack of adequate preparation for future LAC faculty members in the Foreword, *Life at a Small Liberal Arts Colleges,* featured in the book *Developing Faculty in Liberal Arts Colleges* (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b). He noted,

> "This focus on teaching undergraduates often influences how a faculty member engages with the other two parts of the typical triumvirate of faculty responsibilities: scholarship and service. Furthermore, the typical doctoral education, even one that emphasizes teaching, does not do enough to prepare a future faculty member for the demands of a career at a liberal arts college" (p. x).

More recent research findings have revealed that while teaching is an important factor in tenure and promotion decisions in LACs, expectations related to scholarship

are increasing (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b). Reder also acknowledged rising scholarly expectations both in terms of quality and quantity. "Yet, at many such colleges [LACs] the scholarly requirements for tenure may equal – or even exceed – those at larger institutions" (p. xi). Further, scholars have revealed that faculty members in LACs are engaged in their own scholarly learning in a variety of forms in this institutional setting (Terosky & Gonzales, 2016). The definition of service in LACs has also expanded beyond committee service and faculty governance, to include campus recruiting, participation in off-campus admissions events, fundraising, alumni engagement, mentoring of undergraduate research, and campus-community partnerships as a few notable examples (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b). As Reder (2017) noted, "Perhaps the least anticipated aspect of a faculty career at a liberal arts college is the amount and variety of required service…" (p. xii). Until recently, far fewer studies have examined the faculty experience in LACs as compared to other institution types (notable exceptions include Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b; Reder, 2010; Reder, Mooney, Holmgren, & Kuerbis, 2009; Terosky & Gonzales, 2016). Early insights into faculty careers in LACs can be credited to the work of Nelson (1981) and Gibson (1992).

Nearly 40 years ago, William C. Nelson (1981) wrote, *Renewal of the Teacher Scholar: Faculty Development in Liberal Arts Colleges*, and reported an alarming finding in his research. "Faculty [in liberal arts colleges] often perceived new tensions between teaching and scholarship and real uncertainty about the practicality of doing both well and being appreciated for even trying." He further elaborated, "This situation has led to tensions not only between 'teaching' and 'scholarship' but worse yet between 'teachers' and 'scholars' (with self-perceptions providing the categories)" (p. 7). This perceived tension communicated by faculty was exacerbated by institutional structures that undermined faculty growth and change in all areas of faculty life, thereby failing to acknowledge how these roles, and the associated learning, intersect and are informed by each other rather than in opposition.

I pause briefly to highlight Nelson's (1981) choice of the word renewal as his attempt to imply a state of continued growth and change, that even faculty members, regardless of career stage are (or should be) supported in their learning and growth in relation to their discipline and profession. It's this passion for learning that guided them towards a career in the academy. More recently, scholars have focused on the importance of renewal or scholarly learning across a range of institution types and the need to acknowledge and support the myriad ways in which faculty scholarly learning can and should occur (Baker, Terosky, et al., 2017b; Neumann 2009; Terosky & Gonzales, 2016).

Gibson (1992) also recognized the need to support the whole person, particularly in the context of LACs. In the book, *Good Start: A Guidebook for New Faculty in Liberal Arts Colleges*, Gibson (1992) acknowledged the various paths in which future faculty may choose given the diversity of institution types which make up the American higher education system. He aptly acknowledged the role of institutional mission as a primary driver. He elaborated further by noting,

> "The greatest divider is, however, the primary mission of the institution. And whatever the other labels, the most significant factor affecting the day-to-day professional life of the faculty member is whether the primary mission of the college is to educate the whole person….Because the liberal arts environment, with its emphasis on the whole-person education, is so distinctively different, it seems wiser to attempt a guide specifically for faculty planning a career in that setting" (pgs. 3–4).

Gibson's (1992) guidebook emphasized the importance of mission and what that means in a LAC environment as it relates to the professoriate. Institutional mission influences the corresponding expectations and experiences of faculty members ranging from the interview and contract negotiation stages to early career socialization and working towards (and achieving) promotion and tenure in this institution type.

More recently, the work of Baker, Lunsford, et al. (2017a, Baker, Terosky, et al. 2017b) sheds light on faculty life in a twenty-first century LAC environment. In *Developing Faculty in Liberal Arts Colleges: Aligning Individuals Needs and Organizational Goals*, Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b sought to explore the faculty experience and associated faculty development supports in a consortium of 13 liberal arts institutions from the Great Lakes Colleges Association (GLCA). This examination took into account career stage, appointment type, and disciplinary/divisional differences as important factors that influence the faculty experience (see also Baker, Pifer, & Lunsford, 2018). In their book, they proposed the Alignment Framework for Faculty Development in Liberal Arts Colleges (AFFD-LAC) as a means of creating a more strategic, thoughtful approach to aligning institutional mission and priorities with individual (e.g., faculty) needs and characteristics. The authors made the case that faculty development efforts should be situated at this all too often neglected intersection of institutional goals and priorities and individual needs. This focus, they asserted, helps institutions and those individuals and entities, such as faculty development committees, tasked with supporting their faculties to develop, deliver, and assess a diversified portfolio of faculty development supports.

Findings shared by Baker, Lunsford, et al., 2017a, Baker, Terosky, et al., 2017b provides a current picture of faculty life in LACs, one characterized by a multitude of expanding and evolving expectations related to traditional faculty roles, that are very much influenced by career stage and other key considerations, both professional and personal. I draw on findings from this research related to early career faculty socialization and needed support to inform the remainder of this chapter (Baker, Lunsford, et al., 2017a).

Socialization and Career Cycles & Learning

The notion of socialization and learning grounds this chapter, the findings, and corresponding recommendations. In the following section, I provide a brief overview of socialization as defined by Weidman et al. (2001) followed by a discussion of

their socialization framework. Included is a discussion of a complementary framework proposed by Hall and Chandler (2007), career cycles and learning, as applied to the early career faculty experiences in LACs (Baker & Terosky, 2017). I conclude this section with a discussion of the complementarity between these frameworks and their utility to the early career faculty experience in LACs.

Graduate Student Socialization

Relying on the work of Brim (1966), Weidman et al. (2001) defined socialization as the process by which individuals gain the knowledge, skills, and abilities needed to be effective members of their respective community(ies). In their words, "Socialization can be viewed as 'an upward-moving spiral' carrying the neophyte through recurring processes toward the goal of professionalization" (p. 5). This process, as characterized by Weidman and colleagues, is assisted through three core elements: knowledge acquisition, investment, and involvement.

Knowledge acquisition is both about the attainment of "sufficient cognitive knowledge" (p. 16) to proficiently perform the intended professional roles, and the gaining of affective knowledge such as a self-assessment of one's ability to be successful in the intended community and profession. An important outcome of this process is the development of an evolving professional identity as knowledge shifts from general to specialized.

Investment relates to the development of a student's role identity and commitment. "To invest in a role is to commit something of personal value such as time, alternative career choices, self-esteem, social status or reputation to some aspect of a professional role or preparation for it" (Weidman et al., 2001 p. 17). Investment begins as early as the graduate program selection process whereby students are deliberate about which programs and institutions are and are not a fit. Once enrolled, graduate students further commit to a particular professional role and expertise through course selection, particularly electives and program engagement in related program activities (e.g., brown bags, student organizations). Important to this process, are relationships with veteran community members, particularly faculty members associated with the graduate program. Committing to the goals of the program are also an integral part of investment.

Lastly, *involvement* results when a student engages with community members and in community practices in an effort to try on the desired professional roles as she works toward active community membership (Baker & Lattuca, 2010; Ibarra, 1999; Lave & Wenger, 1991). As Weidman and colleagues noted, "Involvement with teachers and older students gives the novice insights into professional ideology, motives, and attitudes" (p. 18).

The socialization process, involving knowledge acquisition, investment, and involvement, is facilitated by core institutional and programmatic infrastructures as well as personal characteristics, and personal and professional communities. At the heart of the socialization experience for graduate students, as identified by Weidman et al. (2001),

is the graduate degree program which takes into account institutional culture and related socialization tactics. Feeding into this central component are the students themselves including characteristics such as educational background and personality traits, professional communities (e.g., associations), personal communities (family roles, friends, and prior employers), and other early career practitioners such as those individuals already in the intended career (see Table 6.2). The Weidman et al. (2001) socialization framework has and continues to be the dominant model in which to understand the socialization process for graduate students domestically and abroad, as well as across a range of disciplines, with more than 1000 citations since its publication.

Career Cycles and Learning

Hall and Chandler (2007) followed by Baker and Terosky (2017) sought to hone in on the role of developmental relationships to the career learning and socialization processes of early career faculty members. The Hall and Chandler career cycles and learning model involved four stages to the career transition process including: exploration, trial, establishment, and mastery. Relationships with key community members serve as important facilitators (or hindrances) of socialization as early career individuals move within and between these four stages. I briefly discuss the four stages as characterized by Hall and Chandler (2007) and Baker and Terosky (2017) including key considerations for early career faculty members in LACs.

Exploration occurs when an individual investigates potential careers or fields of work. During this stage, mentors or critical others may help guide the novice towards a given field based on knowledge, skills, and abilities. Baker and Terosky (2017) noted that for the early career faculty member, the exploration stage occurs during graduate school as students decide if the professoriate is the intended profession but also included consideration of institution type in which that student wishes to pursue a career in the academy (Austin, 2002). Doctoral students must take into account the myriad faculty roles and current (and evolving) expectations associated with being a member of the academic program and future faculty career as defined by current organizational members (e.g., faculty, staff, advance students) and the institution in which they have and seek membership post-graduation (Austin & McDaniels, 2006).

Trial occurs as soon as the novice selects an intended career or field of work including institution type in which to begin a faculty career. The trial stage, as applied to the early faculty experience, encapsulates the first three years in the academy. During this time, the early career faculty member learns the ropes of her profession, within the context of her respective institution. The learning that occurs ranges from instrumental learning (e.g., how to navigate course management systems) to scholarly learning (e.g., developing course content, fostering collaborations with disciplinary colleagues) (Baker & Terosky, 2017; Neumann, 2009; Terosky & Gonzales, 2016). To successfully navigate this stage, the novice must first exit the current role, develop confidence in his ability to succeed in the new, intended role, and engage in sense-making as part of the transition process. Sense-making is

important to the trial phase in that the individual begins to ascribe meaning to his collective experiences as a novice working towards becoming a veteran organizational members. Further, sense-making allows the individual to identify the core community practices that are of most value to the intended career, particularly in the context of institutional setting. For early career faculty members in LACs, this means quickly understanding the ways in which key roles and responsibilities are defined and enacted, which likely differ from their doctoral education training.

Establishment is characterized by role learning, which involves knowledge acquisition as well as mastery of social, political and organizational norms. For early career faculty members in LACs, this means understanding how the institutional mission drives behaviors, influences faculty governance, and sheds light on formal and informal working rules. Developmental relationships within and outside of the LAC context serve as critical conduits of information to make possible this transition. Establishment is triggered by interim (or mid) tenure review in institutional systems in which a tenure systems is present. To arrive at this stage means the faculty member has successfully navigated the trial stage and now "begin(s) to learn more deeply about, and shape, their roles and identities within their institutional contexts" (Baker & Terosky, 2017 p. 426). Baker and Terosky further described the establishment stage "as a time in which faculty are drawn to reconnect with their subject matter passions through their teaching, research, and service" (p. 427). Often in LACs, early career faculty members are one of a few, and perhaps the only, faculty member on their respective campus who engages in a particular type of work.

Lastly, *mastery* results when the novice becomes a fully participating member of the intended career or field of work. "Ideally, the mastery stage represents the time at which developers can bring learners smoothly toward the next role transition" (Hall & Chandler, 2007 p. 489). While promotion and tenure signal a level of mastery and an achievement of an important career milestone in the professoriate, perhaps more important is the knowledge acquired, including general, disciplinary, and organization specific as guided by institutional mission, which is undergraduate education for LACs.

Commonalities

Taken together, these frameworks provide an important perspective and guidance into supporting the socialization experiences of early career faculty members, regardless of institution type. Both frameworks offer a fluid, ongoing model of how early career colleagues are socialized into the academy. The Hall and Chandler (2007) career cycles and learning framework, followed by Baker's and Terosky's (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b) application to the early career faculty experience, clearly articulates the stages the new faculty member moves through as she seeks to be immersed in her new profession, particularly in the context of the chosen institution (and department). In other words, the career cycles and learning framework (Hall & Chandler, 2007) and subsequent application (Baker &

Table 6.1 Summary of key socialization terms

	Graduate student socialization	Career cycles & learning for early career faculty
Definition	Process by which individuals gain the knowledge, skills, and abilities needed to be effective members of their respective community(ies).	The connection between an individual's developmental network and learning as facilitated by career transitions
Unit of analysis	Graduate student	Organizational newcomer/early career faculty member
Key processes	*Knowledge acquisition:* Attainment of cognitive and affective knowledge	*Exploration:* Newcomer investigates potential careers/fields of work
	Investment: Development of a student's role identity and commitment.	*Trial*: "Learn the ropes" of profession (instrumental and scholarly learning).
	Involvement: Engagement in community practices/with community members	*Establishment*: Deep learning about roles and organizational or institutional context(s)
		Mastery: Full engagement (and acceptance) in community practices
Outcome(s)	Socialization into graduate program; resolve the tension between being a student and being a scholar	Legitimacy; the earning of promotion and tenure; having and displaying general, disciplinary, and institution specific knowledge needed to enact key institutional roles and responsibilities

Terosky, 2017) provide insights into *what* must happen to support movement within and between these stages, specifically noting key career milestones (and the successful achievement of those milestones). The Weidman et al. (2001) model provides insights into *how* or the *process by which* that movement occurs by way of knowledge acquisition, investment, and involvement mechanisms and experiences. Both models acknowledge growth and development as an ongoing process, and influences of key processes such as engagement in community practices. Also important to both of these models is the role of developmental relationships with key institutional, departmental, and professional individuals who are already immersed in and accepted as veteran community members. Table 6.1 provides a summary of key terms and processes of the socialization and career cycles and learning frameworks.

Methods

The early career faculty data presented in this chapter is from a longitudinal mixed-methods study of the faculty experience in a consortium of 13 liberal arts institutions in the Great Lakes Colleges Association[1] (http://glca.org/). *The Initiative for*

[1] Albion College, Allegheny College, Antioch College, Denison University, DePauw University,

Faculty Development in Liberal Arts Colleges (IFDLAC) began during the 2012–2013 academic year and concluded during spring, 2016. The IFDLAC study involved faculty focus groups, faculty and administrator interviews, and one survey administration. It is important to note that the institutional review board at Albion College provided initial approvals for all data collection with each of the 12 institutional IRB committees providing secondary approvals for each data collection site and phase.

Fifteen faculty focus groups were conducted across five of GLCA institutions (Albion, Denison, Earlham, Kenyon, & Hope Colleges) during the 2012–2013 academic year. The information gleaned from these focus groups was presented at a bi-annual GLCA Dean's meeting, and provided evidence that warranted further exploration of the faculty experience and faculty development issues across the GLCA.

Nearly 100 administrator and faculty interviews were conducted throughout the IFDLAC project. Interviews included all academic deans and four GLCA presidents during the summer of 2013. Four major themes were addressed: institutional priorities, socialization (formal and informal) on campus, faculty development and socialization practices, and available support for faculty members related to teaching, scholarship, and service. Over 80 faculty members were interviewed from across the 13 GLCA institutions during the 2013–2014 academic year. Faculty interviews included individuals who indicated their willingness to participate in an interview (a response option on the faculty development survey), and with faculty members who held key personnel or leadership positions on campus (e.g., directors of centers for teaching & learning, department chairs). Five primary areas were addressed: professional background; primary roles on campus; support provided by or desired by the consortium and the institution; personal aspects that support or hinder success on the professoriate; and programming and supports need to attract and retain talented faculty.

Finally, a faculty development survey was administered to learn more about the faculty experience across the GLCA. All 2492 faculty members at 12 GLCA institutions (spring, 2014), including full- and part-time faculty, as well as those in both tenure-line and non-tenure-line positions were invited to participate via email. For the remaining college, data was shared from the recent administration of the Higher Education Research Institute (HERI) survey which was integrated into the analysis. There were 541 completed surveys and 299 partially completed surveys; with a 20% response rate from tenured or tenure-eligible faculty. The survey addressed five key areas: faculty development structure and needs; participation in faculty development activities; mentoring support; satisfaction; and demographics (see also Baker, Lunsford, et al., 2017a).

Earlham College, Hope College, Kalamazoo College, Kenyon College, Oberlin College, Ohio Wesleyan College, Wabash College, and The College of Wooster

Socialization and Learning: From Doctoral Student to Early Career Faculty Member

In this section, I provide a side-by-side look at the infrastructures, communities, contexts, and characteristics in which socialization occurs for graduate students (Weidman et al., 2001) and early career faculty members in LACs (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b). Such a comparison, shown in Table 6.2, facilitates a more in-depth discussion of similarities and differences between these two populations in terms of socialization processes, key contributing influences, and

Table 6.2 Contributing factors to graduate student and early career faculty socialization in LACs

Graduate student socialization	Early career faculty in LACs
Prospective students	**Faculty characteristics**
Background	Academic background
Predispositions (e.g., personality, learning styles)	Professional background
	Demographic characteristics
	Familial relationships/care-giving responsibilities
Institutional culture	**Institution**
Academic programs	Mission
Peer climate	Town-gown relationship
	Strategic imperatives/goals
	Promotion & Tenure Expectations
	Department
	Colleagues
	Culture
	Leadership
	Faculty roles/expectations
	Teaching
	Scholarship
	Service
	Advising
	Mentoring
Professional communities	**Professional/disciplinary communities**
Practitioners	Peers
Associations	Graduate faculty
	Associations
Personal communities	**Personal communities**
Family	Family
Friends	Friends
Employers	Community
Novice professional practitioners	**Fully participating faculty member**
Commitment	Commitment
Identity	Identity

the extendibility of the Weidman et al. (2001) socialization framework to the early career faculty experience.

Weidman et al. (2001) Socialization Model: Individual & Contextual Factors

As noted previously in this chapter, the Weidman et al. (2001) socialization framework incorporates 5 components of graduate student socialization. I briefly describe the factors next. At the center of their model is the graduate degree program which includes institutional culture, academic programs, and peer climate. As Weidman et al., (2001) noted, "This is the segment of the socialization process over which the academic program in the university has primary control. It is the academic program faculty who establish the norms for teaching, research, and service within the constraints of the larger university community" (p. 38).

Feeding into this central component are four factors. First, prospective graduate students themselves are active agents in the socialization process. Each student comes with unique professional and academic experiences that inform the ways in which they engage in community practices and with community members. Further, personality and other dispositional factors (e.g., learning styles) are important influencers to aspiring graduate students. Next, are the personal communities in which the graduate student participates. These personal communities can include family and friends, religious or volunteer organizations. Professional communities are also viewed as influential to the socialization process for graduate students. In some instances, transitioning from a working professional to aspiring academic means shedding a previous professional identity in order to adopt a new one. This notion leads into the fourth component, the outcome of the socialization process, which is the development of a novice professional practitioner. The goal is "a well-developed commitment to and identification with the chosen professional career" (Weidman et al., 2001 p. 39).

Baker, Lunsford, et al. (2017a): Individual & Contextual Factors to Early Career Faculty Socialization in LACs

The work of Baker, Lunsford, et al. (2017a) and Baker and Terosky (2017) provide important insights into the processes, facilitators, factors, and infrastructures that support early career faculty socialization and learning in LACs (see also Baker, Lunsford, & Pifer, 2015; Baker, Pifer, &, Lunsford, 2016; Pifer et al., forthcoming). Contributing factors include faculty characteristics, institution, department, faculty roles and expectations, professional and disciplinary communities, personal communities, and the development of fully participating faculty members. I briefly discuss each in the following section.

Faculty Characteristics

Much like Weidman et al. (2001) noted the importance of graduate student characteristics and predispositions to the socialization process, such factors are vitally important to early career faculty members as they begin their socialization journeys. Additionally, academic (e.g., graduate school training) and other professional experiences (e.g., work experience) as well as familial relationships (e.g., partner, sibling) and care-giving responsibilities (e.g., parent or guardian) are principal contributors to the early career faculty member's experience. Early career colleagues arrive at their institutions with a greater depth and breadth of lived experiences compared to graduate students, both personal and professional, that influence their susceptibility of socialization (Sweitzer Baker, 2009).

> "[But] assistant professors in particular told us about challenges related to child care; maternity and paternity leave concerns; negotiating responsibilities related to children and home with their partners; and negotiating their professional tasks, such as arranging teaching or meeting times with colleagues to accommodate parenting duties" (Baker, Lunsford, et al., 2017a, p. 96).

Institution

Once again, both the Weidman et al. (2001) model and research by Baker, Lunsford, et al. (2017a) and Baker, Terosky, et al. (2017b) highlight the importance of the institution to early career socialization experiences. However, Baker, Lunsford, et al. (2017a) and Baker, Terosky, et al. (2017b) offer a broader look at the myriad ways in which institutional characteristics influence the socialization process for early career colleagues in LACs. Institutional mission is perhaps the most important, followed by strategic imperatives (e.g., initiatives and priorities developed from strategic planning efforts) and goals which serve as primary drivers in communicating what is valued, expected, and rewarded in LACs (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b). Several of the institutions in the GLCA are also religiously affiliated and that affiliation guides behaviors and decision-making within the context of undergraduate education. Also important, particularly in the context of LACs, is the "town and gown" relationship given that most colleges are situated in rural areas. Nearly 40% of the early career faculty members who participated in the Baker, Lunsford, et al. (2017a) and Baker, Terosky, et al. (2017b) studies mentioned the importance of and broadly defined the notions of service and collegiality to include engagement beyond the immediate campus community which was an unanticipated lesson learned during early socialization experiences.

Department

Research by Pifer, Baker, and Lunsford (2016, forthcoming) highlights the important role that the department plays in the experiences of faculty members in LACs. While Weidman et al. (2001) account for the academic program under their graduate program category, the work of Baker, Lunsford, et al. (2017a), Baker, Terosky, et al. (2017b), and Pifer et al. (forthcoming), include department as a stand-alone context in their efforts to highlight the academic department as the central location in which faculty members enact the day-to-day aspects of their careers.

> "A closer examination of the academic department in LACs reveals that it provides an organizing context and resources for faculty teaching, research, and service; an organizational culture based on policies, colleagueship, and leadership; and a clearer understanding of faculty development needs and strategies" (p. 50).

These findings have implications for LACs, particularly those tasked with supporting early career colleagues, and for the early career faculty members themselves as they seek to navigate their new environments.

Faculty Roles & Expectations

When we think of the professoriate, we think of the traditional faculty roles of teaching, scholarship, and service. The ways in which these roles are defined and enacted are greatly influenced by institutional mission and disciplinary norms. Given its emphasis on knowledge creation and dissemination, doctoral education does not adequately prepare early career faculty members who earn positions at LACs to successfully enact their roles and responsibilities upon arrival on campus, making socialization processes (and associated supports) vital to their success (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b). Over 60% of the early career faculty members who participated in the research conducted by Baker, Lunsford, et al. (2017a) and Baker, Terosky, et al. (2017b) discussed this disconnect in very concrete ways. They described the "steep learning curve" and "lack of exposure" to roles beyond research as a "hindrance" to "hitting the ground running" once arriving on campus. One could argue the learning curve is higher for early career faculty members who earn positions at institution types beyond research universities given their doctoral training. Therefore, understanding how faculty roles and expectations are defined and enacted becomes vitally important to early career faculty socialization in LACs.

Professional/Disciplinary Communities

Similar to graduate students (Weidman et al., 2001), professional and disciplinary communities play an important role in the socialization of early career faculty members in LACs. Attending professional and disciplinary conferences serve as an opportunity to stay engaged with doctoral peers and faculty members, which supports socialization. Given the small number of faculty employed in LACs as compared to larger institution types, it can become isolating as early career faculty members seek to pursue or maintain a scholarly agenda or to get support teaching within their discipline. More often than not, early career faculty members are one of a few, or in some instances, the only person on campus who has a particular disciplinary expertise therefore making campus collaborations harder to come by (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b). The early career faculty members featured in the work of Baker, Lunsford, et al. (2017a) and Baker, Terosky, et al. (2017b) spoke at great lengths about their relationships with graduate school peers and former faculty advisors as critical to maintaining a scholarly agenda while managing such a high teaching load. Therefore, maintaining a continued presence in professional and disciplinary communities and collaborations with former colleagues helps early career faculty members in LACs stay current in their respective fields and provides much needed external disciplinary socialization support.

Personal Communities

Personal communities are an important contributor to socialization experiences for early career faculty members in LACs, as they are for doctoral students (Weidman et al., 2001). Personal communities important to early career faculty members include the community in which the LAC is situated as well as those communities in which family and friends are included either locally or elsewhere. As revealed by Baker, Lunsford, et al. (2017a), Baker, Terosky, et al. (2017b), the surrounding community in which an LAC is situated plays an important role into the socialization experiences of early career faculty members, in both positive and negative ways. Findings from their research revealed that a failure to become a part of the surrounding community, and worse, feelings of being discriminated by the surrounding community resulted in isolation and "always being on the job market" as one participant noted. Often times, LACs are situated in rural areas which can be appealing to some who seek a simpler life, but can be isolating for others who strive for an environment that is more diverse. Further, such environments often offer limited professional (and in some instances, personal) opportunities for spouses or partners. These realities can cause strain on the early career faculty member as he seeks to become a part of the campus and surrounding community while also making sense of how that experience influences and is influenced by his other personal communities.

Fully Participating Faculty Member

The goal of any early career colleague in which a tenure system is present, is the earning of promotion and tenure which signals a degree of legitimacy both within their disciplinary domain as well as in their department and institution. Ideally, due to strong socialization experiences, the early career colleague now becomes socialization agent herself, supporting the process for the next generation of early career colleagues in LACs. Ideally, the socialization process also supported the development of leadership skills which will enable the newly tenured faculty member to assume greater leadership roles on campus and re-envision the next stage of her academic career as she moves into the mid-career stage.

Supporting Early Career Faculty Socialization in LACs: Recommendations & Future Directions

The goal in writing this chapter was to explore the applicability and extendibility of the Weidman et al. (2001) model of graduate student socialization to the early career faculty experience in LACs. Based on a review of the literature and model components presented in this chapter, it appears that the Weidman et al. (2001) model of graduate student socialization is not only applicable but serves as an important foundation with which to build and understand the early career faculty socialization experience given the graduate experience is an important component to understanding the path to the professoriate (Austin, 2002). That foundational grounding was extended by the work of Baker and Terosky (2017) and further supported by a review of the individual and contextual factors that contribute to early career faculty socialization in LACs (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b). In the following section, I offer three recommendations and future directions to continue efforts to better understand the professoriate in LACs.

Key Stakeholder Collaboration: Organizational Networks

Socialization and the career cycles and learning frameworks highlight the role of developmental relationships as facilitators in socialization and learning. In the context of LACs, and higher education in general, I argue these collaborations are critically important as community members seek to collectively re-define, communicate, and support teaching, research, and service in the institutional (and departmental) setting. Baker, Lunsford, et al. (2017a) and Baker, Terosky, et al. (2017b) shared an

example of a senior colleague noting his desire to mentor the next generation of faculty members, but lamented on his ability to do so effectively given that the promotion and tenure system in which he was successful had drastically changed since his experience. This example illustrates both a lack of formal supports across the professoriate to prepare faculty members across career stages for their (evolving) various roles, as well as an institutional and professional growth which requires constant conversation, negotiation, and renegotiation of that which is valued and rewarded. Faculty development is not the responsibility of one individual or entity alone but rather a combination of individuals tasked with this responsibility (e.g., Academic Dean, Director of Faculty Development, Director of Teaching and Learning), committees (e.g., Faculty Development Committee, Faculty Personnel Committee), and the faculty members themselves as active agents in this process.

Future research could explore the role of organizational networks at this level to gain a deeper understanding about how such networks can support faculty socialization and learning, particularly in the context of LACs. Further, such research could identify how and the process by which such structures play in socialization and learning. Connectedness among these stakeholder groups needs to be more deliberate in order to achieve desired outcomes at the institutional and individual levels. Such efforts, I argue, take a strategic approach to socializing and early career learning.

Individual Networks

The importance of individual networks has been on the rise in higher education, particularly for underrepresented populations as a means of gaining a diversity of professional and personal supports that may be otherwise unavailable (Sorcinelli & Yun, 2007). In their books, Baker, Lunsford, et al. (2017a) and Baker, Terosky, et al. (2017b) shared the example of Kenyon College's Early Career Developmental/Mentoring Network as one such example of a formal institutional program that seeks to help early career colleagues create a developmental network aimed at supporting career advancement in the context of the College. All early career faculty, by the first of November in the first semester of employment, must organize a mentoring group which includes the department chair, a tenured departmental colleague, and one additional faculty member in or outside of the academic department. Group membership is shared with and approved by the Provost. The goal of this group is to provide regular feedback to the early career colleague in the three primary areas of evaluation according to the handbook which include teaching, scholarship, and citizenship. Regular feedback and meetings occur as well as a review of course evaluations and scholarly efforts upon which recommendations are provided to the early career colleague. The program continues through the second year of employment.

This type of network can be characterized as a strategic network, one of the three primary networks describe by Hill and Lineback (2011). In their *Harvard Business Review* article, they stressed the importance of individuals creating three types of networks including *operational* (day-to-day support), *developmental* (career and

psychosocial health support) and *strategic* (relationships aimed at supporting future career paths), with the latter being the most neglected of the three. The Early Career Developmental/Mentoring Network program at Kenyon appears to remedy this at the institutional level. Such a model can serve as a best practice for LACs and early career faculty members alike as they seek to attract, retain, and promote a diverse and talented faculty body. Future research could explore early career faculty members' networks to determine the aims of each, the composition of those networks, the social capital and resources leveraged, and the associated outcomes. Such data sources would support a comparison of networks by gender and discipline related to career advancement.

Invest Resources in the Academic Department

Lastly, greater supports and investments need to be directed at the departmental level. Research by Pifer et al. (2016, forthcoming) revealed the important role of the department to the faculty experience in LACs. In fact, the department is the central location in which socialization occurs. Unfortunately, this results in varied experiences related to mentorship, the communication of needed information related to political, social, and departmental norms and values, as well as challenging working environments (Baker, Lunsford, et al., 2017a; Baker, Terosky, et al., 2017b). The result is a system in which supports (or lack thereof) are individually driven based on departmental membership (and associated knowledge, skills, and abilities) as opposed to organizational drivers that standardize the process both in terms of content and quality. If a department chair, for example, is a poor mentor or leader, the early career faculty member entering that department is already at a disadvantage. Therefore, institutions need to re-focus resources at the department-level in terms of leadership development supports and have more formalized standard operating procedures that help direct departmental efforts to ensure consistency of supports as early career faculty members navigate the unknown challenges faced upon entering the academy.

Conclusion

As debates continue to swirl about the purpose of doctoral education, post-PhD employment trends continue to tell an evolving story about the institution types and non-academic positions that newly minted PhD recipients earn upon graduation. Such realities require a re-envisioning of the ways in which doctoral students are supported, developed, and trained to prepare them as effectively as possible to ensure success in their careers. As discussed throughout this chapter, the socialization experiences of graduate students serves as an important foundation for the early career faculty experience in LACs. The Weidman et al. (2001), graduate student

socialization framework provides an important foundation from which to build as scholars and practitioners seek to understand and support the early career faculty experience across a range of institution types. Liberal arts colleges are a unique setting in which to embark on the path to the professoriate, and understanding the nuances associated with this setting are critical to supporting early career faculty in LACs as they are socialized into the academy and into this higher education setting.

References

Acker, S., & Haque, E. (2015). The struggle to make sense of doctoral study. *Higher Education Research & Development, 34*(2), 229–241.

Albertine, S. (2013). Toward the next century of leadership: A future faculty model. *Peer Review, 15*(3), 4–7.

Austin, A. (2011). The socialization of future faculty in a changing context. In *The American academic profession: Transformation in contemporary higher education* (pp. 145–167). Balitmore: Johns Hopkins University Press.

Austin, A. E. (2002). Preparing the next generation of faculty: Graduate school as socialization to the academic career. *The Journal of Higher Education, 73*(1), 94–122.

Austin, A. E., & McDaniels, M. (2006). Preparing the professoriate of the future: Graduate student socialization for faculty roles. In *Higher education: Handbook of theory and research* (Vol. 21, pp. 397–456). Boston: Springer.

Baker, V. L., & Lattuca, L. R. (2010). Developmental networks and learning: Toward an interdisciplinary perspective on identity development during doctoral study. *Studies in Higher Education, 35*(7), 807–827.

Baker, V. L., Lunsford, L. G., & Pifer, M. J. (2015). Systems alignment for comprehensive faculty development in liberal arts colleges. *To Improve The Academy, 34*(1–2), 91–116.

Baker, V. L., Lunsford, L. G., & Pifer, M. J. (2017a). *Developing faculty in liberal arts colleges: Aligning individual needs and organizational goals*. New Brunswick, NJ: Rutgers University Press.

Baker, V. L., Pifer, M. J., & Lunsford, L. G. (2016). Faculty challenges across rank in Liberal arts colleges: A human resources perspective. *Journal of Faculty Development, 30*(1), 21–27.

Baker, V. L., Pifer, M. J., & Lunsford, L. G. (2018). Faculty development in liberal arts colleges: A look at divisional trends, preferences, and needs. *Higher Education Research & Development*. https://doi.org/10.1080/07294360.2018.1483901

Baker, V. L., & Terosky, A. L. (2017). Early career faculty mentoring: Career cycles, learning and support. In D. A. Clutterbuck, F. K. Kochan, L. G. Lunsford, B. Smith, N. Dominguez, & J. Haddock-Millar (Eds.), *The SAGE handbook of mentoring* (pp. 421–435). Thousand Oaks, CA: SAGE Publications.

Baker, V. L., Terosky, A. L. P., & Martinez, E. (2017b). *Faculty members' scholarly learning across institutional types* (Jossey-Bass ASHE higher education report series (AEHE)). San Francisco: Jossey-Bass.

Barnes, B. J., & Randall, J. (2012). Doctoral student satisfaction: An examination of disciplinary, enrollment, and institutional differences. *Research in Higher Education, 53*(1), 47–75.

Bedeian, A. G., Cavazos, D. E., Hunt, J. G., & Jauch, L. R. (2010). Doctoral degree prestige and the academic marketplace: A study of career mobility within the management discipline. *Academy of Management Learning & Education, 9*(1), 11–25.

Brim Jr., O. G. (1966). Socialization through the life cycle. In O. G. Brim Jr. & S. Wheeler (Eds.), *Socialization after childhood. Two essays* (pp. 1–49). New York: Wiley.

Clark, B. R. (1997). Small worlds, different worlds: The uniquenesses and troubles of American academic professions. *Daedalus, 126*(4), 21–42.

DeAngelo, L. (2010). Preparing for the PhD at a comprehensive institution: Perceptions of the "Barriers". *Journal of the Professoriate, 3*(2), 17–49.

Durette, B., Fournier, M., & Lafon, M. (2016). The core competencies of PhDs. *Studies in Higher Education, 41*(8), 1355–1370.

Gardner, S. K. (2007). "I heard it through the grapevine": Doctoral student socialization in chemistry and history. *Higher Education, 54*(5), 723–740.

Gibson, G. W. (1992). *Good start: A guidebook for new Faculty in Liberal Arts Colleges*. Bolton, MA: Anker Publishing Company.

Golde, C. M. (2005). The role of the department and discipline in doctoral student attrition: Lessons from four departments. *The Journal of Higher Education, 76*(6), 669–700.

Golde, C. M., & Dore, T. M. (2001). *At cross purposes: What the experiences of today's doctoral students reveal about doctoral education.* (www.phd.survey.org). Philadelphia: Pew Charitable Trusts.

Hall, D. T., & Chandler, D. E. (2007). Career learning cycles and mentoring. In B. R. Ragins & K. E. Kram (Eds.), *Handbook of mentoring at work: Theory, research, and practice* (pp. 471–498). Thousand Oaks, CA: Sage Publications.

Hill, L., & Lineback, K. (2011). The three networks you need. *Harvard Business Review*, March 3. Retrieved on July 20, 2017. https://hbr.org/2011/03/the-three-networks-youneed.html

Ibarra, H. (1999). Provisional selves: Experimenting with image and identity in professional adaptation. *Administrative Science Quarterly, 44*(4), 764–791.

Jalongo, M. R., Boyer, W., & Ebbeck, M. (2014). Writing for scholarly publication as "tacit knowledge": A qualitative focus group study of doctoral students in education. *Early Childhood Education Journal, 42*(4), 241–250.

Jaschik, S. (2016). The shrinking PhD job market. *Inside Higher Ed*. Retrieved on July 31, 2017 from https://www.insidehighered.com/news/2016/04/04/new-data-show-tightening-phd-job-market-across-disciplines

Johnson, C. M., Ward, K. A., & Gardner, S. K. (2017). Doctoral student socialization. In *Encyclopedia of international higher education systems and institutions* (pp. 1–4). https://doi.org/10.1007/978-94-017-9553-1_544-1

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.

Nelson, W. C. (1981). *Renewal of the teacher scholar*. Washington, DC: Association of American Colleges.

Neumann, A. (2009). *Professing to learn: Creating tenured lives and careers in the American research university* (No. 475). Baltimore: Johns Hopkins University Press.

Park, C. (2005). New variant PhD: The changing nature of the doctorate in the UK. *Journal of Higher Education Policy and Management, 27*(2), 189–207.

Pifer, M. J., Baker, V. L., & Lunsford, L. G. (2016). The functions of academic departments in liberal arts colleges. *The Journal for the Study of Post-Secondary & Tertiary Education, 1*, 233–252.

Pifer, M. J., Baker, V. L., & Lunsford, L. G. (forthcoming). Colleagues, culture, and leadership: The academic department as a location of faculty experiences in liberal arts colleges. *Review of Higher Education, 42*(2), 537–564.

Pruitt-Logan, A. S., & Gaff, J. G. (2004). Preparing future faculty: Changing the culture of doctoral education. In *Paths to the professoriate: Strategies for enriching the preparation of future faculty* (pp. 177–193). San Francisco: Jossey-Bass.

Reder, M. (2010). Effective practices in the context of small colleges. In *A guide to faculty development* (2nd ed., pp. 293–308). San Francisco: Jossey-Bass.

Reder, M. (2017). *Life at a small liberal arts college. Forword to developing Faculty in Liberal Arts Colleges: Aligning individual needs and organizational goals*. Rutgers: University Press.

Reder, M., Mooney, K., Holmgren, R. A., & Kuerbis, P. J. (2009). Starting and sustaining successful faculty development programs at small colleges. *To Improve the Academy, 27*, 267–286.

Rhoades, G. (2007). *T*he study of the academic profession. In P. J. Gumport (Ed.), *Sociology of higher education: Contributions and their contexts* (pp. 113–146). Baltimore: Johns Hopkins University Press.

Sorcinelli, M. D., & Yun, J. (2007). From mentor to mentoring networks: Mentoring in the new academy. *Change: The Magazine of Higher Learning, 39*(6), 58–61.

Stevens-Long, J., Schapiro, S. A., & McClintock, C. (2012). Passionate scholars: Transformative learning in doctoral education. *Adult Education Quarterly, 62*(2), 180–198.

Sweitzer Baker, V. (2009). Towards a theory of doctoral student professional identity development: A developmental networks approach. *The Journal of Higher Education, 80*(1), 1–33.

Terosky, A. L., & Gonzales, L. D. (2016). Scholarly learning as vocation: A study of community and broad access liberal arts college faculty. *Innovative Higher Education, 41*(2), 105–120.

Walker, G. E., & Golde, C. M. (2006). *Envisioning the future of doctoral education preparing stewards of the discipline, Carnegie essays on the doctorate*. San Francisco: Jossey-Bass.

Walker, G. E., Golde, C. M., Jones, L., Bueschel, A. C., & Hutchings, P. (2009). *The formation of scholars: Rethinking doctoral education for the twenty-first century* (Vol. 11). San Francisco: John Wiley & Sons.

Watson, J., & Lyons, J. S. (2012, June). Investigation of the work environment of engineering Ph. Ds in the United States. In *2012 ASEE annual conference & exposition* (pp. 25–860).

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Chapter 7
Doctoral Student Socialization and Professional Pathways

Susan K. Gardner and Stacy A. Doore

In 2015, only 48.5% of all doctoral recipients in the United States (USA) reported employment commitments in academic settings after graduation (National Science Foundation, 2016). While professional commitments vary considerably by discipline, the fact remains that more than half of all Ph.D. degree recipients report employment in sectors such as government (7.1%), industry or business (32.4%), non-profit organizations (6.1%), and even elementary and secondary education (5.8%; NSF, 2016). These professional pathways awaiting Ph.D. recipients are diverse, yet graduate education in the USA has been criticized for its lack of attention to socializing students for the breadth of professional pathways (e.g., Nerad & Cerny, 1999; Nerad & Cerny, 2000; Nyquist, Woodford, & Rogers, 2004; Walker, Golde, Jones, Conklin Bueschel, & Hutchings, 2008; Weidman, Twale, & Stein, 2001; Wendler et al., 2012). While many kinds of doctoral students exist (e.g., juris doctorate, professional doctorate), we focus this chapter primarily on students pursuing the Doctor of Philosophy (Ph.D.) and their socialization for professional diversity in the context of the United States (USA). It is important to note that while the Ph.D. is intended to produce independent scholars (Gardner, 2008), the need for scholars in all types of careers is well documented (Walker et al., 2008).

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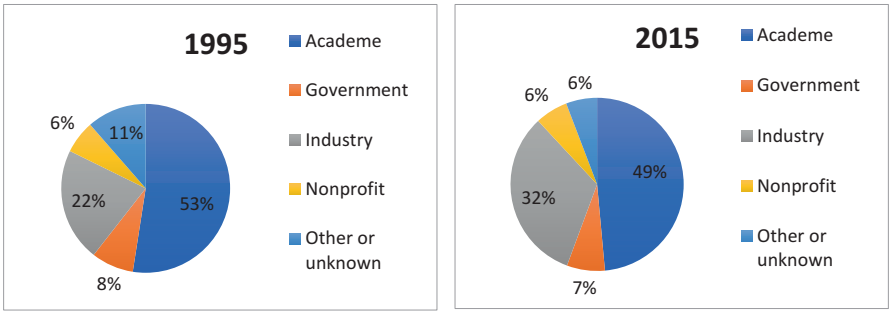
Professional Pathways from the Doctorate

A common criticism of the doctoral student socialization process in the USA is that faculty tend to prepare their students for the career with which they are most familiar – an academic position (Mangematin, 2000; Sauermann & Roach, 2012; Stephan, 2012). National data tell us, however, that Ph.D. recipients pursue a variety of different professional pathways after graduation. The National Science Foundation's *Survey of Earned Doctorates*, administered since 1957, collects annual data about post-graduation career intentions of Ph.D. recipients. Although the number of Ph.D.s awarded annually has increased over the last 20 years, the number of Ph.D. recipients indicating a firm post-graduation commitment has remained constant (see Appendix). As presented in Fig. 7.1, in 1995, about 52.4% of doctoral graduates reported an academic post as their professional pathway; by 2015, this percentage decreased to 48.5%. In those same years, however, the percentage of doctorates reporting post-graduation plans in industry or business grew from 21.7% to 32.4% (National Science Foundation, 2016). While it is important to note that such academic posts also include postdoctoral fellowships or positions, the shift toward non-academic careers is clear.

Disciplinary differences do exist in these career pathways. For example, the great majority of Ph.D. recipients in the humanities and arts tend to report intentions of pursuing post-graduation employment in academia (78.7% in 2015; NSF, 2016), with little variation in the past 20 years. Fields like education and the social sciences have even seen slight increases in the number of Ph.D.s who enter academia. In all other disciplinary fields, however, the data tell a different story. The majority of those in STEM fields, for example, have seen an increasing trend toward non-academic careers over the past 20 years, with the greatest declines in mathematics and computer sciences (declining from 55.3% in 1995 to 32.4% in 2015; see Appendix).



Source: National Science Foundation (2016).

Fig. 7.1 Post-graduation Commitments for Doctorate Recipients, 1995 and 2015. (Source: National Science Foundation (2016))

Moreover, even when the intention of pursuing an academic position is indicated – perhaps due to the choice of a postdoctoral fellowship or a part-time lectureship - other studies have found that Ph.D.s tend to change career paths several times in their early career period (Aaenerud, Homer, Nerad, & Cerny, 2006; Goulden, Frasch, & Mason, 2009; Nerad, 2004; Stephan & Ma, 2005). In other words, plans to pursue different types of professional pathways exist for all disciplines and fields and this diversity of career intentions and outcomes has been well established over the past two decades.

Professional Socialization: The Packing List and Driving Directions

At the same time, numerous surveys, studies, and written commentary have made evident that these different professional pathways are not always well illuminated to graduate students nor is the map to these different professions regularly revisited. These pathways, and their preparation for them, are an integral part of the graduate student socialization process (Weidman et al., 2001).

For the purposes of our discussion we reiterate what previous chapters have pointed out, that socialization is the process through which an individual acquires the knowledge, skills, and habits of mind to assume a particular professional role; in other words, the acquisition of a professional identity (Bragg, 1976). To continue with our metaphor of the map of possible pathways, professional socialization can be seen as the packing list the recruit needs for his or her journey as well as the appropriate driving skills and navigational directions needed to arrive at the destination. When we consider that the purpose of professional socialization is to assist the newcomer in becoming a successful part of a profession's organizational culture, then, the role of graduate education becomes clearer. More to the point, when a Ph.D. is required to enter into and succeed in a given profession, the role of graduate education in the professional socialization process is paramount in introducing the individual to the knowledge, values, and standards of a chosen profession.

The transmission of this knowledge as well as these values and standards are at once influenced by the individual's own background, experiences, identity, and other relationships both in graduate school and outside of it, as well as the professional standards and knowledge that await the individual in the chosen profession. In Weidman et al.'s (2001) model, the interplay of these characteristics, experiences, and influences become the process of socialization.

Weidman et al. (2001) also discussed the important role of professional communities in the socialization process for graduate students. This community is encompassed by the practitioners and associations that represent the profession to which the graduate student aspires. While the university is connected to these professional communities in the model, the relationship is fluid and certainly not linear or directly

connected. Herein lies the problem for many of the fields and disciplines whose professional landscape has changed for its graduates in the past several decades.

To put it another way, it has arguably always been the purpose of law schools to prepare their graduates to become legal professionals, inasmuch as it has been the purpose of medical schools to prepare their graduates to become medical professionals. These types of programs all require extensive practical training time through internships, licensure, and residencies in order to enter the profession. This type of post-graduation training is intended to prepare students to develop a professional identity through the transmission of explicit professional standards, such as board exams and certifications, as well as the implicit disciplinary norms, values, and unwritten expectations of the profession. In other words, these individuals may take classes and gain some of their socialization within the confines of the university setting, but a large part of this socialization is happening within the specific professional setting.

The training to become a Ph.D., however, has traditionally occurred squarely within the confines of the university. In other words, when Ph.D. students are not able to interact with and engage in professional socialization outside of the walls of an academic setting, they lack the necessary socialization to pursue and be successful in non-academic settings. When academic departments and disciplines do not prepare their Ph.D. students for the variety of careers and professional pathways that await them, they fail to properly socialize students to these important professional norms and values. Utilizing our metaphor again, the problem lies in that we are preparing our graduates for a trip with an outdated map that does not effectively represent the multitude of potential routes that might get them to their desired destination.

Moving beyond Socialization: Professionalization

Returning to Weidman et al.'s (2001) model, then, this fluid relationship between the university and professional communities must shift to a much less permeable one. In their 2001 monograph, Weidman, Twale, and Stein remarked, "Graduate and professional programs need to move away from training students to fit the status quo and toward socializing them to challenge and improve their chosen profession and its concomitant process of professionalization" (p. 95). For the majority of research universities, for example, the status quo has been one of preparing their graduates for academic roles (Sauermann & Roach, 2012; Stephan, 2012). Indeed, "the careers students are prepared for are not the ones that they will assume, nor are these the careers that students want" (Golde & Dore, 2001, p. 44).

Unfortunately, this is not a new problem. In their critical history of American higher education, Jencks and Riesman (1968) put it this way, "The *training* offered in a graduate department is almost exclusively for research; yet the *certification* they provide, in the form of a Ph.D., is often more important if one plans to teach than if one plans to do research" (p. 239). However, even in fields – such as chem-

istry – where career paths remain largely outside of academia, even these students are unaware of the multiple pathways available to them (Thiry, Laursen, & Loshbaugh, 2015).

Given this mismatch, another way to examine the doctoral student experience as preparation for the career may be through the frame of *professionalization*. Wherein socialization is adopting knowledge, skills, values, and norms of a given organization or its culture (Merton, 1957), professionalization is more focused upon the learning of them (Bess, 1978). Antony (2002) highlighted the distinction between the two concepts, saying, "Socialization distinguishes itself from the process of professionalization, however, by requiring the *internationalization* or *adoption* of the profession's norms, values, and ethics to the point of defining the neophyte's own professional identity and self-image" (p. 369). Here again is where the mismatch between a Ph.D. student's choice of career pathway and their experience in graduate school may enter in.

Unmarked Roads and Outdated Maps: Traditional Graduate Education in the USA

An oft-cited quote from Simone Weil states, "Culture is an instrument wielded by professors to manufacture professors, who when their turn comes will manufacture professors." Indeed, this has become a frequent critique of many Ph.D. programs (Sauermann & Roach, 2012). However, we also know that many students will enter graduate school with one intended professional outcome but experience a shift in their desires as they persist through graduate school. In their survey, Golde and Dore (2001) found that as many 63% of their respondents were interested in faculty careers but that more than a third of reported losing interest in such a career by the end of their programs. While some were dissuaded by an academic life after seeing it more intimately through their faculty members' experiences, others found a calling in industry, in non-profit organizations, or elsewhere. Similar findings were reported by Goulden et al. (2009). In particular, Goulden et al. found that the "fast track" of academia held less allure for both women and men in the STEM fields who sought to balance life and career. These results were also shared by Gibbs Jr, McGready, Bennett, and Griffin (2014) who found underrepresented students expressing less interest over time in academic careers. Sauermann and Roach (2012) found a similar interest decline in their surveyed students in STEM fields but, perhaps more noteworthy, also found that, more often than not, faculty advisors were those who were pushing for the academic pathway. In other words, students show a marked decline in interest in faculty careers even while their faculty members continue to press for such a career pathway. Changes in career pathway have also been well documented post-graduation, with some studies pointing to several changes in career for Ph.D. recipients (Aaenerud et al., 2006; Goulden et al., 2009; Nerad, 2004; Stephan & Ma, 2005).

Therefore, a shifting career pathway among graduate students is normal and well documented (Wendler et al., 2012). In some scholars' work, this shifting career pathway is referenced as a student "trying on" or experimenting with different professional selves (Baker & Pifer, 2014; Hopwood, 2010). The problem arises when the program and its faculty are not able to provide support for such "trying on." More disconcerting are the faculty members who explicitly discourage such career shifts (Sauermann & Roach, 2012), or who may view the student's exploration of careers outside of academia as some kind of failure.

When seen through the lens of a shrinking academic job market for full-time and tenure-stream faculty, such overt pressure for Ph.D. students to pursue academic careers is problematic. Indeed, some have harshly critiqued the apparent structural inequality of the Ph.D. job market as an "insider-outsider" system, even comparing it to a drug gang (Afonso, 2013), wherein a shrinking core of "insiders" (i.e., tenure-stream faculty) must be supported by an expanding pool of "outsiders" (i.e., Ph.D.s and post-docs).

However, as Sauermann and Roach (2012) are quick to point out, "Advisors' apparent emphasis on encouraging academic careers does not necessarily reflect an intentional bias nor an overt campaign of misinformation. Rather, it may reflect that advisors themselves chose an academic career and have less experience with other career options" (p. e36307). Indeed, it is well known that "most faculty advise as they were advised during their own graduate student career" (Weidman et al., 2001, p. 67). Bringing this back to socialization, then, it remains a challenge to socialize students to a professional pathway with which faculty have little or no experience. Changing the map is the next step.

The Fork in the Road: Changing Doctoral Education

When we consider the multiple professional pathways that have become predominant choices for Ph.D. recipients, graduate schools must become the proverbial fork in the road instead of the well-trodden path of familiarity. In other words, the onus falls upon graduate faculty, departments, graduate school administrators, and employers to help define these new paths: Graduate education and its socialization process must change.

Influencing Career Pathways

Many things will influence the career pathways of Ph.D. recipients. Of course, such influences may begin well before graduate school. As depicted in Fig. 7.2, Wendler et al. (2012) forwarded multiple factors influencing career pathways of students, including parents, teachers, and peers. Indeed, this peer influence has

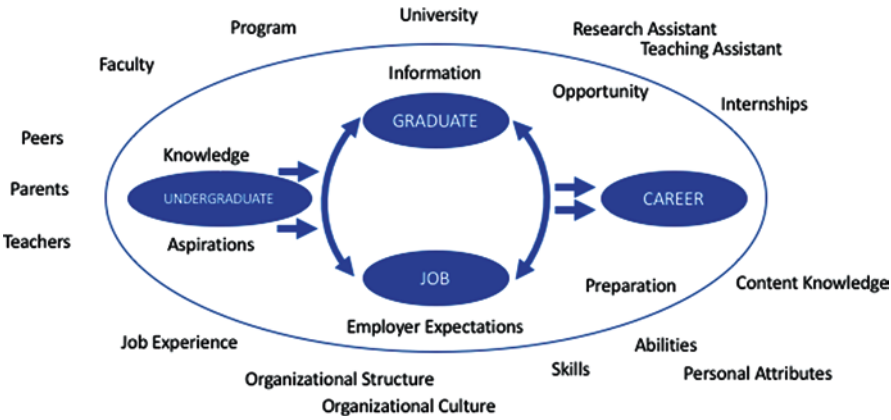


Fig. 7.2 Wendler et al. (2012) Model of Career Pathways Influencers

been found in other studies as well (Thiry et al., 2015). More to the point, an undergraduate student's knowledge and aspirations are influenced by peers, parents, and teachers. Once pursuing an undergraduate degree, the career path is then influenced by the knowledge gained as well as the aspirations the individual holds. While some students may pursue graduate education after the baccalaureate experience, others may move directly into the work force. In some of these situations, the employer may set particular expectations that influence the individual to pursue further education, whether due to needing more skills, or to pursue greater opportunities. While in graduate school, however, the student's prospects are influenced by faculty members, the program itself, the university and its context, as well as opportunities to serve as a graduate assistant or in an internship. At the same time, all of these opportunities are mitigated by the amount of information on different opportunities afforded to the student. While beyond the scope of this chapter, there are relevant discussions to be had about the influence upon career pathway occurring as early as elementary school (Wendler et al., 2012).

Unaccounted for in Wendler et al.'s (2012) model, however, are several other influences upon the individual's career pathways, including (a) the job market, and (b) personal relationships or commitments in the student's life.

Students' own personal lives and relationships also play an important role in choosing a particular career pathway over another. For example, many Ph.D. students may be in committed relationships by the end of their graduate education, and often with other Ph.D.s (Schiebinger, Henderson, & Gilmartin, 2008). Those in such relationships will of course be heavily influenced by the careers of their partners, their families' economic needs (Nerad, Rudd, Morrison, & Homer, 2009), and the geographic location constraints of their partners' position (McAlpine & Emmioglu, 2015).

Graduate Faculty

While it could be argued that graduate education by its nature cannot provide the complete roadmap for professionalization and socialization that students need for non-academic careers, it is also true that students most often consult their faculty more than any other group for career advice (Wendler et al., 2012). Thinking about the roadmap model, the graduate faculty in a student's life has the opportunity to act in much the same way as a GPS device does for a traveler on a long road trip. Just as a GPS provides the traveler important information about their current position in relation to the desired destination location, the graduate advisor is in a position to provide their students with multiple possible routes they could take based on their specified constraints (e.g., speed, cost, distance, route features), and navigation directions to guide the traveler on the chosen route. It is precisely this flexibility that makes these navigation devices indispensible to travelers. We would simply all stop using our mobile navigation applications if they could only tell us about a single route or could only give a limited view of information about the environment in which we were traveling. So like a good navigation system, graduate faculty need to understand and communicate to their students the state of the current academic environment in their field of study and the opportunities presented by current job market forces. This information from the graduate advisor's knowledgebase needs to include current job market projections, and be flexible enough to allow PhD students to explore multiple possible pathways beyond academic tenure track outcomes during their training. As a primary internal sphere of influence on PhD outcomes, the graduate advisor can increase or decrease access to information and opportunities to non- academic career paths (Sauermann & Roach, 2012; St. Clair et al., 2017). Another internal influence, family, can increase or limit access to career opportunities. Non-academic recruiters may also act as an external influencer on PhD career outcomes but have little to no impact on the socialization process, unless it is to provide a bridge between the graduate faculty and the job market needs. Ideally, there would be more cross-over between the internal influence of the advisor and the external influence of job market and recruiters, however, in most PhD programs this is still quite separated.

There are several ways that graduate faculty can assist their students in a fully informed career pathway decision-making process. O'Meara et al. (2014) provided five specific guidelines in this vein: (1) encouraging and legitimizing multiple career paths, (2) providing structured opportunities for students to practice skills and experience different work environments, (3) providing resources (financial support and information), (4) facilitating networking, and (5) offering mentoring and guidance (p. 164).

In engaging in the first of O'Meara et al.'s (2014) guidelines, an important first step for graduate programs is to better understand their students and graduates. Tracking career choices of current students and how they change over time can be helpful in providing important support at different turning points (Wendler et al., 2012). For example, students may enter seeking a particular professional pathway

but realize with time that their interests and goals have changed. Similarly, tracking actual job placements of graduates is imperative, leading programs to understand career paths, how students feel about the jobs they take, and the preparation they received to do the jobs they have (Aaenerud et al., 2006).

Jencks and Riesman (1968) also argued that there are skills beyond the intellectual that need to be supported by educational programs. These were also referred to by Walker and colleagues (2008) in their work with the Carnegie Initiative on the Doctorate as "habits of heart and mind." They said, "What is formed…is the scholar's professional identity in all its dimensions" (p. 8). More specifically, Richardson (2006) discussed different kinds of knowledge that the doctoral recipient should acquire, including "practical knowledge," or what Aaenerud et al. (2006) discussed as "skills development." These skills may include interdisciplinary research skills but go beyond the research enterprise to include interpersonal skills, such as collaboration, teamwork, and managerial techniques (p. 128). In their research, Aaenerud et al. found that while doctoral recipients in both English and mathematics utilized these skills most frequently in their professional settings, these skills were rarely taught in their doctoral programs. Wendler et al.'s (2012) interviews with industry leaders found their recently hired doctorates lacked skills in working in team environments, creating and delivering presentations, as well as business skills related to budgeting and project management.

Akin to O'Meara et al.'s (2014) second and fourth guidelines, graduate programs can assist students in exploring possible career pathways through the inclusion of internships early in the graduate program (Fuhrmann, Halme, O'Sullivan, & Lindstaedt, 2011) as well as more informal opportunities to interact with professionals from outside the academic sector (Aaenerud et al., 2006). As a more formal component, internships, co-ops, and postdoctoral opportunities also provide important networking opportunities, including potential future employment (Wendler et al., 2012).

It is important to note, however, that discussions about career pathways should occur early and often in the students' graduate experience (McAlpine, 2016); in some scholars' estimation, even before admitted (Sauermann & Roach, 2012). Students may shift in their expectations and interests around career pathways (Aaenerud et al., 2006; Golde & Dore, 2001; Wendler et al., 2012) so having opportunities to explore such pathways throughout various points in the graduate program will prove helpful. Related, program faculty can assist students in best determining a particular pathway (or a set of possible pathways) based upon not only intellectual interests but also professional and personal interests. Namely, particular professional contexts may be of more or less import to an individual student as well as work environment. For example, some individuals may seek more flexibility in work schedule, autonomy in their work, resources in the workplace, time for leisure, career growth prospects, geographic location, partner accommodations, and the like (Aaenerud et al., 2006), which may ultimately result in certain career paths being more attractive to them than others.

Finally, graduate programs could consider more formal connections and relationships with prospective employers through advisory board membership.

Such advisory boards can assist in fomenting networking opportunities for students, internship placements, and even consultation on curricular preparation (Wendler et al., 2012).

Graduate Schools

Graduate faculty and their programs are, by nature, limited in what they can offer their students. Graduate schools – functioning in an administrative capacity within various universities – may ultimately be better equipped to provide some of this oversight and programmatic support (Nerad, 2015a) that faculty do not have the time or expertise to offer. Namely, graduate schools may be able to offer more explicit connections to panels on career pathways, mentoring programs with industry partners, or the like. Similarly, working cooperatively with a division of student affairs or the university's career services office, graduate schools can provide career counseling or career placement services to graduate students (Wendler et al., 2012).

Akin to past efforts launched and facilitated by graduate schools, such as the Preparing Future Faculty (PFF) initiative (Council of Graduate Schools, 2003), graduate schools could also consider engaging in efforts to prepare doctoral graduates to work in industry, government, non-profits, or other sectors (Wendler et al., 2012). Wendler et al. also provided examples of other mechanisms employed by graduate schools at universities across the USA, such as Emory University's Laney Graduate School and their Pathways Beyond the Professoriate program, which connects alumni with current graduate students in multiple careers. The Council of Graduate Schools also provides additional reports and information around graduate student professional development and preparation, including programs specifically for STEM careers (Denecke, Feaster, & Stone, 2017).

Graduate deans and graduate schools can also assist their graduate programs in data collection efforts that track graduates' career pathways as well as current students' intentions (Wendler et al., 2012). Taking such data collection out of the hands of individual faculty members and academic departments may also be helpful in that students may go to great lengths to hide their career intentions, sensing that non-academic career pathways may be discouraged or even taboo (Nerad, 2015b). These administrators' influence upon larger institutional data collection efforts can provide an entrée to collecting and maintaining such data.

Prospective Employers

Prospective employers should also work closely with universities to provide various opportunities and clear the pathways to their professional settings. For example, while Wendler et al. (2012) recommend typical connections like internship opportunities, they also make mention of providing sabbatical and research oppor-

tunities to graduate faculty. Such opportunities can be helpful mechanisms for faculty to learn first-hand about the pathways these contexts offer. They also forward financial support as a strategy to partner with universities, such as through endowing a graduate fellowship. Collaborative relationships with graduate programs can also include consulting about the skills and knowledge needed in the curriculum (Wendler et al., 2012).

Graduate Students

Of course, students play an indelible role in preparing for and exploring these professional pathways. Students' voices are louder than they often believe. Students' agency in choosing and voicing preferences in career pathways is an important part of making change (O'Meara et al., 2014). When seeking a graduate program, therefore, prospective students should go beyond a program's reputation in their decision-making process and strive to understand how the program prepares graduates for multiple career pathways. Websites are one way to learn about these prospective programs but connections with current students and alumni can be even more informative. Many programs will advertise contact information of these individuals or they can be provided at request. Once in the graduate program, students can also hold great sway with their faculty and administrators in making changes. Graduate student organizations can sponsor panel discussions of local employers, for example, and seminars can feature alumni who went on to different career pathways. Connections with employers and alumni in these diverse careers can also provide for a mentoring program wherein students are matched with these individuals. Similarly, connections with professional associations and organizations can be invaluable to students' learning about career options outside what is immediately visible in their programs. Students can certainly exercise their own agency (O'Meara et al., 2014; Thiry et al., 2015) even when their graduate programs fall short of preparing them for multiple career pathways.

Toward a New Model of Professional Pathway Socialization

Bringing it all together, not only should we consider a new map of career pathways from doctoral education, but we should also reconsider the passengers in this journey. Faculty will continue to be one of the most important passengers, providing advice, guidance, and mentoring; however, faculty cannot be the only passengers and, to a great extent, cannot be the navigators. Graduate schools and their deans, industry and government partners, as well as students themselves are vital in this experience.

Reconsidering Weidman et al.'s (2001) model in light of this chapter, we provide a new way of considering professional pathway socialization for Ph.D. students. As

shown in Fig. 7.3, and akin to Weidman et al.'s model, we highlight the important actors in the Ph.D. student socialization process: faculty in the early undergraduate experience, the constant role of family throughout the journey, and the important – but changing – role of advisors in the process. At any point in this journey, however, students may take professional pathways away from academia, often influenced by their familial situation and a changing job market. Students who decide to pursue graduate education after their undergraduate years may also be steered away from pursuing a Ph.D. by a job market or familial circumstances. An advisor plays an important role in influencing the student to continue into the Ph.D. program. At this point, however, the advisor's influence should also be mitigated by the job market and the realities of it. For some, this may include a post-doc that brings them to industry, government, or private sector research. For others, this path to a profession may be more direct. Yet others will be influenced along the academic pathway, with this pathway circling back, potentially, to influence the next generation of scholars along a similar path.

The map, in this new conceptualization, illustrates that there is not one pathway for Ph.D. students. Moreover, this map recognizes that where an initial pathway takes the student may not be the final destination. Whatever the destination and however the journey changes, we must encourage and support students to do as Thoreau exhorted: "Pursue some path, however narrow and crooked, in which you can walk with love and reverence."

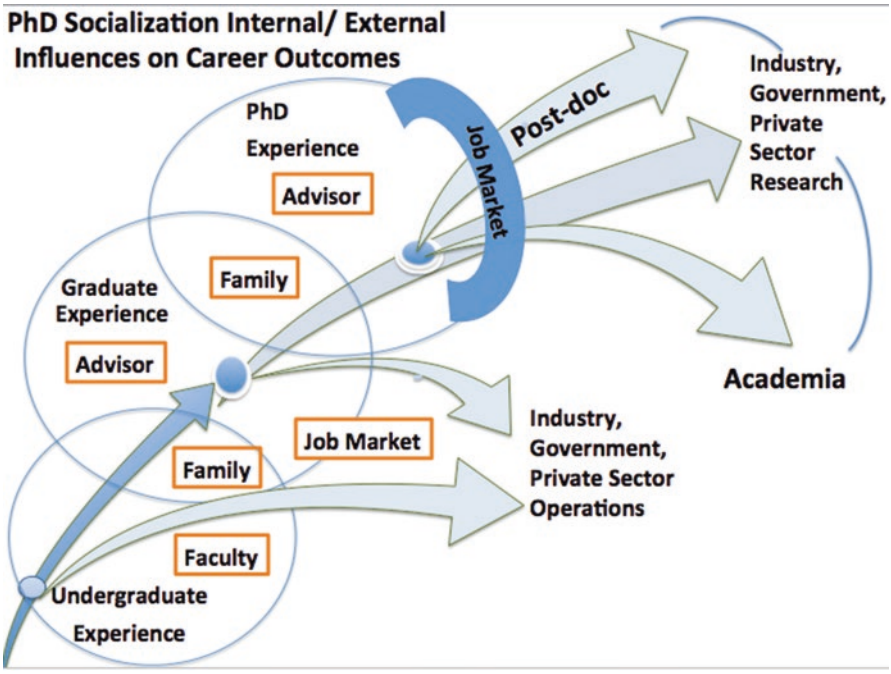


Fig. 7.3 Ph.D. Career Path Socialization Model

Appendix: Post-Graduation Commitments for Doctorates by Broad Field of Study, 1995–2015

	Year	Academe %	Government %	Industry or business %	Nonprofit organization %	K-12, other, unknown %
Life sciences	1995	51.4	14.2	24.5	7.3	2.6
	2000	46.0	13.7	28.9	6.9	4.6
	2005	53.2	12.7	25.3	7.1	1.8
	2010	48.9	14.3	25.0	8.4	3.4
	2015	45.5	9.8	33.1	9.4	2.2
Physical sciences & earth sciences	1995	28.3	12.9	53.2	2.3	3.2
	2000	21.9	9.3	63.8	2.0	2.9
	2005	26.2	9.3	59.5	3.1	1.9
	2010	28.5	14.4	50.9	3.0	3.2
	2015	23.9	6.4	64.8	3.0	1.9
Mathematics & Computer Sciences	1995	55.3	4.2	37.3	2.2	1.0
	2000	47.5	3.8	44.0	2.0	2.6
	2005	54.6	4.0	38.3	1.9	1.2
	2010	40.8	6.7	46.7	2.3	3.5
	2015	32.4	4.6	59.0	2.8	1.2
Psychology & Social Sciences	1995	53.8	12.4	16.3	11.4	6.1
	2000	52.0	11.4	17.4	11.4	7.7
	2005	62.0	10.0	14.2	8.8	5.0
	2010	60.2	13.9	13.5	7.9	5.3
	2015	59.6	11.6	16.2	9.1	3.4
Engineering	1995	19.1	10.9	66.1	2.2	1.6
	2000	14.8	9.0	72.9	1.8	1.5
	2005	18.5	9.3	68.7	2.3	1.2
	2010	16.9	12.9	64.3	3.1	2.8
	2015	14.4	9.7	72.1	3.1	0.6
Education	1995	48.3	6.0	6.0	5.1	34.6
	2000	47.9	4.6	5.7	4.6	37.2
	2005	50.2	4.1	4.1	4.3	37.3
	2010	53.4	3.5	4.5	4.5	34.1
	2015	59.4	3.6	4.5	5.8	26.6
Humanities and arts	1995	79.8	1.7	5.1	9.1	4.3
	2000	78.0	1.9	6.4	7.6	6.2
	2005	82.5	2.3	4.3	6.8	4.2
	2010	80.6	2.1	5.0	6.2	6.1
	2015	78.7	2.1	5.7	8.8	4.7

Source: National Science Foundation (2016)

References

Aaenerud, R., Homer, L., Nerad, M., & Cerny, J. (2006). Paths and perceptions: Assessing doctoral education using career path analysis. In P. L. Maki & N. A. Borkowski (Eds.), *The assessment of doctoral education* (pp. 109–141). Sterling, VA: Stylus.

Afonso, A. (2013). How academia resembles a drug gang [blog comment].

Antony, J. S. (2002). Reexamining doctoral student socialization and professional development: Moving beyond the congruence and assimilation orientation. In *Higher education: Handbook of theory and research* (Vol. XVII, pp. 349–380). New York: Agathon Press.

Baker, V. L., & Pifer, M. J. (2014). Preparing for practice: Parallel processes of identity development in stage 3 of doctoral education. *International Journal of Doctoral Studies, 9*, 137–154.

Bess, J. L. (1978). Anticipatory socialization of graduate students. *Research in Higher Education, 8*, 289–317.

Bragg, A. K. (1976). *The socialization process in higher education* (ERIC/AAHE Research Report, No. 7). Washington, DC: The George Washington University.

Council of Graduate Schools. (2003). *The preparing future faculty program*. Retrieved from http://www.preparing-faculty.org

Denecke, D., Feaster, K., & Stone, K. (2017). *Professional development: Shaping effective programs for STEM graduate students*. Washington, DC: Council of Graduate Schools.

Fuhrmann, C. N., Halme, D. G., O'Sullivan, P. S., & Lindstaedt, B. (2011). Improving graduate education to support a branching career pipeline: Recommendations based on a survey of doctoral students in the basic biomedical sciences. *CBE-Life Sciences Education, 10*(3), 239–249.

Gardner, S. K. (2008). "What's too much and what's too little?": The process of becoming an independent researcher in doctoral education. *The Journal of Higher Education, 79*, 326–350.

Gibbs Jr., K. D., McGready, J., Bennett, J. C., & Griffin, K. (2014). Biomedical science PhD career interest patterns by race/ethnicity and gender. *PIoS one, 9*(12), e114736.

Golde, C. M., & Dore, T. M. (2001). *At cross purposes: What the experiences of doctoral students reveal about doctoral education*. Retrieved from http://www.phd-survey.org

Goulden, M., Frasch, K., & Mason, M. A. (2009). *Staying competitive: Patching America's leaky pipeline in the sciences*. Retrieved from https://cdn.americanprogress.org/wp-content/uploads/issues/2009/11/pdf/women_and_sciences.pdf

Hopwood, N. (2010). A sociocultural view of doctoral students' relationships and agency. *Studies in Continuing Education, 33*, 103–117.

Jencks, C., & Riesman, D. (1968). *The academic revolution*. Garden City, NY: Doubleday Anchor Books.

Mangematin, V. (2000). PhD job market: Professional trajectories and incentives during the PhD. *Research Policy, 29*(6), 741–756.

McAlpine, L. (2016). Post-PhD non-academic careers: Intentions during and after degree. *International Journal for Researcher Development, 7*, 2–14.

McAlpine, L., & Emmioglu, E. (2015). Navigating careers: Perceptions of sciences doctoral students, post-PhD researchers and pre-tenure academics. *Studies in Higher Education, 40*(10), 1770–1785.

Merton, R. K. (1957). *Social theory and social structure*. New York: The Free Press.

National Science Foundation. (2016). *Employment sector of doctorate recipients with definite postgraduation commitments for employment in the United States, by broad field of study: Selected years, 1995–2015*. Retrieved from https://www.nsf.gov/statistics/2017/nsf17306/data/tab46.pdf.

Nerad, M. (2004). The PhD in the US: Criticisms, facts, and remedies. *Higher Education Policy, 17*, 183–199.

Nerad, M. (2015a). Professional development for doctoral students: What is it? Why now? Who does it? *Nagoya Journal of Higher Education, 15*, 285–318.

Nerad, M. (2015b). Searching for taboos in doctoral education: An exploratory journey. *Die Hochschule, 24*, 17–32.

Nerad, M., & Cerny, J. (1999). Postdoctoral patterns, career advancement, and problems. *Science, 285*, 1533–1535.

Nerad, M., & Cerny, J. (2000). From rumors to facts: Career outcomes of English PhDs. *ADE Bulletin, 124*, 43–55.

Nerad, M., Rudd, E., Morrison, E., & Homer, L. (2009). Confronting common assumptions: Designing future-oriented doctoral education. In *Doctoral education and the faculty of the future* (pp. 80–89). Ithaca, NY: Cornell University Press.

Nyquist, J., Woodford, B., & Rogers, D. L. (2004). Re-envisioning the Ph.D.: A challenge for the twenty-first century. In D. H. Wulff & A. E. Austin (Eds.), *Paths to the professoriate: Strategies for enriching the preparation of future faculty* (pp. 194–216). San Francisco: Jossey-Bass.

O'Meara, K., Jaeger, A. J., Eliason, J., Grantham, A., Cowdery, K., Mitchall, A., et al. (2014). By design: How departments influence graduate student agency in career advancement. *International Journal of Doctoral Studies, 9*, 155–179.

Richardson, V. (2006). Stewards of a field, stewards of an enterprise: The doctorate in education. In C. M. Golde & G. E. Walker (Eds.), *Envisioning the future of doctoral education: Preparing stewards of the discipline* (pp. 251–267). San Francisco: Jossey-Bass.

Sauermann, H., & Roach, M. (2012). Science PhD career preferences: Levels, changes, and advisor encouragement. *PLoS One, 7*, e36307.

Schiebinger, L., Henderson, A. D., & Gilmartin, S. K. (2008). *Dual-career academic couples: What universities need to know*. Retrieved from Palo Alto, CA.

St. Clair, R., Hutto, T., MacBeth, C., Newstetter, W., McCarty, N. A., & Melkers, J. (2017). The "new normal": Adapting doctoral trainee career preparation for broad career paths in science. *PLoS One, 12*(5), e0177035.

Stephan, P., & Ma, J. (2005). The increased frequency and duration of the postdoctorate career stage. *The American Economic Review, 95*(2), 71–75.

Stephan, P. E. (2012). *How economics shapes science*. Cambridge, MA: Harvard University Press.

Thiry, H., Laursen, S. L., & Loshbaugh, H. G. (2015). "How do I get from here to there?" an examination of Ph.D. science students' career preparation and decision making. *International Journal of Doctoral Studies, 10*, 237–256.

Walker, G. E., Golde, C. M., Jones, L., Conklin Bueschel, A., & Hutchings, P. (2008). *The formation of scholars: Rethinking doctoral education for the twenty-first century*. San Francisco: Jossey-Bass.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Wendler, C., Bridgeman, B., Markle, R., Cline, F., Bell, N., McAllister, P., et al. (2012). *Pathways through graduate school and into careers*. Princeton, NJ: Educational Testing Service.

Chapter 8
Preparing the Scholarly Practitioner: The Importance of Socialization in CPED-Influenced EdD Programs

Jill Alexa Perry and Emma Abruzzo

In professional graduate programs, socialization is an essential process that helps develop a student's identity as a member of their chosen profession. As Weidman et al. (2001) indicate, this process gives students the knowledge, skills and values they will need to enter in and commit to their profession. What this process looks like, however, varies by profession and by type of doctoral program. Deborah Colwill (2012) describes three categories of doctoral education. The first is the Professional Doctorate, which provides training through "lengthy internships and clinical experiences" (Gardner, 2009, p. 30) and generally doesn't require a dissertation or thesis. Professional fields within the realm of medicine and law typically employ this type of doctorate. The second type of doctoral education is the Research Doctorate, which culminates in an original piece of research that contributes to advancing the field of study (Colwill, 2012). This type of doctorate typically prepares those who wish to conduct research or work as university-level faculty members. The final type of doctorate is the Professional Research Doctorate, which Colwill (2012) describes as focusing on both research and practice. A dissertation or thesis is required in such programs, however, the research is focused on "investigating a particular professional topic or existing problem" (p. 13). Each one of these graduate degrees will require a distinct socialization process to prepare the student to enter into the corresponding position (attorney, professor, educator).

This chapter expands upon the socialization process for one type of Professional Research Doctorate, the Education Doctorate (EdD). In particular, this chapter focuses on the CPED-influenced EdD. This degree is an EdD that has been redesigned under the Carnegie Project on the Education Doctorate's (CPED) Framework which aims to improve professional preparation in education for the advanced prep-

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aration of school practitioners, clinical faculty, academic leaders and professional staff for the nation's schools and colleges and the organizations that support them (Perry & Imig, 2008). EdD programs generally attract students who are already practicing professionals, therefore the aim of the program is slightly different than in other professional programs such as medicine, law, clergy, etc. Instead of indoctrinating students into a new profession, in education students trained to enhance their existing skills to impact their practice.

This chapter discusses how CPED has changed the EdD and what that has meant for socializing students in these programs. First, we provide some background information on the EdD and CPED. Then we discuss the goal of the CPED-influenced program and who these programs aspire to graduate. Next, we discuss the core elements of the Weidman, Twale and Stein Model (2001) that may provide a guide for improving the socialization process in EdD programs. Finally, we provide data from two CPED research efforts that demonstrate how the Weidman, et al. (2001) core elements are changing in CPED-influenced EdD programs and thus improving the way students in these programs are being socialized into new roles.

Background

Upon its birth, the EdD degree had a distinct purpose: to prepare school leaders. Henry Holmes (a professor at Harvard in 1921) created the degree as a solution to the need for strong upper-level elementary and secondary school leaders at a time when the Boston area schools were growing and principals were only administrative positions (Powell, 1980). In this early creation, however, the EdD was defined by "subtraction" (Shulman, Golde, Beuschel, & Garbedian, 2006), meaning Holmes modeled the degree just as the PhD, but reduced the number of requirements and credits (Powell, 1980). Additionally, after ten years of operation, scholars uncovered that the Harvard EdD accepted less rigorous student dissertation work than what was expected of PhD student (Clifford & Guthrie, 1988; Deering, 1998; Freeman, 1931). This original EdD design of less credits and weaker research proliferated to graduate schools of education around the US and, over time, left the EdD with the unfortunate nickname of "PhD-lite" (Shulman et al., 2006). As a result, many practitioners sought the more prestigious PhD instead (Perry, Zambo, & Wunder, 2015) or if their only option was the EdD, they viewed it as a credential rather than the rigorous preparation needed to help them impact their practice. Take for example, the following statement retrieved from Edweek.org May 15, 2012:

> *I need better skills for my job. We are all struggling (but afraid to say so because we don't want to lose our jobs) because the training people like me have received is either too simplistic or too theoretical. If I could get a similar level education to a medical doctor I would be pleased. What I want is a degree that tells people (and especially my board) that I know a thing or two about how to make research on teaching applicable in our school district. – Anonymous post*

Doctoral preparation in the field of education has suffered this kind of confusion for nearly a century (Perry, 2010, 2012; Shulman et al., 2006) as those seeking to enter the professoriate and those seeking to lead in practice have been historically trained in nearly the same fashion.

When the Carnegie Project on the Education Doctorate began in 2007, its intent was to respond to the EdD's diversion from its original objective and again distinguish it as the professional education degree. CPED leaders looked to the Council of Graduate Schools' Task Force on the Professional Doctorates for guidance. The Task Force recommended:

> Graduate colleges should not use one-size-fits all standards that simply ask why a professional doctorate is not just like a PhD. [But rather] a Professional degree should represent preparation for the potential transformation of that field of professional practice just as the PhD represents preparation for the potential transformation of the basic knowledge of a discipline. (Council of Graduate Schools, 2007, p. 6).

This recommendation supported what practitioners had been seeking. Twenty-five graduate schools of education committed themselves to working together to undertake a critical examination of the education doctorate with a particular focus on improving the preparation of those leading in professional practice. Their tasks were twofold: to distinguish the EdD from the PhD and to "rethink how preparation would both differ from traditional EdD or PhD programs and be distinctly designed for practitioners" (Hoffman & Perry, 2016, p. 14). To do this, members ask what skills, knowledge and dispositions practitioners in the field needed to be transformational leaders. Faculty members recognized that professionals entering doctoral programs bring varying goals and needs that reflect their distinct professional contexts—rural, urban, suburban, and international PK-20 educational and organizational settings. Faculty also understood that each university campus is distinctive with its own regulations that may, or may not, limit programmatic and policy changes. As a result of such variety and diversity across educational contexts, a one-sized-fits-all model for the EdD was rejected and the CPED Framework was developed to honor local contexts and allow member to maintain flexibility in their program designs. Ten years after CPED began, the consortium now has over 100 schools of education as members with faculty and administrators who utilize the CPED Framework to redesign their EdD programs.

Rethinking the EdD

This section offers a brief overview of the CPED Framework. This framework guides members in the development of programs that enhance already existing professional skills with inquiry and leadership skills to improve practice. As such, professional practitioners who study in CPED-influenced programs are socialized to become Scholarly Practitioners through their coursework, cohort experiences, field experiences, milestones and faculty mentoring. This type of preparation is different

than the traditional ways that were based on PhD preparation. Instead, the CPED model resulted from a group of faculty considering who students that come from practice are, what their needs are, and how the academy might contribute to their growth as leaders.

Types of Students

Professional preparation at the doctoral level in education is different than in other professions. In the case of the EdD, it is not "a 'license to practice' undertaken by those entering an educational career, rather it is study undertaken by experienced practitioners" (Tupling & Outhwaite, 2017, p. 154), which is the "inverse of other fields" (Shulman et al., 2006, p. 26). These professional practitioners are typically older and generally have between 10 and 20 years of professional experience. Many are highly qualified, successful practitioners who bring an immense amount of professional expertise to their program of study (Perry, 2013; Willis, Valenti, & Inman, 2010).

These students arrive with a solid professional identity and often enter these programs eager to gain stronger skills and abilities that will help them address the pressing issues they face in their daily practice. Additionally, because they are working professionals, actively on a career path, they do not leave their practice to study but rather "remain in their specialist practice as they study the EdD" (Tupling & Outhwaite, 2017, p. 154). Therefore, they desire part-time study and generally apply their learning to practice as they progress through their program.

Practitioner Needs

In many cases, educational practitioners face the dilemma of needing to obtain a doctorate to advance in their careers. Frequently, however, their only options are traditional doctoral programs that don't necessarily give them applicable skills for practice. They sacrifice time away from work and family and spend hard-earned money (part-time students don't qualify for financial aid) to obtain a degree that does not support their professional development beyond credentialing. They write dissertations that are heavily theoretically-based and struggle to apply the experience and knowledge to their practice settings.

In other professions, training deals with applying skills to practice. For instance, medical students work in hospitals alongside certified doctors to learn diagnosing skills and bedside manners. Surgeons learn to sew as part of their program curriculum. Lawyers practice arguing and debating, over and over. Clergy learn to console. Engineers practice design. Traditionally, doctoral students of education received no such training. Rarely did programs teach them to apply theoretical knowledge to practice settings and their dissertations generally satisfied academic requirements

but did little to change their practice. The end result of such preparation was a credential that supported career advancement but offered little in the way of useful skills to help practitioners improve the practice of education (Perry, 2012).

Applying Inquiry to Practice

Since the birth of the EdD, many scholarly studies (Anderson, 1983; Brown, 1966; Clifford & Guthrie, 1988; Deering, 1998; Denemark, 1985; Eells, 1963; Freeman, 1931; Hochbein & Perry, 2013; Levine, 2005; Osguthorpe & Wong, 1993; Shulman et al., 2006) have pointed out that the role of research and inquiry has been weakened in EdD programs. According to these studies, the research course credits in many EdD programs were frequently reduced and dissertations focused on problems of practice were frequently perceived as less rigorous. The reason, these studies suggest, is that faculty who taught in EdD programs did not consider research and inquiry skills as important skills for practitioners.

Learning across CPED consortium faculty and student practitioners, however, has indicated the opposite. Strong inquiry skills are central to providing practitioners with the tools to better understand and improve the problems they face in practice (Perry, 2016). Therefore, CPED advocates that professional preparation take into account the role and importance of inquiry, particularly as it is applied to practice, and strengthen it in professional doctoral preparation.

Re-envisioning the Education Doctorate with these considerations in mind makes for an interesting task as faculty grapple with ways to offer skilled professionals what they need. The result has been a partnership where faculty bring their expertise in research and inquiry to problems that practitioners face daily for collaborative learning and problem solving. Below is an outline of the CPED Framework that supports members in redesigning such programs.

The Framework

The CPED Framework includes (a) a new definition of the EdD, (b) a set of guiding principles for program redesign, and (c) a set of design-concepts upon which programs can be built.

Definition

In 2009, the CPED membership redefined the education doctorate to be: “The professional doctorate in education that prepares educators for the application of appropriate and specific practices, the generation of new knowledge, and for the

stewardship of the profession" (CPED, 2009). According to Golde (2006), "stewardship establishes the purpose of doctoral education" (p. 9). She describes stewardship as the ability "to inculcate those we educate with the highest levels of competency and integrity" (p. 9). She further suggests that a steward of the discipline is "a caretaker who trains a critical eye to look forward and must be willing to take risks to move the discipline forward" (p. 13) through the generation, conservation and transformation of knowledge (Golde, 2006). Like the Steward of the Discipline, this caretaker role is also required of the Steward of the Practice. However, for the Steward of the Practice, the knowledge that is generated and conserved is comprised of both theoretical and professional knowledge and the transformation of practice is the result of generating and conserving such knowledge.

Generation

Research skill is central to doctoral study. A steward is "expected to conduct investigation according to accepted standards of rigor and quality" (Golde, 2006, p. 10). While this statement rings true for those who are stewards of the discipline or of the practice, scholarly practitioners have the added responsibility of generating knowledge that is grounded in field work and that is readily useable in practice. Given their daily confrontations with problems of practice, practitioners have the ability to conduct research in the field "at a depth that traditional forms of research might well not be capable, precisely because they are practitioners" (Jarvis, 1999, p. 24).

Then how do we prepare practitioners to engage in scholarly research that will generate useful, practical knowledge? How does their preparation differ from traditional research methods training and provide skills needed to be able to generate impactful, quality research that generates change? The CPED consortium developed the concept of *inquiry as practice* to address these questions. Inquiry as Practice is "the process of posing significant questions that focus on complex problems of practice and utilizing data to understand the effects of innovation. As such, inquiry of practice requires the ability to gather, organize, judge, aggregate, and analyze situations, literature, and data with a critical lens" (CPED, 2011). Hochbein and Perry (2013) have noted these skills go beyond what traditional research preparation provides and requires that practitioners be taught to decipher, debate and design studies as tools for confronting daily problems in education. This type of research training typically involves methods and scholarship "suited to the context of practice" (Willis et al., 2010, p. 25) and that is "mediated by intellectual understanding and reflection" (Green & Powell, 2005, p.88).

Conservation

Conservation for Stewards of the Discipline involves "mastering the breadth and depth in the discipline" (Golde, 2006, p. 11) including historical and contextual landscapes. Berliner (2006) suggests conservation "requires understanding of how

that field started and what is has become, so that the future of the field is both faithful to its origins and appropriate for its times" (p. 269). For Stewards of the Practice, conservation merges professional knowledge and skills with the tools of inquiry. What is unique about CPED-influenced programs is the means by which conservation is taught—through precise and focused instruction. The CPED consortium has adopted the notion of *signature pedagogy* as the central means for teaching theoretical and practical knowledge and skills. A Signature Pedagogy is the pervasive set of practices used to prepare scholarly practitioners for all aspects of their professional work: "to think, to perform, and to act with integrity" (Shulman, 2005, p. 52) and includes three dimensions:

1. Teaching is deliberate, pervasive and persistent. It challenges assumptions, engages in action, and requires ongoing assessment and accountability.
2. Teaching and learning are grounded in theory, research, and in problems of practice. It leads to habits of mind, hand, and heart that can and will be applied to authentic professional settings.
3. Teaching helps students develop a critical and professional stance with a moral and ethical imperative for equity and social justice.

Doctoral students of CPED-influenced EdD programs understand the importance of having full knowledge of the field including its history, current events and policy implications. As such, they are taught to incorporate these aspects into their investigations of problems of practice. They are also taught that this knowledge needs to be shared beyond their leadership, communicating effectively and clearly to stakeholders (Archbald, 2008).

Transformation

Golde (2006) defined transformation as the way in which a steward applies "knowledge, skills, finding and insights" (p. 12). Her definition builds upon the understanding of what a professional doctorate should be established by the Council of Graduate Schools Task Force on the Professional Doctorate (2007); that is, preparation for the "potential transformation for that field of professional practice" (p. 7). The CPED consortium contends that the transformation of the field lies in the impact of the graduates applying their newly acquired skills and knowledge. Impact on practice comes not only from their leadership abilities newly infused with innovative, scholarly thinking, but also from the work they generate through their *dissertation in practice*— a scholarly endeavor that impacts a complex problem of practice.

This product should do four things (CPED, 2011). First, it should exhibit the doctoral candidate's ability "to think, to perform, and to act with integrity" as Shulman (2005) defines as the goals for professional preparation. Second, the dissertation in practice should demonstrate how the candidate's research has addressed and impacted a complex problem of practice, or "a persistent, contextualized, and specific issue embedded in the work of a professional practitioner, the addressing of

which has the potential to result in improved understanding, experience, and outcomes" (CPED, 2011). Third, this scholarly work should serve as the launching pad for practitioners to be change agents in their practice just as the traditional dissertation serves as the launching pad for publication for newly minted PhDs. Finally, the impact of the scholarly practitioner's work should benefit a larger community of stakeholders (i.e., the candidate's organization, community constituents, clients, professional peers) (Archbald, 2008).

Principles

Members apply this definition to their local context and design their professional practice doctorate utilizing the principles and design-concepts. The CPED guiding principles state that the Education Doctorate:

1. Is framed around questions of equity, ethics, and social justice to bring about solutions to complex problems of practice.
2. Prepares leaders who can construct and apply knowledge to make a positive difference in the lives of individuals, families, organizations, and communities.
3. Provides opportunities for candidates to develop and demonstrate collaboration and communication skills to work with diverse communities and to build partnerships.
4. Provides field-based opportunities to analyze problems of practice and use multiple frames to develop meaningful solutions.
5. Is grounded in and develops a professional knowledge base that integrates both practical and research knowledge, that links theory with systemic and systematic inquiry.
6. Emphasizes the generation, transformation, and use of professional knowledge and practice (CPED, 2009).

Design-Concepts

The design-concepts are programmatic building blocks that were originally identified by Dr. Lee Shulman, President Emeritus of the Carnegie Foundation for the Advancement of Teaching, as he studied professional preparation in engineering, law, medicine, nursing, and clergy. Through the early work of the consortium members, additional design-concepts that could further shape the key practices in professional education preparation were added. Together, these include *signature pedagogy, laboratories of practice, inquiry as practice, problem of practice, dissertation in practice* and the *scholarly practitioner* (CPED, 2011). Definitions for these concepts are:

Scholarly practitioners: graduates who are individuals capable of blending their practical wisdom with their professional skills and knowledge to name, frame, and solve problems of practice; using practical research and applied theories as

tools for change because they understand the importance of equity and social justice; disseminating their work in multiple ways; and resolving problems of practice by collaborating with key stakeholders, including the university, the educational institution, the community, and individuals.

Signature pedagogy: the pervasive set of practices used to prepare scholarly practitioners for all aspects of their professional work: "to think, to perform, and to act with integrity" (Shulman, 2005, p. 52).

Inquiry as practice: the process of posing significant questions that focus on complex problems of practice.

Laboratories of practice: settings where theory and practice inform and enrich each other.

Problem of practice: a persistent, contextualized, and specific issue embedded in the work of a professional practitioner, the addressing of which has the potential to result in improved understanding, experience, and outcomes.

Dissertation in practice: a scholarly endeavor that affects a complex problem of practice.

Redesigning EdD programs utilizing this Framework means rethinking the purpose of the program and the interconnectedness of programmatic components to produce graduates who are scholarly practitioners. Faculty must train students to integrate their professional knowledge with scholarship and inquiry to impact problems in practice and enhance their leadership. Central to this work is rethinking how EdD students are socialized differently than traditional doctoral students or typical professional students. For this, we might look to the Weidman Model.

Weidman Models

As stated above, the need for rethinking how students in EdD programs are socialized into becoming Scholarly Practitioners is an important piece of becoming a CPED-influenced EdD program. The evolution of the Weidman Model (1989) to graduate and professional education (Weidman et al., 2001) offers an important opportunity to understand the places in which such socialization might occur and as such offer CPED-influenced EdD programs tools for program redesign and improvement. This enhanced model looks at the development of identity with and commitment to professional roles using the core elements of socialization— knowledge acquisition, investment and involvement. In particularly Weidman et al. (2001) expand the structures and roles within universities that support the core elements and paint a clear path for understanding what components are necessary to socialize EdD students into their new roles.

Knowledge Acquisition refers to the cognitive and affective knowledge professional students learn in their program that shifts their understanding to the problems and ideologies of their profession. This knowledge also solidifies the students' understanding of their role in the profession resulting in a new professional identity.

Weidman et al. (2001) explain that *organizational structures* such as "academic and professional departments serve as a frame of reference for newly entering students and lay foundation for socialization" (p. 56). These structures serve as a home base for students during their program. *Program structures*, on the other hand, support socialization through their delivery design and content. "Instructional delivery of curriculum', note the authors, "most assuredly sets the tone for how students are socialized" (Weidman et al., 2001, p. 58).

At the interpersonal level, *faculty roles and supervision* provide students with access to "the closely guarded body of knowledge [that faculty] posses" (Weidman et al., 2001, p. 58). In these roles, faculty decide which students "shall be anointed and certified as qualified to engage in professional practice" (p. 59). *Student peers* offer another means of knowledge acquisition depending on the design of the program. Entering with "a group of other students affects socialization different than individually. The cohort influences the learning process, opens support mechanisms and enriches the experience socially and emotionally" (Weidman et al., 2001, p. 60).

Investment refers to the "time and energy put forth [by the student] in meeting program requirements" (Weidman et al., 2001, p. 63). Investment begins with applying to the program and ends with completion of the capstone requirement. Weidman et al. (2001) argue that student investment is enhanced when students experience sponsorship of a professor, advisor or current student. *Organizational structures*, such as program milestones and the celebration of students reaching these goals supports socialization. *Professional standards*, or the sorting and selecting of rituals that allow progression toward a profession from admissions to graduation also provide structures that contribute to socialization. *Faculty and their expectations* and advising of students, suggest Weidman et al. (2001), "play a major role in shaping the professional self-image of a student" (p. 66). The relationship that forms between student and their faculty mentor can ultimately "turn into a partnership when faculty [member] recognizes the student's intellectual and research abilities" (p. 67). The *student peer culture* also supports a student's investment in the program. Weidman et al. (2001) note "the impact of peer group members on each other generates a powerful force that nourishes and transforms members" (p. 69).

Involvement refers to the opportunities students have to participate in some aspect of the professional role during their preparation. These opportunities (assistantships, clinical experiences, etc.) "teach the student how to think and what to believe" (Weidman et al., 2001, p. 70). *Organizational structures* that allow for such opportunities augment student socialization to the profession especially when these opportunities offer more "frequent and varied interactions" (Weidman et al., 2001, p. 71) with the professional role. *Program structures* determine the types of opportunities and at what point students experience them. The *faculty role in supervised practice* plays a large role in student involvement as the "close supervision" (Weidman et al., 2001, p. 75) affords the student an opportunity to learn from continuous feedback. *Peers* provide less formal structures that give students "social outlets, psychological release and much needed emotional support" (Weidman et al., 2001, p. 82).

Knowledge acquisition, investment and involvement are the core elements of the socialization process that support the students' identity development. Their commitment to this new identity is built through bonding processes with peers and faculty, the sponsorship of a mentor, and internalization of the professional role" (Weidman et al., 2001, p. 83). Commitment is an ongoing process that grows with their participation in the program. Furthermore, as students demonstrate competence in program milestones their commitment increases. Weidman et al. (2001) found across multiple graduate and professional programs that designing a program to foster "commitment versus credentialism" (p. 85) impacts the level of commitment a student will have to their new profession.

Applying the Weidman Model to CPED-Influenced EdD's

As CPED grows and ages, members seek to learn how the CPED-influenced EdD has developed in various university and regional contexts. One area of interest is how the graduates of CPED-influenced EdDs differ from one another. Do they identify as Scholarly Practitioners? Have they committed to this role in their professional practice? Applying the Weidman Model to two CPED data gathering efforts offers insights into how CPED-influenced programs have changed from traditional program models as a means to produce Scholarly Practitioners. Specifically, this section will look at how programmatic changes have supported the development of the core elements of socialization — knowledge acquisition, investment and involvement and how the Scholarly Practitioner identity has been developed and adopted by EdD students and graduates.

In 2014, CPED published data from a four-year US Department of Education Fund for the Improvement of Postsecondary Education (FIPSE) funded study that looked at how 21 of the original CPED member schools of education had changed their EdD as a result of membership in CPED. Findings from the multiple-case study demonstrated that CPED, as an innovation, had impacted schools of education at the institutional, programmatic and individual levels. In 2017, 86 CPED member schools of education were asked to complete an extensive report about the design, implementation and outcomes of their programs. For the present chapter, we reviewed early findings received from CPED programs categorized as "experienced" or "implementing." We sought to understand how applying the CPED Framework to program design changed the expected outcomes for program graduates. Within these two efforts, we learned of ways that programs have changed and become distinctive from traditional preparation to develop students with Scholarly Practitioner identities and who are socialized into understanding their new roles. We also learned what these new roles look like and how students understand and operationalize them. First, we outline changes that demonstrate programmatic changes. Next, we look at program and student understandings of identity and student commitment to this new identity.

Program Structures

Programmatic changes supported the acquisition of new knowledge, student investment in the program and also provided opportunities for students to be active and involved learners.

2010–2014 FIPSE Study

The FIPSE study revealed that CPED had helped the original deans and faculty members understand the relevance of connecting professional practice to doctoral preparation. This understanding manifested into an articulation of a program vision and mission that focused on developing Scholarly Practitioners. Programs were designed with the purpose of becoming more relevant to practice and supportive of adult learners who are working educational professionals. Courses were redesigned to focus on necessary skills and knowledge and honored professional knowledge. Environments were tailored to be more supportive to learning.

In CPED-influenced programs courses and coursework were based on the needs of adult learners, encouraging students to be responsible for their own learning while simultaneously guiding them through a structured set of courses and experiences. Courses were enlightening, practical, and authentic; that is, grounded in the real world needs and experiences of practitioners. In the words of one faculty member, "…it's grounded in professional practice, but at the same time informed by outside perspectives" (Perry et al., 2015). Examples of this could be seen in field-embedded classes, case analyses, and action research.

Programs demonstrated that students learn in laboratories of practice (often their work setting) by doing and applying what they learn in their courses and reporting back through coursework. Additionally, even though some direct instruction and lecture still took place, courses and assignments were designed to scaffold learning. Most learning environments were complemented either with internships or laboratories of practice where students could learn from more knowledgeable others or with embedded fieldwork where students could learn from practice and with peer-to-peer collaboration.

Methods courses, in particular, were central to socializing Scholarly Practitioners. These courses were targeted and useful to student practice—teaching students to consume, use and do research in their daily work settings. Articulating the benefit of methodological knowledge, faculty members from the one institution said they wanted their students to become sound decision-makers and problem-solvers. In fact, early thinking in the CPED consortium suggested programs should develop students into problem-solvers.

To accomplish this goal, instructors provided understandable information in increments or, use a "just in time" approach where materials and skills were offered in progression with the program allowing students to learn as they go. Examples of types of methodological knowledge included gap analysis and cycles of action

research. Moreover, much of these methods courses were closely tied to dissertation work so that students learned skills together, under the guidance of their faculty and over the full period of the program.

Further supporting socialization, courses in CPED-influenced programs were taught by a variety of individuals in varied combinations. At some institutions, only tenure-track faculty members teach courses, whereas at other combinations of faculty and clinical faculty (sometimes graduates of the program) teach and sometimes, practitioners co-teach with faculty. At some institutions, two courses were blended together and co-taught by faculty to provide interdisciplinary understanding. In most of these programs, a practitioner with a terminal degree was asked to sit on the dissertation committee to allow for professional experience to influence and guide the student's study.

2017 CPED Report

More recently, we have found that institutions have invested in developing the skills, knowledge and dispositions that improve a Scholarly Practitioner's abilities. These changes support identity development through knowledge acquisition, investment in defining the scholar practitioner and student involvement in the program.

The CPED Framework is has strong emphasis on engaging community, working towards social justice and equity in schools, engaging diverse stakeholders and sharing learning across these stakeholders. Programs have responded to these aims for the Scholarly Practitioner by adding programmatic components that will socialize students to enact these skills in practice. For instance, in order for students to better interact with their communities, program changes have included:

- Civic engagement projects that focus on contemporary regional issues in education impacting educational attainment, economic viability, and/or livability in a metropolitan area,
- Shadowing of educational leaders to learn how to appraise problems in context, and
- Evaluating existing and projected needs of ethical leaders in local educational and community settings.

Students are also asked to apply their learning in a variety of different settings, going beyond the comfort of their current practice environment. Some program changes that support this learning have included:

- Field experiences that require guided practice in highly diverse and high need school settings,
- Exploration of current ethical issues influencing leadership decisions,
- Student participation in discussions of problems of practice across a diverse set of understandings and perspectives,
- Faculty with experience in highly diverse and high-need school districts, and
- Field-based performance assessments of students.

These programmatic changes reflect a pedagogy that reinforces "learning by doing" in safe settings that emphasize in-depth dialogue, reflection that relates course readings to these activities and to professional practice. This means learning to communicate through means other than academic and scholarly writing. Some program changes to that end have included:

- Conveying information through dialogue, virtual media, arts-based projects, etc., that is readily understood by multiple audiences.
- Preparing and presenting written work to both academic and practitioner audiences
- Requiring students to shadow educational leaders to learn about school improvement initiatives that make a positive difference in the lives of individuals, families, organizations, and communities

As the Council of Graduate Schools Taskforce on the Education Doctorate (2006) pointed out, professional doctorates cannot be a replica of the PhD. These data demonstrate how CPED influenced EdD programs have redesigned their structures to produce Scholarly Practitioners. All aspects of a program must be reconsidered if a program is to develop the new identity. For the CPED-influenced EdD, that means reshaping programs that support the merging of inquiry and practice and supporting students as they move from highly skilled practitioners to Scholarly practitioners.

Becoming a Scholarly Practitioner: Identity and Commitment

We have seen across the data that students who have participated in these programs have come to understand themselves as Scholarly Practitioners and programs have redefined what they want graduate outcomes to be as a result.

2010–2014 FIPSE Study

In the FIPSE study, data was gathered from students in two ways. First, 83 students from 11 of the 21 institutions participated in focus groups. Second, 225 students across all 21 institutions participated in an open-ended question survey. What was learned from these data was how students and alumni were becoming or had become Scholarly Practitioners as a result of the program changes. Two big themes emerged – (1) students saw their program as having given them tools for understanding and changing their local practice; and (2) student mindsets and thinking about their professional work had changed.

Results indicated that students felt they had gained research and inquiry as tools for arguing to stakeholders and policy makers the need for solving problems and actually changing their practice. Students noted the ability to read data and use it to better understand their practice. Several participants described this as "consuming

research" and one specifically as "making sense in a practice way." (Perry et al., 2015). Participants noted that this learning came from their program's ability to connect theory to their current practice as a means to develop these skills and ultimately make methods courses "matter."

One student described the ways in which learning was done in her program as "action learning" or "transfer of learning to actual application." This idea of action learning formed both an initial *en vivo* code as well as a broader theme as the data was analyzed. Participants spoke of learning by doing at many points in their programs including individual classroom exercises, longer-term field experiences, and the bringing of learning back to their place of work, trying it out and then reflecting on the experience back in the classroom. Action learning is what Shulman and CPED members would consider a signature pedagogy because it allows students the opportunity to be socialized to the habits of hand, heart and mind in a reflective, safe environment.

Participants perceived the understanding and applying of existing research for practice improvement as a growth in themselves as one student described "moving beyond the practitioner mindset to really understanding research." Such statements were common across the data, with participants often beginning with "I am able to" as they described a new intellectual mindset. For example, one student commented, "we can prove the case" when discussing how he applied research to build arguments for resources in his school district. "We were challenged to present not as practitioners, but as scholars, because we were defending our point of view," another student explained, "it's not just a matter of opinion, but what is your evidence that you want other people to believe in you" (Perry et al., 2015).

Students and alumni also described having the ability and imperative to view problems of practice and potential solutions from multiple perspectives or lenses. "We have learned different ways of looking and appreciating," one participant commented. Another said, "You almost feel guilty [now] if you don't use multiple lenses." These lenses were described as being global in perspective, diverse across groups of people, going beyond practical knowledge to theoretical frameworks and intentionally moving students "out of their comfort zone" to better lead and solve problems.

2017 CPED Report

Though data were not collected from students in the CPED report, an understanding of what learning outcomes *experienced* and *implementing* programs expect their students to possess upon graduation lends an understand to the ways in which socialization in CPED-influenced EdD programs are different. Each institution was asked to list the expected outcomes for graduates as they relate to the CPED Framework. Not all of the principles had matching outcomes in the implementing and experienced category. However, looking across all of the outcomes listed, some pertinent themes emerged that demonstrate both programmatic change and a clear need for specialized socialization in CPED-influenced EdD programs.

Much of the language of graduate outcomes centers around, the ability to solve problems of practice and create policy through the application of theory and inquiry. For example, programs expect students will be able to "Understand, evaluate, and apply educational theory and inquiry knowledge" or "who have the skills and mindset to sustain inquiry around professional problems of practice." In this language is a strong sense of creating change in practice with words such as "meaningful action", "applying", "solving", "investigate potential solutions." Coupled with the sense of change is engaging others in action. That is, combining leadership skills with inquiry to engage stakeholders in understanding and solving problems in practice.

Leadership is also highlighted in the outcomes but in ways that expect students will develop their leadership abilities through the application of theory and inquiry. For example, one program suggests graduates will be able to articulate, "How theory and research influence the development of personal leadership practice." Another suggests students will sustain their leadership growth upon graduation by continued application of scholarly skills. Within most of the programs' stated outcomes, there is a notion that graduates will "transform" practice as educational leaders through the application of their scholarly practitioner skills.

A final theme that stands out is the notion of transformational leadership as a means to serve communities and schools as a matter of social justice. Part of this is understanding themselves as leaders, "how their personal narrative shapes their own approach to social justice" and how they incorporate a social justice mindset to lead complex organizations that serve all. Coursework listed prepares students to investigate some of the ways in which oppression affects and is reproduced by education and schooling, explore the power of education to reform society, and leave the program equipped with the intellectual curiosity and a basic set of tools to challenge oppression in their own institutions.

Conclusion

Acquiring a new role in graduate programs, as the Weidman, et al. model (2001) suggests, is a distinguishing factor in CPED-influenced programs, one that sets these programs apart from traditional doctoral study in the field of education. Preparing practitioners for their new role as Scholarly Practitioner requires not only a full overhaul of EdD programs, but also a redesign of the purpose and intent of program content. In many respects, helping faculty who have been trained in traditional PhD programs to understand these distinctions requires that they too be socialized into understanding the difference and distinction of the EdD.

CPED is an innovation that requires that more people learn about and understand it in action. As membership grows, the unique nature of this grassroots organization will continue to provide learning about and improvement in their programs. Over time, the more we learn about the impact of the CPED Framework on EdD programs, the more we will learn more about how these programs socialize students to becoming Scholarly Practitioners.

References

Anderson, D. G. (1983). Differentiation of the EdD and PhD in education. *Journal of Teacher Education, 34*(3), 55–58.

Archbald, D. (2008). Research versus problem solving for the education leadership doctoral thesis: Implications for form and function. *Educational Administration Quarterly, 44*(5), 704–739.

Berliner, D. (2006). Toward a future as rich as our past. In C. M. Golde & G. E. Walker (Eds.), *Envisioning the future of doctoral education* (pp. 268–291). San Francisco: Jossey-Bass.

Brown, L. D. (1966). Doctoral graduates in education. In *An inquiry into their motives, aspirations, and perceptions of the program*. Bloomington, IN: Indiana University.

Carnegie Project on the Education Doctorate. (2009). *Working principles for the professional practice doctorate in education*. (np).

Carnegie Project on the Education Doctorate. (2011). *Design concept definitions*. (np).

Clifford, G. J., & Guthrie, J. W. (1988). *School: A brief for a professional education*. Chicago: University of Chicago Press.

Colwill, D. A. (2012). *Educating the scholar practitioner in organization development*. Charlotte, NC: Information Age Publishing.

Council of Graduate Schools. (2007). *Task force on the professional doctorate*. Washington, DC: Council of Graduate Schools.

Deering, T. E. (1998). Eliminating the doctor of education degree: It's the right thing to do. *The Educational Forum, 62*, 243–248.

Denemark, G. (1985). Educating a profession. *Journal of Teacher Education, 36*(5), 46–51.

Eells, W. C. (1963). *Degrees in higher education*. Washington, DC: Center for Applied Research in Education.

Freeman, F. N. (1931). *Practices of American universities in granting higher degrees in education: A series of official statements* (Vol. 19). Chicago: University of Chicago Press.

Gardner, S. (2009). Conceptualizing success in doctoral education: Perspectives of faculty in seven disciplines. *Review of Higher Education, 32*(3), 383–406.

Golde, C. M. (2006). Preparing stewards of the discipline. In C. M. Golde & G. E. Walker (Eds.), *Envisioning the future of doctoral education* (pp. 3–23). San Francisco: Jossey-Bass.

Green, H., & Powell, S. (2005). *Doctoral study in contemporary higher education*. Maidenhead, UK: The Society for Research into Higher Education/Open University Press/McGraw-Hill Education.

Hochbein, C., & Perry, J. A. (2013). The role of research in the professional doctorate. *Planning and Changing Journal, 44*(3/4), 181.

Hoffman, R., & Perry, J. A. (2016). The CPED framework: Tools for change. In J. A. Perry (Ed.), *The EdD and scholarly practitioners: The CPED path* (pp. 13–27). Charlotte, NC: Information Age Publishing.

Jarvis, P. (1999). *The practitioner-researcher: Developing theory from practice*. San Francisco: Jossey-Bass.

Levine, A. (2005). *Educating school leaders*. New York: The Education Schools Project.

Osguthorpe, R. T., & Wong, M. J. (1993). The PhD versus the EdD: Time for a decision. *Innovative Higher Education, 18*(1), 47–63.

Perry, J. A. (2010). *Reclaiming the education doctorate: Three cases of processes and roles in institutional change* (doctoral dissertation). University of Maryland, College Park.

Perry, J. A. (2012). To EdD or not to EdD? *Phi Delta Kappan, 94*(1), 41–44.

Perry, J. A. (2013). Developing stewards of practice. In J. A. Perry & D. L. Carlson (Eds.), *In their own words: A journey to the stewardship of the practice in education*. Charlotte, NC: Information Age Publishing.

Perry, J. A. (2016). *The new education doctorate: Preparing the transformational leader the EdD and scholarly practitioners: The CPED path* (pp. 1–13). Charlotte, NC: Information Age Publishing.

Perry, J. A., & Imig, D. G. (2008). A stewardship of practice in education. *Change: The Magazine of Higher Learning, 40*(6), 42–49.

Perry, J. A., Zambo, D., & Wunder, S. (2015). Understanding how schools of education have redesigned the doctorate of education. *Journal of School Public Relations, 36*, 58–85.

Powell, A. G. (1980). *The uncertain profession*. Cambridge, MA: Harvard University Press.

Shulman, L. S. (2005). Signature pedagogies in the professions. *Daedalus, 134*(3), 52–59.

Shulman, L. S., Golde, C. M., Bueschel, A. C., & Garabedian, K. J. (2006). Reclaiming education's doctorates: A critique and a proposal. *Educational Researcher, 35*(3), 25–32.

Tupling, C. L., & Outhwaite, D. (2017). Developing an identity as an EdD leader: A reflexive narrative account. *Management in Education, 31*(4), 153–158.

Weidman, J. C. (1989). Undergraduate socialization: A conceptual approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5, pp. 289–322). New York: Agathon Press.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco, CA: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Willis, J. W., Valenti, R., & Inman, D. (2010). *Completing a professional practice dissertation: A guide for doctoral students and faculty*. Charlotte, NC: Information Age Publishing.

Part IV
International Perspectives on Student Socialization in Higher Education

Chapter 9
The Socialization of International Doctoral Students in the USA

Daniela Véliz

There is no doubt that universities in the United States (USA) have been the leading higher education destination for talented graduate students across the world (Institute of International Education, 2015), followed perhaps only by the United Kingdom (UK). According to international university rankings, the USA still holds a privileged position compared with many other countries in the world (Academic Ranking of World Universities, 2017). The USA is home to the world's most prestigious universities, including half of the global top 10 universities, according to the QS World University Rankings (2016). Specifically, in doctoral education, studies have found that the quality of the programs in the USA is critical to attracting foreign students (Han & Appelbaum, 2016). However, this might change in the near future due to current USA immigration policies that have been promoted by President Donald Trump, which includes strong anti-immigration rhetoric. In fact, international student enrollment in graduate science and engineering programs in the USA dropped 6% in 2017 after several years of increases (National Science Foundation, 2018). News reports suggest that some international students are concerned that these new immigration policies might affect their job prospectus after graduation, as well having concerns about issues of personal safety and the potential for antimigrant violence (Glum, 2017).

Despite these recent developments, the number of international doctoral students has increased over time and constitute a significant portion of the graduate student population in USA universities (Survey of Earned Doctorates, 2015a, 2015b). Likewise, the proportion of international doctoral recipients has gradually increased over the past three decades, from 17% in 1985 to 29% in 2015 (Survey of Earned Doctorates, 2015a, 2015b). Among this population, national representation is led by China, India, and South Korea, with the highest representation in the STEM fields (Institute of International Education, 2016).

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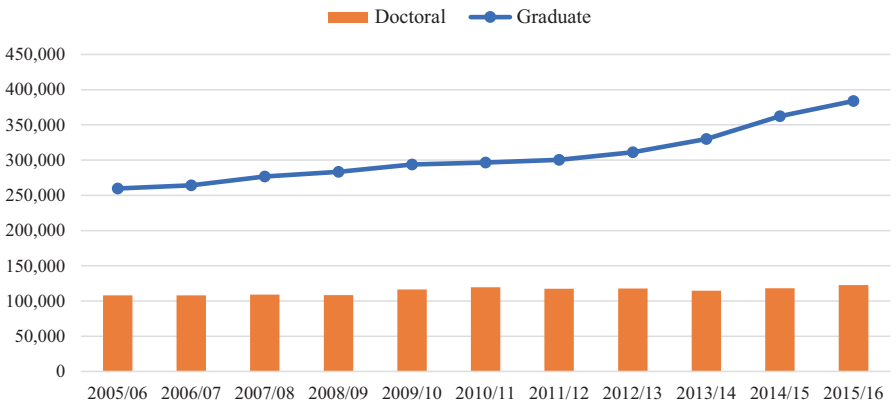
Although international doctoral students have an increasing presence in USA doctoral programs, few studies have focused on their experiences connecting with and navigating the university community. Instead, most studies have focused on aggregate national data about outcomes (e.g., Cantwell & Taylor, 2013; Okahana & Allum, 2015; Su, 2013), with many studies even referring to the general graduate student population without discerning differences between the master's and doctoral student experience (e.g., Trice, 2004). What is notable in the literature about international doctoral students is how rarely their socialization experiences have been examined. Socialization has become the predominant lens through which doctoral education has come to be studied (e.g., Gardner, 2007; Gonzalez, 2006; Lee & Gardner, 2010). Socialization is defined as the process through which individuals learn the values and norms needed to exist in a group (Merton, 1957), and it has come to be seen as a crucial piece of doctoral students' academic and professional success (e.g., Gardner, 2007; Golde, 2005; Gonzalez, 2006; Lee & Gardner, 2010; Weidman, Twale, & Stein, 2001). Moreover, given the diversity of the international doctoral student population, their experiences are often seen monolithically with very little research on subpopulations within this large and diverse student group.

In this chapter, I first explore the characteristics of international graduate students in the USA, with a focus on international doctoral students. I then provide an overview of the socialization experiences of this population utilizing the existing literature, and conclude with implications for stakeholders. Consistent with how the United States Citizenship and Immigration Services (USCIS) defines international students, the definition I use in this paper is as follows: a person who is enrolled at an institution in the USA and is not a USA citizen, an immigrant, or a refugee. And, in line with the existing literature, I refer to the international graduate student population more inclusively and make note, when possible, of specific studies that focus on doctoral students.

Characterization of International Graduate and Doctoral Students

The proportion of international graduate students in the USA has continued to steadily increase over the past 30 years, from 17% in 1985, to 23% in 2000, and to 29% in 2015 (Survey of Earned Doctorates, 2015a, 2015b). While research on international graduate students in the USA is scarce, (Zhou, 2015), we know that most international graduate students are enrolled in master's or certificate programs (Institute of International Education, 2015). In 2006, there were 259,717 international graduate students enrolled in USA postsecondary institutions, and by 2016 the number had increased to 383,935 (Institute of International Education, 2015). When disaggregated by program level, the 118,104 international doctoral students

Table 9.1 Graduate and doctoral students in the U.S.: 2005–2006 to 2015–2016



Source: Adapted from Open Doors Report on International Educational Exchange, by Institute of International Education (2015), retrieved from http://www.iie.org/opendoors

enrolled in USA universities in 2015 accounted for 31% of the entire international graduate student enrollment (see Table 9.1).

International graduate students are highly concentrated in relatively few fields. In general, international doctoral students are mostly found in the STEM fields, with the three leading fields being engineering (28%), physical science (12%), and biological and biomedical science (10%; see Table 9.2). Indeed, international graduate students account for about 50% of all science and engineering PhDs awarded in the USA (Stephan, 2012). Moreover, the proportion of international doctoral students on a temporary visa in the STEM fields has doubled over the past 30 years. Some doctoral programs, in fact, depend on the enrollment of international doctoral students to operate, not only for their number but also for the financial revenues they provide (Anderson, 2014). In addition, the career trajectories of international doctoral students reveal a higher tendency to seek employment in high tech industries compared with their USA peers (Han & Appelbaum, 2016). These differences in career paths have implications in the sense that the USA has the potential to lose entrepreneurship and innovation if these international graduates then return to their home countries (Han & Appelbaum, 2016).

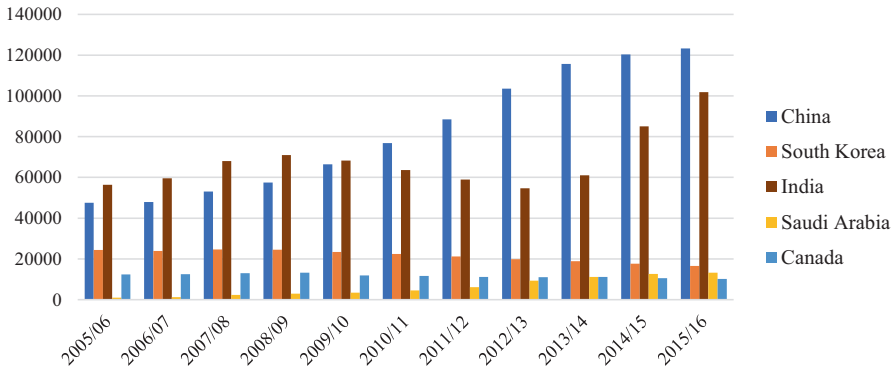
Most international graduate students tend to hail from three predominant countries – China, India, and South Korea, which account for 63% of all international graduate students (Institute of International Education, 2015). In fact, more than 30% of all international doctoral students enrolled for the first time in Fall 2015 were Chinese (Okahana & Allum, 2015). For further details on trends by country of origin refer to Table 9.3.

Table 9.2 Top 10 leading majors for international doctoral students: 2014

Major Field of Study	Students with F-1 Visas	Percent of total Freign Students by Degree
Engineering	38.201	27,8%
Physical Sciences	16.262	11,8%
Biological and Biomedica Sciences	13.766	10,0%
Health Professions And Related Programs	10.620	7,7%
Social Sciences	8.329	6,1%
Computer and Information Sciences	8.199	6,0%
Mathematics And Statistics	5.935	4,3%
Business, Management, Marketing	5.237	3,8%
Education	4.278	3,1%
Theology And Religious Vocations	3.406	2,5%
All Other Fields	23.246	16,9%
Total	137.481	100,0%

Note: Adapted from The Geography of Foreign Students in U.S. Higher Education: Origins and Destinations (2014), by Neil G. Ruiz, retrieved from https://www.brookings.edu/interactives/the-geography-of-foreign-students-in-u-s-higher-education-origins-and-destinations/

Table 9.3 Leading places of origin of international graduate students in the U.S.: 2005–2006 to 2015–2016



Source: Adapted from Open Doors Report on International Educational Exchange, by Institute of International Education, retrieved from http://www.iie.org/opendoors

Motivations to Pursue Graduate Education in the USA

There is much more to consider about international graduate students than their representation. In fact, the decision to study in the USA is in itself a complex decision with many factors influencing graduate students' choices. The USA has been one of the top destinations for international students (Institute of International Education, 2015), and the perceived promise of a higher status degree is a crucial motivation to pursue advanced degrees abroad for many international graduate students, especially from prestigious higher education systems or institutions (Albach, 2004; Dodani & LaPorte, 2005; Khadria, 2011; Zhou, 2015).

After the completion of a doctoral degree, more decisions await international graduate students: to stay in the USA, return back home, or go to again move aborad. The decision is not simple and the literature provides some insight into factors affecting these decisions. Most of the literature on international graduate students suggests that a PhD is a way for highly intelligent individuals in developing economies to obtain permanent residency or citizenship (Portes & Rumbaut, 2006; Zhou, 2015). Achieving a graduate or professional degree in the USA has been a channel into the USA workforce for highly skilled international people (Portes & Rumbaut, 2006; Zhou, 2015). To illustrate, in the past decade a high proportion (85%) of international doctoral recipients born in China, Iran, and India wanted to stay in the USA after graduation (Survey of Earned Doctorate, 2015a, 2015b). Moreover, research on international mobility has pointed out that retention and departure rates for international doctoral recipients are mainly associated with the economic conditions of their home countries at time of graduation (Finn, 2007; Kim, Bancart, & Isdell, 2011). This suggests that economics are an important motivation for deciding where to locate after graduation (Dodani & LaPorte, 2005; Khadria, 2011; Portes & Rumbaut, 2006; Zhou, 2015).

Should international graduates wish to remain in the USA, a more complex process awaits them. For example, finding a sponsor for their visas and then visa process itself. This process is even more complicated for those students with families (Trice, 2004), such obtaining visa's for family members (wife, children, etc.) while also looking for employment.

Opportunities and Challenges for International Doctoral Students

Although research on international graduate students is limited, several studies have focused on the benefits and challenges associated with being an international graduate student in the USA On the one hand, international graduate students are critical to improving the capacity of USA universities to conduct research, which translates into higher quality academic programs. Some scholars suggest that international doctoral students are also helpful in retaining faculty members (Anderson, 2014), especially at research universities where teams of graduate students are led by professors to conduct and execute the research. In several fields, such as the STEM, international graduate students constitute a substantial proportion of the labor force for faculty members (Anderson, 2014). In other words, international graduate students, who make up a substantial portion of the graduate student research workforce, are proving crucial support to faculty on large research projects that would be difficult for faculty to move to another institution.

The literature suggests that international students with a positive experience in the USA may be good ambassadors who transfer favorable attitudes of the USA when they return to their home countries (Ebersole, 1999). Other scholars have

argued that international students foster long-term connections between their alma maters and its alumni through research collaborations and international organizations (Trice, 2004).

Additionally, international students who decide to stay in the USA and work in academia bring an international perspective to the culture of the institution, supporting the experience of a global community on campus (American Association of University Professors, 1998; Ku, Lahman, Yeh, & Cheng, 2008; Trice, 2004). Along these lines, several studies have suggested that as society has become globalized, it creates transnational fields of competition (King, Marginson, & Naidoo, 2011; Marginson, 2007). For example, global rankings push universities to compete for status as well as resources (Cantwell & Taylor, 2013; Pusser & Marginson, 2012, 2013). Universities competing for international rankings value international students and faculty in their quest to move upwards to becoming or maintaining world class university status, as some of these rankings include in their methodology factors like the internationalization of staff, students, and research (Times Higher Education, 2018).

From an institutional perspective, some research has aimed to better understand the views of faculty members on international graduate students, who are a critical factor for doctoral students as they serve as teachers and advisors. For example, Trice (2003) studied how faculty members perceived master's and doctoral students in four professional graduate school (Architecture, Mechanical Engineering, Material Science and Engineering, and Public Health) at a top midwestern university. One of the common challenges faced by international graduate students was their ability to communicate in English, which encompassed achieving academic proficiency, cultural adjustment, and integrating with domestic graduate students. Despite these challenges, Trice (2003) found that faculty members felt that international graduate students provided several benefits to their departments, such as filling graduate assistantships, helping with international connections, and helping domestic students to understand a more accurate perception of their lives.

Socialization and Unique Experiences of International Doctoral Students

To provide a context of our discussion in the present volume, I shall recap that socialization has been described as the process through which a new member "learns the ropes" of an organization (Van Maanen & Schein, 1979). Specifically, the Weidman et al. model (2001) illustrates that socialization is a nonlinear process, which includes aspects that affect the socialization of graduate students such as: institutional culture, the core elements of socialization (knowledge acquisition), prospective students (academic background), professional and personal communities, and novice professional practitioners (see Fig. 9.1). Many of these aspects affect international graduate students in unique ways, which this chapter will next address. Other models of doctoral student socialization have further contributed to

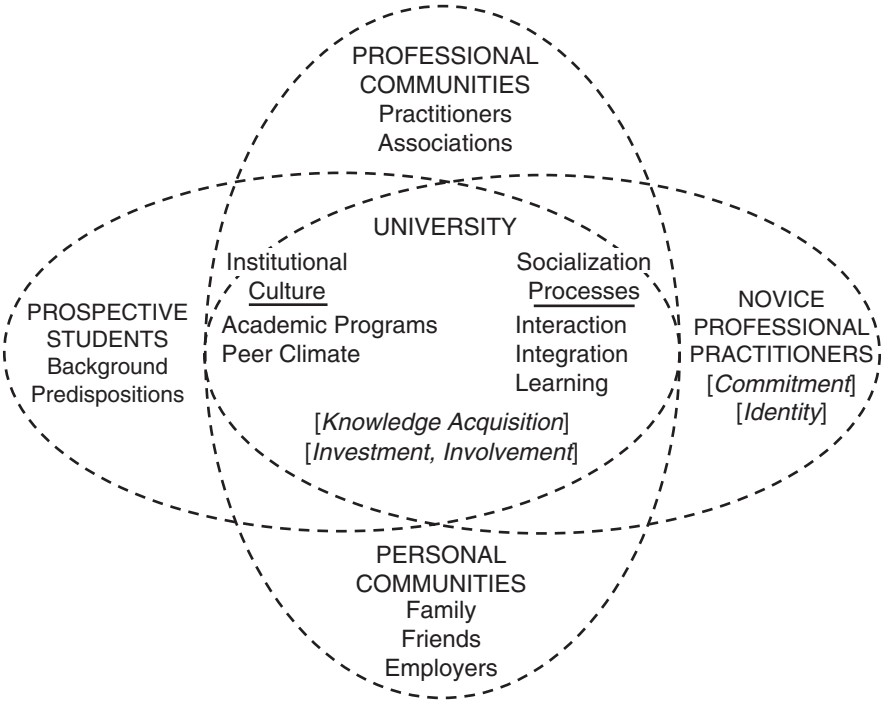


Fig. 9.1 Weidman, Twale, and Stein's (2001) graduate and professional student socialization model

our understanding of the doctoral student experience by identifying other factors such as discipline, department, and institution (Gardner, 2008).

The Weidman et al. model (2001) suggests that at the center is the core of the socialization experience which includes the institutional culture of the university, the socialization process itself and other important elements of socialization such as knowledge acquisition. Close to the central part there are four elements of graduate student's socialization which includes prospective students, professional communities, personal communities and novice professional practitioners.

In light of Weidman et al.'s (2001) model, international graduate students experience many challenges and opportunities. The literature is rife with the stress and confusion graduate students feel (Mallinckrodt & Leong, 1992; Misra, Crist, & Burant, 2003) and these feelings can be even more intensive for international students as they must navigate new national, institutional, and educational customs and cultures (Watkins, 1998). International students come from different educational systems and many speak different languages. Additionally, international students have been socialized into different learning styles as well as cultural backgrounds than those of their USA peers (Ku et al., 2008). In fact, the cultural adjustment has been described as a critical challenge for international students (Yan & Berliner, 2011). For example, studies have shown that Chinese students report high levels of

cultural shock, which makes their adjustment to USA culture harder for them (Yan & Berliner, 2011). Because of the cultural differences between USA and China, international Chinese students tend to report that they are unable to understand, control, or predict people's behavior, which contributes to high levels of student anxiety (Yan & Berliner, 2011).

Another frequently cited challenges in the literature about international graduate students is the language barrier. As previously mentioned, international graduate students for whom English is a second language face communication challenges, especially in oral presentations (Trice, 2004). International graduate students who struggle to communicate effectively in English tend to spend extra time with their professors trying to learn both a language while simultaneously learning the course content. This language difficulty can also affect their overall performance in courses, especially at the beginning of their programs (Trice, 2004). The language barrier is particularly relevant for the socialization experience, since international doctoral students may need to spend extra time and effort to meet the standards required, and faculty members may need to devote extra time in providing language-related feedback that could assist these students (Trice, 2004).

Another aspect of the socialization process is their ability to integrate into the academic program and connect with peers (Weidman et al., 2001). International graduate students who socialize with domestic students tend to be more satisfied and better adjusted with their international experience (Trice, 2004). However, researchers suggest that relatively few international graduate students interact frequently with their USA peers. Indeed, international graduate students who come from cultures similar to the USA are more likely to interact more frequently with their USA peers (Trice, 2004). One way to overcome this obstacle, according to Ku et al. (2008), is for international doctoral students to use peer mentoring groups, wherein they often benefit academically as well as in their social interactions.

The literature points out that interacting with faculty members and, specifically, with advisors, is crucial for doctoral student socialization, especially for those who plan to pursue a faculty position after graduation (Barnes & Austin, 2009). However, little research has been conducted in how to support international doctoral student socialization (Ku et al., 2008). Some scholars have suggested that the role of advisors and mentors is crucial for doctoral students, by accepting, encouraging, and supporting them (Clark, Harden, & Johnson, 2000). Mentoring, then, can be used as a way to support doctoral students (Ku et al., 2008). International doctoral students planning to pursue a faculty position may benefit enormously from mentors who are caring, available, and who show some extra patience (Ku et al., 2008). Unfortunately, researchers have reported that international doctoral students in science and engineering departments tend to be underrepresented in top programs and overrepresented in less prestigious ones (Su, 2013). Consequently, it is not surprising that fewer international doctoral students pursue an academic career after graduation compared with their USA peers, since is more likely that students trained in prestigious departments secure research-oriented faculty jobs (Su, 2013). Additionally, graduate assistantships and teaching assistantships can be an issue for international graduate students due to language barriers and visa status (Yan & Berliner, 2011).

Weidman et al.'s (2001) model suggests that personal communities support the central portion of graduate student socialization. It could be argued that such personal communities might even be more relevant for international graduate students, since studies have suggested that individuals in this population not only have to adapt themselves to the new country, but also help spouses adjust to this new culture (Trice, 2004). Trying to adjust to a new culture is difficult in itself, and having to help others adjust might be overwhelming, especially at the beginning of a program when there tend to be other pressures that international doctoral students must juggle. Being a foreigner beginning a life in a new country, and experiencing cultural differences, may cause a sense of isolation and dislocation not experienced by domestic graduate students (Ku et al., 2008). Alternatively, international doctoral students who must leave their family at home have a reduced support system, while at the same time creating an extra pressure to succeed (Lee & Gardner 2010; Yan & Berliner, 2013). To illustrate this point, scholars have reported that for Asian students the pressure might be even higher since they carry a burden of bringing glory and pride to their families (Lee & Gardner, 2010; Yan & Berliner, 2013).

While the model by Weidman et al. (2001) is useful in understanding the socialization process of graduate students and professionals, I would argue that there is one relevant factor they left unconsidered relating to financial constraints. According to the literature, the primary source of funding for international graduate students comes from their families (Institute of International Education, 2015), which adds extra pressure to their experience. Teaching and research assistantships, when funded through federal government research grants disbursed to the student through the institution, are often exclusively for domestic students, thereby reducing the financial opportunities for international doctoral students, consequently affecting the socialization experience of international doctoral students.

To summarize, while the socialization experiences of international doctoral students can be in some ways similar to that of domestic students, some factors that are part of the Weidman et al. model (2001) are more salient for the international population, such as language, cultural adjustment, family separation, and mentoring (Ku et al., 2008; Ryan, Gheen & Midgley, 1998; Zhai, 2002), to which I would add financial support.

Conclusions

If current trends remain, the proportion of international doctoral students will continue to grow, especially in the STEM fields. While there are many benefits for USA universities in attracting international graduate students to their programs, institutions should be aware that this population of students faces unique socialization challenges. From the faculty point of view, providing advice and mentoring throughout all the stages of a doctoral degree is critical. However, the advice might be different for international doctoral students, especially those coming from non-Western European countries.

Given the current anti-immigration climate in the USA, institutions and programs should provide more support to prospective and current international doctoral students to counter the anxiety they may be feeling, as moving to another country is not a simple decision. At the institutional level, support structures should include writing services with staff trained to work with diverse populations, and who are capable to provide guidance in managing anxiety in oral presentations in a foreign language, a very common activity for doctoral students. Additionally, assistance in the visa process should be a concern for the institution, both during doctoral education but also after graduation (at least in terms of advising) in order to provide useful advice on the transition to a professional and/or academic career in the USA. More research is needed to address the challenges and benefits of doctoral students coming from different cultures and countries, especially on students coming from countries that are less represented in terms of numbers and who might face issues that are currently overlooked in the literature and in practice.

International graduate students have been shown to provide clear benefits to universities (Anderson, 2014) and to the USA economy. A better understanding of the socialization process will allow institutions, departments, and faculty members to offer programs and develop policies that help international graduate students at every stage in their doctoral program – as they transition from prospective to enrolled doctoral student, and as they make their way into the labor market. By being proactive and responsive, universities will be able to better response to the needs of all the diversity of populations the receive. Lastly, while the Weidman et al. (2001) model provides a framework that is pertinent for international doctoral students, I believe that there are some factors that should be highlighted as more relevant for this population, since international doctoral students bring a distinctiveness that cannot be overlooked.

References

Academic Ranking of World Universities. (2017). *Rankings ARWU*. Retrieved from http://www.shanghairanking.com/ARWU2017.html

Altbach, P. G. (2004). Higher education crosses borders: Can the United States remain the top destination for foreign students? *Change, 36*, 18–25.

American Association of University Professors, Committee Z., & American Association of University Professors. (1998). *The annual report on the economic status of the profession.*

Anderson, S. (2014). *International students are vital to USA higher education*. Washington, DC: NAFSA. Retrieved from: https://www.nafsa.org/_/File/_/ie_mayjun14_frontlines.pdf

Barnes, B. J., & Austin, A. E. (2009). The role of doctoral advisors: A look at advising from the advisor's perspective. *Innovative Higher Education, 33*(5), 297–315.

Cantwell, B., & Taylor, B. J. (2013). Global status, inter-institutional stratification, and organizational segmentation: A time-dynamic Tobit analysis of ARWU position among USA universities. *Minerva, 51*(2), 195–223.

Clark, R. A., Harden, S. L., & Johnson, W. B. (2000). Mentor relationships in clinical psychology doctoral training: Results of a national survey. *Teaching of Psychology, 27*(4), 262–268.

Dodani, S., & Laporte, R. E. (2005). Brain drain from developing countries: How can brain drain be converted into wisdom gain? *Journal of the Royal Society of Medicine, 98*, 487–491.

Ebersole, J. F. (1999). The challenge and the promise of international education. *Continuing Higher Education Review, 63*, 98–106.
Finn, M. (2007). *Stay rates of foreign doctorate recipients from USA universities* (p. 2005). Oak Ridge, TN: Oak Ridge Institute for Science and Education.
Gardner, S. K. (2007). "I heard it through the grapevine": Doctoral student socialization in chemistry and history. *Higher Education, 54*, 723–740.
Gardner, S. K. (2008). Fitting the mold of graduate school: A qualitative study of socialization in doctoral education. *Innovative Higher Education, 33*(2), 125–138.
Glum, J. (2017, 11, 3 November). *Donald Thrump may be scaring international students away from Colleges in the USA*. Retrieved from http://www.newsweek.com/trump-international-education-study-abroad-708667
Golde, C. M. (2005). The role of the department and discipline in doctoral student attrition: Lessons from four departments. *Journal of Higher Education, 76*, 670–700.
González, J. C. (2006). Academic socialization experiences of Latina doctoral students: A qualitative understanding of support systems that aid and challenges that hinder the process. *Journal of Hispanic Higher Education, 5*(4), 347–365.
Han, X., & Appelbaum, R. P. (2016). *Will they stay or will they go?: International STEM students are up for grabs*. Kansas City, MO: Ewing Marion Kauffman Foundation.
Institute of International Education. (2015). International student totals by place of origin, 2013/14–2014/15. *Open doors report on international educational exchange*. Retrieved from http://www.iie.org/opendoors
Institute of International Education. (2016). Top 25 places of origin of international students, 2014/15–2015/16. *Open doors report on international educational exchange*. Retrieved from http://www.iie.org/opendoors
Khadria, B. (2011). India amidst a global competition for its talent: A critical perspective on policy for higher and university education. In S. Marginson, S. Kaur, & E. Sawir (Eds.), *Higher education in the Asia-Pacific*. https://doi.org/10.1007/978-94-007-1500-4_21
Kim, D., Bankart, C. A. S., & Isdell, L. (2011). International doctorates: Trends analysis on their decision to stay in USA. *Higher Education, 62*, 141–161.
King, R., Marginson, S., & Naidoo, R. (2011). *Handbook on globalization and higher education*. Northampton, MA: Edward Elgar.
Ku, H.-Y., Lahman, M. K. E., Yeh, H.-T., & Cheng, Y.-C. (2008). Into the academy: Preparing and mentoring international doctoral students. *Educational Technology Research and Development, 56*(3), 365–377.. Retrieved from. https://doi.org/10.1007/s11423-007-9083-0
Lee, T., & Gardner, S. K. (2010). Understanding the doctoral experience of Asian international students in STEM fields: An exploration of one institutional context. *Journal of College Student Development, 51*, 252–264.
Mallinckrodt, B., & Leong, F. T. (1992). International graduate students, stress, and social support. *Journal of College Student Development, 33*(1), 71–78.
Marginson, S. (2007). Global position and position taking: The case of Australia. *Journal of Studies in International Education, 11*(1), 5–32.
Merton, R. K. (1957). *Social theory and social structure*. New York: The Free Press.
Misra, R., Crist, M., & Burant, C. J. (2003). Relationships among life stress, social support, academic stressors, and reactions to stressors of international students in the United States. *International Journal of Stress Management, 10*(2), 137.
National Science Board. (2018). *Science and engineering indicators 2018. NSB-2018-1*. Alexandria, VA: National Science Foundation. Retrieved from https://www.nsf.gov/statistics/indicators/
Okahana, H., & Allum, J. (2015). *International graduate applications and enrollment*. Washington, DC: Council of Graduate Schools.
Portes, A., & Rumbaut, R. G. (2006). *Immigrant America: A portrait* (3rd ed.). Berkeley, CA: University of California Press.

Pusser, B., & Marginson, S. (2012). The elephant in the room: Power, politics, and global rankings in higher education. In M. Bastedo (Ed.), *The organization of higher education* (pp. 86–118). Baltimore: The Johns Hopkins University Press.

Pusser, B., & Marginson, S. (2013). University rankings in critical perspective. *Journal of Higher Education, 84*(4), 544–568.

Ryan, A. M., Gheen, M. H., & Midgley, C. (1998). Why do some students avoid asking for help? An examination of the interplay among students' academic efficacy, teachers' social–emotional role, and the classroom goal structure. *Journal of Educational Psychology, 90*(3), 528.

Stephan, P. (2012). *How economics shapes science*. Cambridge, MA: Harvard University Press.

Su, X. (2013). International doctoral science and engineering students: Impact on cohorts' career prospects. *Journal of Studies in International Education, 17*(5), 590–606.

Survey of Earned Doctorates. (2015a). *Doctorate recipients, by citizenship and broad field of study: Selected years 1985–2015*. Retrieved from https://www.nsf.gov/statistics/2017/nsf17306/data/tab17.pdf

Survey of Earned Doctorates. (2015b). *Doctorate recipients, by citizenship and broad field of study: Selected years 1985–2015*. Retrieved from https://www.nsf.gov/statistics/2017/nsf17306/report/international-students-staying-overall-trends/stay-rates-country-of-origin.cfm

Times Higher Education. (2018, April 03). *World University Rankings 2018 methodology*. Retrieved from https://www.timeshighereducation.com/world-university-rankings/methodology-world-university-rankings-2018#

Trice, A. G. (2003). Faculty perceptions of graduate international students: The benefits and challenges. *Journal of Studies in International Education, 7*(4), 379–403.

Trice, A. G. (2004). Mixing it up: International graduate students' social interactions with American students. *Journal of College Student Development, 45*(6), 671–687.. Retrieved from. https://doi.org/10.1353/csd.2004.0074

Van Maanen, J., & Schein, E. (1979). Toward a theory of socialization. In B. M. Staw (Ed.), *Research in organisational behaviour* (Vol. 1, pp. 209–264). Greenwich, UK: JAI Press.

Watkins, G. H. (1998, November). *Satisfaction and mentoring: An African American perspective*. In Annual Meeting of the Association for the Study of Higher Education, Miami, Florida.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Yan, K., & Berliner, D. C. (2011). Chinese international students in the United States: Demographic trends, motivations, acculturation features and adjustment challenges. *Asia Pacific Education Review, 12*(2), 173–184.

Yan, K., & Berliner, D. C. (2013). Chinese international students' personal and sociocultural stressors in the United States. *Journal of College Student Development, 54*(1), 62–84.

Zhai, L. (2002). *Studying international students: Adjustment issues and social support* (ERIC Document 474481).

Zhou, J. (2015). International students' motivation to pursue and complete a Ph.D. in the USA. *Higher Education, 69*(5), 719–733. Retrieved from https://doi.org/10.1007/s10734-014-9802-5

Chapter 10
Professional Socialization and Career Development of Chinese International Tourism and Hospitality Students and Graduates: A Revised Framework

Katrine Sonnenschein

Research on professional socialization in higher education has been conducted in mainly nursing, pharmacy, teaching, and law (Page, 2004). Studies of professional socialization in tourism and hospitality education are scarce. This chapter addresses the gap in the literature by applying professional socialization theory to tourism and hospitality degrees. Professional socialization refers to students' "acquisition of values, attitudes, skills and knowledge pertaining to a professional subculture" (Page, 2004, p. 1). This chapter reflects on and revises the professional socialization framework "Conceptualizing graduate and professional student socialization" by Weidman, Twale & Stein (2001). It focuses on different processes for enhancing the socialization and career development of Chinese international students enrolled in and graduates with an Australian tourism and hospitality management degree through internships and workplace training respectively.

Chinese international students represent 25% of the international students in higher education in Australia, making them the largest group of international students (Department of Education and Training, 2015, 2017). A significant number of Chinese international students are enrolled in tourism and hospitality degrees in Australia: in 2016, hospitality management was the sixth-most popular degree within business and commerce in higher education (Australian Government Department of Education and Training, 2016). The second-most popular undergraduate degree among Chinese international students in the university targeted in this study is the Bachelor of Business (Hotel, Tourism, Event, Real Estate and Property, and Sport). Furthermore, the Master of Business, including the award major in Tourism and Hospitality Management, has the largest number of Chinese international students among all Master's programs in the university (Office of Planning and Financial Services, 2015).

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Because of China's growing economy (*The Economist*, 2015), the number of Chinese graduates returning home has accelerated in recent years and there is also an increased need for university graduates in the booming Chinese hotel industry (Wong & Liu, 2010). Therefore, it is relevant to consider how these graduates' qualifications and graduate attributes are valued upon their return to China. Consideration of feedback from multiple stakeholder groups may indicate ways to increase the benefits of the educational experience of Chinese students in Australia, and how to maintain Australia as a desirable destination for studying abroad.

The chapter is thus grounded in a broader study that examined diverse stakeholders' perceptions of the attributes needed by Chinese graduates entering the Chinese hotel industry with international university qualifications in tourism and hospitality (Sonnenschein, 2016). The diverse stakeholders included managers working in the Chinese hotel industry; Chinese graduates holding either an undergraduate or postgraduate tourism and hospitality management degree from a particular university located in South-East Queensland, Australia; Chinese international students enrolled in an undergraduate or postgraduate tourism and hospitality management degree at the above-mentioned university; and academics teaching tourism and hospitality management courses at the same university. Furthermore, the study investigated stakeholders' perceptions of how particular programs in tourism and hospitality management in the university targeted for this study prepare students with the attributes required in the Chinese hotel industry. Finally, a discussion was undertaken regarding the implications of the stakeholders' perceptions for professional socialization theory.

Based on the above-mentioned broader study, this chapter will discuss the different components of the framework "Conceptualizing Graduate and Professional Student Socialization" (Weidman et al., 2001) and introduce a literature review relevant for understanding the revised framework (See Fig. 10.1.). Finally, a revision of the framework will be provided suggesting different processes for enhancing the socialization and career development of students and graduates through WIL and workplace training respectively.

Professional Socialization Framework: "Conceptualizing Graduate and Professional Student Socialization"

According to the Weidman et al.'s (2001) description of the framework "Conceptualizing Graduate and Professional Student Socialization", attributes derived from students' experiences in universities need to be investigated in order to understand professional socialization.

Weidman et al. (2001) argued that socialization contains cognitive as well as affective dimensions. Therefore, to understand professional socialization, the knowledge, skills, attitudes, and values of students' experience in universities must be taken into account. As the authors have stated, "Socialization in university refers

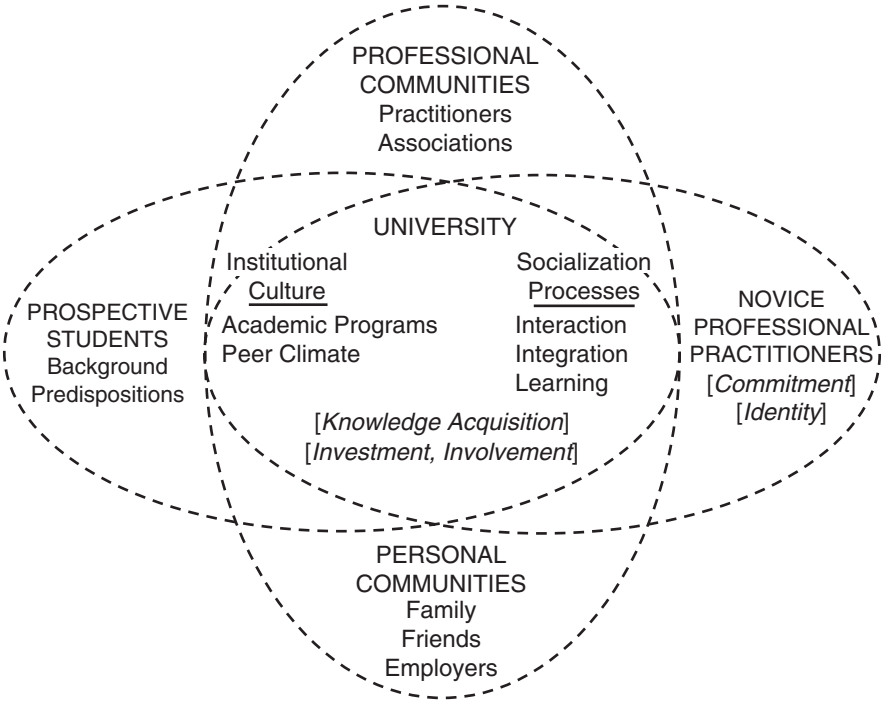

Fig. 10.1 Conceptualizing Graduate and Professional Student Socialization (Weidman, Twale, & Stein, 2001, p. 49)

to the processes through which individuals gain the knowledge, skills, and values necessary for successful entry into a professional career requiring an advanced level of specialised knowledge and skills" (Weidman et al., 2001, p. 5).

Weidman et al.'s (2001) framework draws on conceptual and empirical studies, mainly from the USA, undertaken by Bragg (1976), Stein and Weidman (1989), Thornton and Nardi (1975), and Weidman (1989). Weidman et al.'s (2001) framework is most often applied to postgraduate and advanced professional students (Holley & Taylor, 2009). The framework is sometimes criticised for not addressing enough diverse student populations such as international students and students of different ethnic groups (Twale, Weidman, & Bethea, 2016). Twale et al. (2016) argue that student minority group members experience socialization in different ways from those in the majority. For example, in Johnson-Bailey, Valentine, Cervero, and Bowles (2009) study, African American graduate students found themselves isolated and lonely at the university where the majority were white Americans. This often leads to withdrawal and lack of self-confidence among the African American students. Similarly, according to Li and Collins (2014) study, the Chinese international students often withdrew from social activities due to their lack of understanding of language and classroom norms. This withdrawal delayed their socialization process. The lack of a peer network with domestic students was

a challenge for their socialization at the university in that their network was mostly limited to Chinese international students.

At the centre of Weidman et al.'s 2001 framework (Fig. 10.1) is the core experience of the university degree program, which comprises institutional culture; socialization processes; and knowledge acquisition, investment, and involvement (Weidman et al., 2001). Surrounding the central part are four other components of student socialization: prospective students; professional communities; novice professional practitioners; and personal communities. Prospective students are categorised according to their background (such as degree enrolled in, ethnicity, and gender) and predispositions (such as values, career aspirations, learning styles, beliefs) (Weidman et al., 2001). Professional communities include the communities for which the students prepare themselves to work. Professional associations set standards for admission to the profession and thus influence the composition of academic programs (Weidman et al., 2001). Novice professional practitioners are new graduates who serve as role models for the students. Personal communities consist of family and friends outside academia whose expectations may or may not support the students in the degree program. Employers are also included in this category as they refer to settings that are generally outside academia (Weidman et al., 2001).

The concept of novice professional practitioners in the framework suggests developmental processes in professionals' careers. The keywords appearing in this category are "Commitment" and "Identity", which represent the graduates' continuous evolution of professional socialization. Commitment and identity are not considered simply as outcomes of socialization but are developed gradually in the individual students, who are both affecting and being affected by the other components of the socialization framework (Weidman et al., 2001). The ellipses in Fig. 10.1 reflect the interchanging boundaries among the various concepts of professional socialization. Weidman et al. (2001, p. 51) state that "Although the various conceptual elements of socialization have some analytically distinct characteristics, they are not independent but rather dependent upon one another to varying degrees."

Work Integrated Learning

Work-integrated learning (WIL) has been identified as a way of equipping graduates with attributes that make them work-ready (Crebert, Bates, Bell, Patrick, & Cragnolini, 2004; Mutereko & Wedekind, 2015). It includes internships, field work, and simulations (Smith, 2012; Wardle, 2014). For consistency, this study uses "WIL" interchangeably with "internships".

Work integrated learning (WIL) enables universities to attract students and to fulfil university goals, such as providing education that responds to future needs (Smith, 2012). Much of the hospitality management literature mentioned the importance of internships (Chang & Tse, 2015; Chi & Gursoy, 2009; Connolly & McGing, 2006; Xiao, 2006; Zhang & Wu, 2004). According to a 2009 survey of human

resource managers in US hospitality companies, internships were considered as the most important factor for the success of career and placement services (Chi & Gursoy, 2009).

Hotel managers in China also reported the importance of practical experience in the hotel industry (Zhang & Wu, 2004). The study by Chang and Tse (2015) based on surveys and interviews of graduates from a tourism and hospitality program in Hong Kong also demonstrated the critical importance of internships in preparing students to join the hospitality industry. Whitelaw, Barron, Buultjens, Cairncross, and Davidson (2009) have argued that internships not only offer a way to develop skills sets such as hotel management, but they also enable students to have realistic expectations of their future job and develop motivation and passion for the industry. Tribe (2002) recommended that Australian universities find an appropriate balance between theoretical knowledge and liberal orientation on the one hand, and practical and vocational orientation on the other. By placing more emphasis on practice, the curriculum might become more balanced and develop "philosophic practitioners" who are able to understand the demands of the world of business and those of the wider society (Tribe, 2002).

Mackaway, Winchester-Seeto, and Carter (2014) recommend support for international students seeking internships, given their difficulties entering companies in their host country because of their low levels of confidence and lack of connections. Furthermore, universities need to assist international students develop their English language skills and awareness of the Australian workplace culture through online modules, workshops, supervision, and mentoring, to list some examples (Jackson, 2017). Patrick et al. (2008) agreed that an alternative to an international student's placement in their host country is to identify a suitable internship in their home country. However, helping international students finding internships in their home country may require extra resources of universities and special placement agreements that are compliant with international laws (Patrick et al., 2008). In order to sustain an international internship, it is important that the sending university identifies an internship supervisor (Hollis, 2012; Smith, 2012). The internship agenda is difficult to advance because of conflicting cultures and structures in universities and levels of government as well as a lack of resources at university and government levels (Wardle, 2014).

Boundaryless Career

Careers research has developed since the beginning of the 1970s. At this time, it was widely believed that "an Industrial State … dominated by large, entrenched organisations, was here to stay" (Arthur, 1994, p. 299). Therefore, most research about employment focused on a relative stability of organisations. Furthermore, the idea of individuals advancing hierarchically within a single organisation during their career was dominant (Arthur, 1994). This idea is reflected by the linear career concept consisting of a movement upward in the hierarchy of one organisation (Brousseau,

Driver, Eneroth, & Larson, 1996). In recent times, this traditional perspective of careers has begun to fade, with new models emerging that understand the changing nature of careers (Brousseau et al., 1996; Eby, Butts, & Lockwood, 2003). Given the changeable and unstable network of organisations today, individuals often no longer stay in the same organisation during their whole working life. People are more and more often experiencing career interruptions and dismissals from employment as well as shifting positions within and across organisations (Eby et al., 2003). This has led to the concept of the boundaryless career, which means that individuals are not bounded to an organisation (Arthur, 1994). Individuals with a boundaryless attitude are comfortable and enthusiastic about establishing working relationships beyond organisational boundaries.

McCabe (2001) emphasised that within tourism and hospitality, loyalty and commitment to one employer have decreased. Typically, career paths of employees are short term. A high rate of staff turnover is commonplace in the hospitality industry because of low wages and long working hours (Brown, Thomas, & Bosselman, 2015). Because of the high turnover rate in hospitality, many hotels are not willing to invest in the training and development of their graduate employees. Consequently, many of these people feel the pressure of not being well trained and are more likely to resign (Zhang & Wu, 2004). Gu, Kavanaugh, Yu, and Torres (2006) have recommended that the hotel industry develop their training methods as a way to maximise employee productivity and avoid high staff turnover. Training motivates employees to perform better and to build a sense of loyalty to the hotel, since the company is seen to be investing in the employee's future.

Methodology

The research adopted a qualitative methodology with an interpretive paradigm, and the main data collection method used was semi-structured interviews. In the broader study, 46 interviews were held with people from four stakeholder groups: managers working in the Chinese hotel industry ($n = 12$); Chinese students ($n = 19$) enrolled in either an undergraduate or postgraduate tourism and hospitality management degree (Bachelor of Business (Hotel, Tourism, Event, Real Estate and Property, and Sport) or Master of Business (International Tourism and Hospitality Management) from a particular university located in South-East Queensland, Australia; Chinese graduates ($n = 7$) holding a similar undergraduate or postgraduate tourism and hospitality management degree at the above-mentioned university; and academics teaching tourism and hospitality management courses at the same university ($n = 8$).

Snowball sampling was used to select interviewees. Some students were recruited on campus, and some were referred by their classmates. Graduates were recruited through networks of friends on LinkedIn and at the university. The hotel managers were selected through contacts of the university's International Career Advisor; the Alumni and Development Office of the university; and private networks. Finally,

academics were referred to the researcher through colleagues. The interviews were all conducted between November 2013 and August 2014.

The first main question that the interviewees were asked during the interviews related to their perceptions of attributes required of a graduate entering the Chinese hotel industry. The second main question related to their perceptions of how overseas universities assist the students in developing these graduate attributes. These questions reflect Weidman et al.'s (2001) emphasis on the processes of gaining the knowledge, skills, and values necessary for a successful entry into a professional career.

Coding was used as a method of data reduction. Open codes were developed in the beginning of the data analysis (Strauss & Corbin, 1998, p. 102). After the open coding, the same characteristics were regrouped into categories that represented more abstract concepts (i.e., axial coding) (Strauss & Corbin, 1998). After both open and axial codes were grouped and labelled, the categories were integrated into a core category through selective coding (Strauss & Corbin, 1990). The coding process was undertaken with NVivo10 software. Finally, the categories were integrated into themes in an inductive way.

A weakness of the study is that English was not the first language of the interviewees or of the interviewer (who is Danish). These language differences increased potential misinterpretations, which could become cumulative in a longer interview. However, by reporting the transcripts and interpretations back to the respondents to test their accuracy, any linguistic limitations were overcome. Furthermore, the literature used in this study was in English. Because of the researcher's lack of understanding of Mandarin, available research studies in this language were not consulted.

In the following section, a revision of Weideman et al.'s (2001) framework will be provided that suggests different processes for enhancing the socialization and career development of Chinese international students enrolled in and graduates with an Australian tourism and hospitality management degree through WIL and workplace training respectively. All circles of Fig. 10.2 will be discussed below, except the inner circle "Prospective students", which has not been modified. In the following quotes, the expressions of the interviewees have been retained and have therefore not been adjusted for grammar.

Revisions of Fig. 10.1 "Conceptualizing Graduate and Professional Student Socialization"

Central Circle: University

Most interviewees in the current study recommended the introduction of an internship program embedded in the degree, which would allow the students to develop relevant attributes for their future career and give them a competitive advantage in recruitment. Until semester 2, 2013, the Bachelor of Business (Hotel, Tourism, Event, Real Estate and Property, and Sport) at the Australian university where the

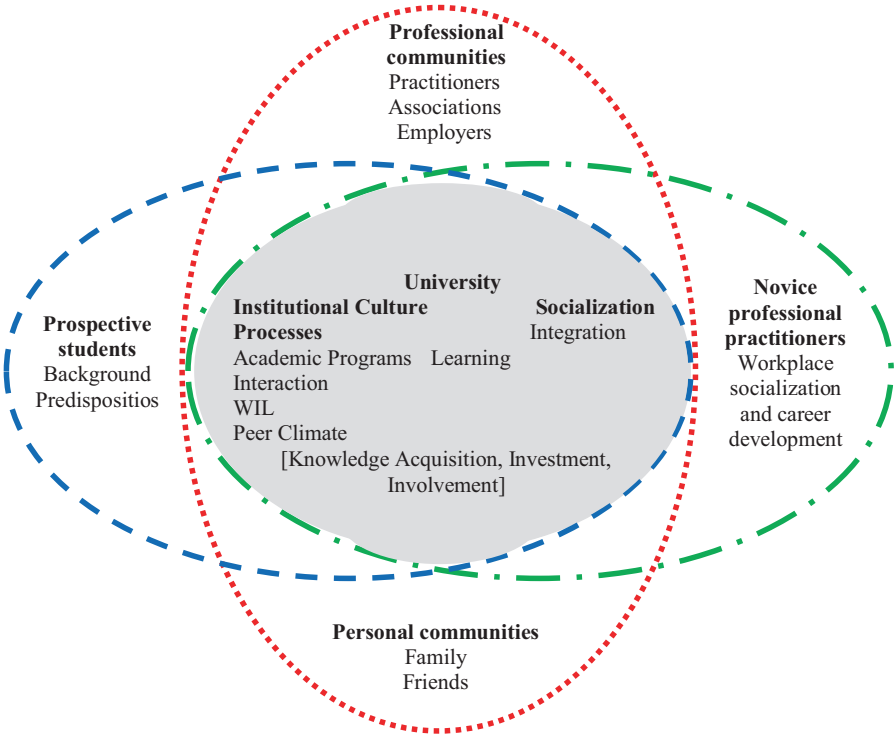

Fig. 10.2 Revision of Figure in Weidman, Twale, and Stein (2001, p. 49)

interviewees were enrolled had a mandatory WIL program (Fraser, personal communication, December 2, 2015). Furthermore, the Master of Business (International Tourism and Hospitality Management) has incorporated two internship electives, "Business Internship" and "Global Mobility Internship", since 2013 (Blackman, personal communication, December 2, 2015). Only very few students had undertaken an internship at the time of the interviews.

Two students explained that graduates who have obtained practical work experience through internships have a competitive advantage over other Chinese graduates in gaining future work in the hotel industry. SMI elaborated:

> And then when you go back to China you can say, "I really did something in Australia". So it will help you. (SMI)

Two students (SJ, SR) explained that an internship experience would help develop their communication skills. SJ explained:

> … maybe the university should pay more attention about the communication … to let the student get more real working experience not only for the theories from the textbooks. (SJ)

SSH added that an internship experience would help students develop a passion for the industry:

> One of my colleagues told me, if you want to get back to China to work, it's better for you to have some experience to get back. And then it will make you feel more valuable. And also, I think the servicing is like passion. (SSH)

Nine students mentioned that it would be an advantage for students if the university assisted them in obtaining internships. It was considered hard for Chinese international students to find internships, as they have limited capability in speaking and writing in English.

Similarly, all managers thought it was crucial for students to complete some work experience through internships during their international studies. They indicated that previous work experience played a significant role in the recruitment process. For example, it would be more cost effective because graduate employees would require less training. Furthermore, they would have a realistic idea about the industry before beginning a job. MRO explained:

> If we're talking about a bridge between finishing your degree and your first entry-level job, yes. In order to make that transition smoother, experience works. (MRO)

Similar to student SSH's comments above, manager MT argued that work experience during studies helps students develop a motivation and passion to stay in the industry. Through an internship, students can find out whether or not they are suited to a career in the tourism and hospitality industry. MT explained:

> But some students along the way, they actually do the internship or part time, they really know whether this is what they want. So if those who have passion, they will be very successful in this career because this is not an easy career. It sounds easy but it's not. So they need a lot of passion. (MT)

Two managers (MB, MD) thought it was useful that universities facilitate internship programs with hotels in China. MB explained that building partnerships between universities and hotels in China would benefit the students in their future job search:

> Working with Starwood or the big companies or Shangri-La. So your teams are or your students are aware of that or have maybe a high chance of getting into the larger companies. (MB)

Six graduates mentioned the need for an internship embedded in the curriculum. They felt that internships would give students an opportunity to learn certain areas and give them confidence. An internship on the CV would also give them an advantage in the job search. Furthermore, graduates GAB and GFY suggested that the university should help students find internships in local hotels; GAB asserted:

> [The] university could help us to find internship in hotels in Australia. (GAB).

Six academics interviewed agreed that it is important to have an internship incorporated into the tourism and hospitality curriculum. AC reported that Chinese international students in particular appreciated an internship component in the degree. Because the students found it challenging to obtain relevant work experience in Australia during studies due to language barriers, the internship component allowed them to return to China to complete their internship:

> I think they struggle getting work in Australia because of the language [barrier]. And I have had students saying, "Oh, what can we do to get a job?" It's hard for them, and that's why, with our industry hours, we allow them to work back in China where it is easy for them to get a job. (AC)

Due to this importance placed on WIL by the interviewees, it is suggested that this concept is represented in the central circle of the revised framework as an example of the socialization process (see Fig. 10.2).

Inner Circle: Professional Communities

The category "Professional communities" in Weidman et al.'s (2001) framework refers to the professional communities for which the students are preparing. It consists of practitioners and professional associations. Weidman et al. (2001) have argued that employers are not part of the academic program area but may still affect the students' experience during their enrolment and therefore, employers are placed under "Personal Communities" in Fig. 10.1. As discussed in the section above, interactions between students and employers through internship programs are important in developing students' experience in the job market and their professional socialization. Hence, it is suggested that the category "Employers" is moved from the inner circle of "Personal communities" (including parents/family and friends) to "Professional communities" in Fig. 10.2, as this category has a close relationship with practitioners and professional associations. For example, "Employers" represent the industry, where students undertake internship and graduates work after completion of their studies.

Inner Circle: Novice Professional Practitioners

While Weidman et al.'s (2001) framework represents the graduates' professional socialization through a continuous evolution of "Commitment" and "Identity", it is suggested that linear and boundaryless concepts reflect different types of commitment and professional identity. While there has been a decline in the linear career consisting of a movement upward in the hierarchy of one organisation, it is increasingly popular among employees to change positions within and across organisations. The data in the current study demonstrated this low organisational commitment in that the graduates often did not identify with one hotel or the hotel industry, as they looked for better options in other service industries, where the salary is higher.

More than half of the interviewed graduates had between one and 4 years of previous work experience within the Chinese/Australian hotel industry and in other service sectors in China and Australia after graduation. The reasons for the relatively frequent career changes mentioned by the graduates were related to their own values such as salary, prestige, and personal goals.:

> As you may know, hotel always, you know, people change very quickly. Actually, when I chose to work for that hotel because the boss was quite nice, the director of sales marketing is quite nice to me, and also the sales manager is a very good teacher to me. But both of them quit their job over last two months. And the new boss came in and I think it's different from the last one and I can't learn much from this boss. So I choose to quit the job. (GFY)

The interview data of the current study also demonstrated that all graduates had received training at their workplace, which was considered important for the returned graduates working in the Chinese hotel industry. For example, two graduates talked very positively about the training they had received from their hotels, which had helped their career development. GAB explained:

> I was really lucky. I got a lot of trainings in HR department. This hotel belongs to Hilton Worldwide Group. And I was been sending out for trainings, train the trainers training. It's a special training for our trainers. I take this training which was very helpful to become an excellent trainer. (GAB)

Seven managers mentioned that they have ongoing training for their employees at their hotels. One manager mentioned that training graduates at the beginning of their employment is necessary to familiarize them with the hotel's management system:

> And once we enroll them and we train them, that's where we provide the necessary training for our new associate[s], not only those service skills but even the system, how to use the system and how to … how should I say? Overcome the situation but this have to go over a period of time. (MC)

The revised framework has replaced "commitment and identity" with "Workplace socialization and career development," i.e., training to improve graduates' professional socialization and loyalty to the workplace.

Discussion and Conclusions

The purpose of this chapter was to revise Weidman, Twale, and Stein's (2001, p. 49) graduate and professional student socialization framework. The findings of the study demonstrated that the interviewees have clear expectations about the outcomes of WIL and workplace training.

The majority of the interviewees found it crucial to have internships embedded in degrees. The perception among the participants in the study was that an internship would provide graduates with a competitive advantage in their job search in China. In particular, they would gain both cognitive and affective attributes, such as communication skills and passion, through WIL. This finding corresponds with the hospitality management literature identified in this study which also mentions the importance of internships (Connolly & McGing, 2006; Xiao, 2006).

In particular, internships enable students to develop motivation and passion for the industry (Whitelaw et al., 2009). It was recommended that compulsory

internships be embedded in Australian tourism and hospitality degrees of the university targeted in this study. Tribe (2002) also recommended that the curriculum might become more balanced and develop "philosophic practitioners" by placing more emphasis on practice such as internships (Tribe, 2002).

Furthermore, interviewees also recommended that the university assist students in obtaining an internship either in hotels in Australia or China during their enrollment. Mackaway et al. (2014) recommend support for international students seeking internships, given their difficulties entering companies in their host country because of their low levels of confidence and lack of connections. Furthermore, universities need to assist international students develop their English language skills and awareness of the Australian workplace culture through online modules, workshops, supervision, and mentoring, to list some examples (Jackson, 2017).

Both managers and academics thought it was useful that universities facilitate internship programs with hotels in China as it would benefit the students in their job search. Patrick et al. (2008) agreed that an alternative to an international student's placement in their host country is to identify a suitable internship in their home country. However, helping international students finding internships in their home country may require extra resources of universities and special placement agreements that are compliant with international laws (Patrick et al., 2008).

Finally, graduates and managers considered workplace training important for the returned graduates working in the Chinese hotel industry, in that it helps them understand the system and it improves their career development. Furthermore, individuals often no longer stay in the same organisation during their whole working life and people more and more shift positions within and across organisations (Arthur, 1994; Eby et al., 2003). Therefore, Gu et al. (2006) have argued that employee productivity and loyalty to the workplace can be enhanced through training at the workplace since the employees see the employer as investing in their future.

By revising the Weidman et al. (2001) professional socialization framework through the findings of the study (Sonnenschein, 2016), the current chapter suggests different processes for enhancing the socialization and career development of Chinese international students enrolled in and graduates with an Australian tourism and hospitality management degree through WIL and workplace training respectively. The chapter provides a theoretical and empirical base for further discussion of important questions related to professional socialization processes, and the role of universities and industries in preparing all students/graduates for employment and career development in a global world. The revised framework helps understand the professional socialization of students/graduates in culturally diverse contexts. Given increasing globalisation, future research could test the revised framework among various samples of international students and different programs, other countries, and other industries. For example, professional socialization of international tourism and hospitality students from other countries and continents could be examined. Programs other than tourism and hospitality could also be considered for further studies. Such research would help diminish the gap between what educational institutions offer and the needs of the industry, both domestically and internationally.

References

Arthur, M. B. (1994). The boundaryless career: A new perspective for organizational inquiry. *Journal of Organizational Behavior, 15*(4), 295–306.

Australian Government Department of Education and Training. (2016). *Chinese student enrolments in hospitality and tourism*. Raw data. Retrieved from unpublished raw data.

Bragg, A. K. (1976). *The socialization process in higher education* (ERIC/AAHE Research Report, No. 7). Washington, DC: American Association for Higher Education.

Brousseau, K. R., Driver, M. J., Eneroth, K., & Larson, R. (1996). Career pandemonium: Realigning organizations and individuals. *The Academy of Management Executive, 10*(4), 52–66.

Brown, E. A., Thomas, N. J., & Bosselman, R. H. (2015). Are they leaving or staying: A qualitative analysis of turnover issues for Generation Y hospitality employees with a hospitality education. *International Journal of Hospitality Management, 46*, 130–137.

Chang, S., & Tse, E. C.-Y. (2015). Understanding the initial career decisions of hospitality graduates in Hong Kong quantitative and qualitative evidence. *Journal of Hospitality & Tourism Research, 39*(1), 57–74.

Chi, C. G., & Gursoy, D. (2009). How to help your graduates secure better jobs? An industry perspective. *International Journal of Contemporary Hospitality Management, 21*(3), 308–322. https://doi.org/10.1108/09596110910948314

Connolly, P., & McGing, G. (2006). Graduate education and hospitality management in Ireland. *International Journal of Contemporary Hospitality Management, 18*(1), 50–59.

Crebert, G., Bates, M., Bell, B., Patrick, C. J., & Cragnolini, V. (2004). Developing generic skills at university, during work placement and in employment: Graduates' perceptions. *Higher Education Research & Development, 23*(2), 147–165.

Department of Education and Training. (2015). *Research snapshot, International student enrolments by nationality in 2014*. Retrieved from https://internationaleducation.gov.au/research/Research-Snapshots/Documents/Enrolments%20by%20Nationality%202014.pdf.

Department of Education and Training. (2017). *International student data, monthly summary*. Retrieved 4 February 2018, 2018, from https://internationaleducation.gov.au/research/international-student-data/pages/default.aspx

Eby, L. T., Butts, M., & Lockwood, A. (2003). Predictors of success in the era of the boundaryless career. *Journal of Organizational Behavior, 24*(6), 689–708.

Gu, H., Kavanaugh, R. R., Yu, C., & Torres, E. N. (2006). Human resources management in China's hotel industry. *China Tourism Research, 2*(3), 209–245.

Holley, K. A., & Taylor, B. J. (2009). Undergraduate student socialization and learning in an online professional curriculum. *Innovative Higher Education, 33*(4), 257–269.

Hollis, C. J. (2012). *Exploring international internships in social work education.* Master thesis, California State University, Chico, California.

Jackson, D. (2017). Exploring the challenges experienced by international students during work-integrated learning in Australia. *Asia Pacific Journal of Education, 37*, 344–359.

Johnson-Bailey, J., Valentine, T., Cervero, R. M., & Bowles, T. A. (2009). Rooted in the soil: The social experiences of black graduate students at a Southern Research University. *The Journal of Higher Education, 80*(2), 178–203. https://doi.org/10.1353/jhe.0.0040

Li, W., & Collins, C. S. (2014). Chinese doctoral student socialization in the United States: A qualitative study. *FIRE: Forum for International Research in Education, 1*(2), 3.

Mackaway, J., Winchester-Seeto, T., & Carter, L. (2014). *Work-integrated learning and the'inclusive'challenge of preparing a diverse student cohort for the world beyond the academy.* Paper presented at the HERDSA conference 2014, Higher Education in a Globalised World, Hong Kong, Baptist University.

McCabe, V. (2001). Career paths and labour mobility in the conventions and exhibitions industry in eastern Australia: Results from a preliminary study. *International Journal of Tourism Research, 3*(6), 493–499.

Mutereko, S., & Wedekind, V. (2015). Work integrated learning for engineering qualifications: A spanner in the works? *Journal of Education and Work, 29*(8), 1–20.

Office of Planning and Financial Services, Griffith University. (2015). *International students at Griffith University*. Retrieved from: Unpublished raw data.

Page, G. (2004). *Professional socialization of valuers: What the literature says.* In Paper presented at the Pacific Rim Real Estate Society conference, Bangkok, Thailand.

Patrick, C.-J., Peach, D., Pocknee, C., Webb, F., Fletcher, M., & Pretto, G. (2008). *The WIL (Work Integrated Learning) report: A national scoping study [final report]*: Queensland University of Technology.

Smith, C. (2012). Evaluating the quality of work-integrated learning curricula: A comprehensive framework. *Higher Education Research & Development, 31*(2), 247–262.

Sonnenschein, K. B. (2016). *Diverse stakeholders' perceptions of the attributes needed by Chinese returned graduates in the hotel industry in China.* Dissertation/Thesis, Griffith University, Australia.

Stein, E. L., & Weidman, J. C. (1989, 2–5 November). *Socialization in graduate school: A conceptual framework*. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, Atlanta, GA.

Strauss, A. L., & Corbin, J. M. (1990). *Basics of qualitative research* (Vol. 15). Newbury Park: Sage.

Strauss, A. L., & Corbin, J. M. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage Publications.

The Economist. (2015, February). Georgia on their mind.

Thornton, R., & Nardi, P. M. (1975). The dynamics of role acquisition. *The American Journal of Sociology, 80*(4), 870–885. https://doi.org/10.1086/225897

Tribe, J. (2002). The philosophic practitioner. *Annals of Tourism Research, 29*(2), 338–357.

Twale, D. J., Weidman, J. C., & Bethea, K. (2016). Conceptualizing socialization of graduate students of color: Revisiting the Weidman-Twale-Stein framework. *The Western Journal of Black Studies, 40*(2), 80–94.

Wardle, K. (2014). An assessment of Work Integrated Learning (WIL) in hospitality tertiary education. In *PhD thesis*. Australia: University of Western Sydney.

Weidman, J. C. (1989). The world of Higher Education: A socialization – theoretical perspective. In K. Hurrelmann & U. Engel (Eds.), *The social world of adolescents* (pp. 87–105). Berlin: Walter de Gruyter.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Fransisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Whitelaw, P., Barron, P., Buultjens, J., Cairncross, G., & Davidson, M. (2009). *Training needs for the hospitality industry. from* http://www.sustainabletourismonline.com/awms/Upload/Resource/80093%20%20Training%20Needs%20WEB.pdf

Wong, S. C., & Liu, G. J. (2010). Will parental influences affect career choice?: Evidence from hospitality and tourism management students in China. *International Journal of Contemporary Hospitality Management, 22*(1), 82–102.

Xiao, H. (2006). The discourse of power: Deng Xiaoping and tourism development in China. *Tourism Management, 27*(5), 803–814.

Zhang, H., & Wu, E. (2004). Human resources issues facing the hotel and travel industry in China. *International Journal of Contemporary Hospitality Management, 16*(7), 424–428. https://doi.org/10.1108/09596110410559122

Chapter 11
Understanding Graduate Student Socialization in China: A Theoretical Framework

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Although the modern doctoral education system was not established in China until the late 1970s, the title "Doctor," *Bo-Shi* (博士) in Chinese, has a long history since the "Warring State Period" (B.C. 403–B.C. 221). It was first used as the title of a government officer responsible for the preservation of documents and archives, compilation of writings, and consultation to the emperor. Only people who were noble, erudite and well informed could be offered the title. In the Han Dynasty (B.C. 202–A.D. 8), the "*Bo-Shi*" were officers who taught Confucian classics. It was in the Tang Dynasty (A.D. 618–A.D. 907) when "*Bo-Shi*" started to be used for people who were proficient in a certain profession. When western missionaries started to establish modern universities in China in the late nineteenth Century, "*Bo-Shi*" was used as the Chinese equivalent to "doctor," more specifically, "Doctor of Philosophy" in the western system, referring particularly to people who were not only a master of existing knowledge in a specific field, but also able to make contributions to the field through original research on new knowledge.

The rapid development of technology in the twenty-first century increased the demand of high-level innovative professionals globally. Experiencing a transition from a resource and labor-intensive economy development model to a technology and intelligence-intensive model, China places more and more emphasis on higher education to cultivate talents with deep knowledge, high level innovative skills, and upright personalities to contribute to the economy, society, and technology develop-

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ment. Doctoral education, designed to prepare future scientists and scholars, takes the responsibility of innovative talent cultivation as its primary obligation. In response to social and economic demand, the scale of doctoral education in China expanded dramatically from 39,927 in 1999 to 361,997 in 2017, becoming the largest doctoral education system in the world. Figure 11.1 presents the growth in the recruitment of doctoral students and numbers of degrees awarded from 1982 to 2017, showing rapid growth since the mid-1990s, when the Chinese economy began developing dramatically.

As the enrollment of doctoral students increased, more and more doctoral graduates entered non-academic professional settings such as governments or enterprises (Hou & Ni, 2017; Shen, Wang, & Zhao, 2015; S. Zhao, 2009). In Tsinghua University, an elite research university in China, only 57.7% of doctoral graduates from 2005 to 2015 worked in an academic profession (i.e., being a post-doctoral researcher or faculty member in universities or research institutes) (Hu, Jin, Lin, & Wang, 2017). Such a change in doctoral graduate employment destination is a global trend. It is, on one hand, the result of the mis-match between the expansion of doctoral education and the saturated job market in academia (J. Gu & Luo, 2013; Z. Xu & Niu, 2017). On the other hand, this suggests that the value of doctorates has begun to be appreciated outside academia. As advocated in the Oxford Statement by the UK Council for Graduate Education,

> *As creators of new knowledge, new insights and new approaches, doctoral award holders are highly intelligent, highly skilled and extremely versatile. It is recognised that such individuals can successfully enter a broad range of careers. Doctorate holders make a substantial contribution to the skilled workforce essential for the knowledge economies of the 21st century; this should be fully recognised and communicated widely.* (UK Council for Graduate Education, 2015)

The traditional belief that a successful doctoral graduate should work in academia no longer holds. According to a comparative analysis of the American, European, and East Asian systems, a prominent global change of doctoral education

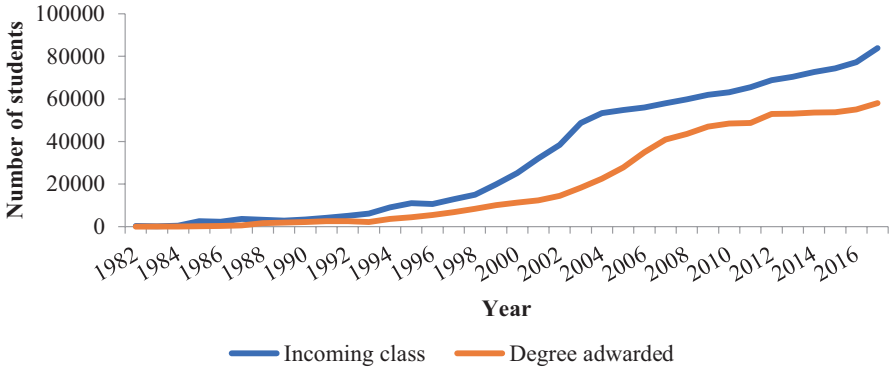

Fig. 11.1 Expansion of doctoral education in China. (Data source: Annual reports on graduate education in China of 2014 and 2016, and the education statistics in 2017 by MoE. http://www.moe.gov.cn/s78/A03/moe_560/jytjsj_2017/qg/201808/t20180808_344684.html. Retrieved on May, 4th, 2019)

is the shift of the education goal from preparing scholars to training elites in every sector (Chuanyi Wang & Zhao, 2017).

How could the originally academically-oriented doctoral programs support student development in both academic and non-academic sectors? The Oxford Statement suggests that the key is to combine "research and transferable skills training and ensure flexibility for individual candidates" (UK Council for Graduate Education, 2015). In fact, top research universities world-wide already include development of transferrable skills, such as independent thinking, proactive learning, self-planning, and effective communication and collaboration, as goals of their doctoral education (Zhong & Cai, 2015).

From the perspective of doctoral student socialization, this means that the goal for doctoral training is not just to help students be socialized into the academic community, but to a broader community of scientists, researchers and scholars who work in different sectors but all conduct original scientific and innovative research. It is necessary to understand what stands for the quality of such a group of people and what the ethics and codes valued by these people are before we discuss how to help doctoral students succeed.

Adding complexity to understanding doctoral student development in China, the Chinese education system has its own unique features shaped by the Chinese culture. For instance, the strong emphasis on education, the deep respect for teachers, and the Confucian code of ethics make the culture and environment on Chinese campuses different from western universities. Therefore, though the graduate student socialization model proposed by Weidman, Twale & Stein (2001) provides a great starting point to understand doctoral student development, it needs to be tailored for the Chinese context to be more explanatory in understanding doctoral students in Chinese universities.

The current literature on Chinese doctoral education quality and student development consists of mostly descriptive, analytical, and argumentative papers on the situation, problems, and possible strategies to address problems. In recent years, there has been an increasing number of empirical studies on factors influencing student outcomes with respect to the quality of doctoral dissertation, research abilities, publications, employment, and satisfaction with qualitative and quantitative research methods (e.g. J. Gu & Luo, 2016; Y. Gu, 2017; Lin, 2012; Qing, 2017; C. Xu, 2010; X. Yin & Gao, 2014; Yuan & Yan, 2009; S. Zhao, Shen, & Zhang, 2010). Some other empirical studies explored the process of education, focusing mostly on the role of academic advisor and the interaction between student and advisor (e.g. Fan & Shen, 2013; Shen, Gao, & Zhao, 2017; Caihong Wang, 2009; Yao, Chen, Li, & Bi, 2014; Zhang, Sun, Bian, & Hang, 2009), and some on the process of research training (e.g. Peng, 2010; K. Yin, Sun, Xing, & Yang, 2016; X. Zhao, 2015). These empirical studies, though mostly based on a single or small number of universities, provide useful materials for understanding what is happening in Chinese doctoral education. However, most studies lack a guiding theoretical framework. Some used the college impact theories by Astin (1984), Pascarella and Terenzini (2005), and Kuh (2001), but these models are designed mainly for undergraduate students (e.g., Cheng & Li, 2016).

There are also studies from the perspective of academic professionalization and socialization. Some introduced socialization theories such as the Weidman, et al. (2001) model (Zheng, 2014). Some explored cases in the western countries (L. Guo & Wu, 2013; Huang & Wang, 2017; Y. Wang, 2018). Some discussed aspects of socialization such as identity, commitment, and adaptability (Bao, Du, & Ma, 2017; F. Guo, Kang, & Shi, 2018; H. Zhang, 2016). Some investigated the socialization process of Chinese doctoral students in specific fields or universities (Bian, 2012; Guan, 2015; X. Zhao, 2015). These are the initial attempts to understand Chinese doctoral student socialization. Yet, as pointed out by a recent review on Chinese studies on this topic, there is a lack of adaptation of this concept into the Chinese culture and context (Y. Guo, 2018).

In this chapter, we propose a conceptual framework to understand Chinese doctoral student socialization into the broader community of scientists, researchers and scholars (hereafter referred to as "the broader scholars' community" for simplicity) as an expansion of the Weidman, et al. (2001) model. We first summarize the desired outcomes of successful doctoral students with an analysis of official regulations on doctorate qualification. We then discuss the unique features of Chinese doctoral education to depict the context where socialization happens, followed by presenting our proposed framework. We conclude the chapter with a discussion the features and limitations of the framework, as compared to the Weidman, et al. (2001) model.

Desired Outcomes of Chinese Doctoral Education

What defines a successful doctoral student in China? Completing a high-quality dissertation is the basic requirement. Yet this is just an output representing a doctoral candidate's research ability. According to the Weidman, et al. (2001) model, there are three socialization outcomes of doctoral students: knowledge, skills, and dispositions. In the Chinese context, what are the requirements with respect to these three aspects? This chapter provides an answer to this question based on an analysis of the official requirements for doctorates from the Chinese central government.

The Office of the State Council Academic Degrees Committee (run by the Department of Degree Management and Postgraduate Education of the MoE; hereafter referred to as SCADC) sets up general requirement for doctorates in Article 6 of *The Regulations of the People's Republic of China on Academic Degrees* (referred to hereafter as the Degree Regulations)[1]:

> *Article 6. Doctoral degrees shall be conferred to postgraduates of institutions of higher education and scientific research institutions, or to personnel with the same educational level as graduate students, who have successfully passed the course examinations and the*

[1] Issued on February 12th, 1980, revised in 2004. Retrieved from http://www.moe.gov.cn/s78/A02/zfs_left/s5911/moe_619/tnull_1315.html on 7 May 2019 (originally in Chinese, translated by the authors).

dissertation defense for doctoral degrees, and attained the following academic achievements:

1. *Mastered solid and broad basic theories and systematic and in-depth expertise in the subject;*
2. *Proved the ability to engage in scientific research independently;*
3. *Made innovative achievements in sciences or technologies.*

These general requirements lay out three basic criteria to earn a doctorate in China: solid and in-depth knowledge, independent research ability, and innovative contribution to the field. At the first glance, it seems that the Degree Regulations concentrate only on knowledge and ability, but do not set up any requirement on academic ethics. Yet in a newly issued official document, the *Basic Requirements for Doctoral and Master's Degrees in First-level Disciplines* (The Sixth Discipline Review Group of the Academic Degrees Committee of the State Council, 2014), the SCADC lays out more detailed requirements for doctorates in each first-level discipline. The academic disciplines in Chinese higher education are regulated by the MoE in the Academic Degree Awarding and Personnel Training Discipline Catalogue. There are 13 general categories, 110 first-level disciplines under all the categories, and several second-level disciplines under each first-level discipline. For example, Mathematics is a first-level discipline under the category of Sciences, and it consists of five second-level disciplines such as Basic mathematics, Computational mathematics, etc.

For each first-level discipline, the Degree Requirements articulate the expectations and requirements for doctorates in four chapters: (1) disciplinary knowledge, (2) academic literacy and ethics, (3) academic and research skills, and (4) doctoral dissertation. Specific requirements for each discipline are set up by a review committee consisting of outstanding scholars and experts in the particular discipline from different universities. Therefore, the requirements reflect the attributes of a qualified doctorate that are appreciated by the academic community in this discipline.

With an aim to achieve a general understanding of the expectations for doctorates from academic communities, we applied a text mining technique to analyze the requirements of the 110 first-level disciplines. First, we identified 3551 meaningful Chinese phrases (usually with 3–4 Chinese characters) from about 10,500 paragraphs. The frequency of the phrases ranged from 1 to 684. One hundred twenty-three phrases with frequency higher or equal to 25 were maintained. Then we deleted phrases with no substantive meaning such as "doctorate," "development trend," "furthermore" and phrases referring to specific disciplines such as "sciences," "engineering technology," and "social science," and combined phrases with the same meaning such as "innovation" and "innovative." Finally, 74 phrases were maintained and translated to English to generate a word cloud as shown in Fig. 11.2.

As shown in Fig. 11.2, the Top 5 most frequently mentioned phrases in degree requirements for doctorates in different disciplines are, in a descending order of the frequency: Innovation (f = 1042),[2] Academic/scientific research (f = 469), Research

[2] "f": frequency.

(Note: The size of the phrase represents its frequency.)

Fig. 11.2 Word cloud from text-mining of the *degree requirements* for doctorates

outputs (f = 552), Research method (f = 443), and Disciplinary knowledge (f = 393). It shows that doctoral education in China places much emphasis on innovative research and research outputs. It also emphasizes research method and disciplinary knowledge, which are two pivotal foundations for a qualified researcher.

Other frequently mentioned phrases include: Academic communication (f = 376), Fundamental theories (f = 343), Academic frontiers (f = 291), Domestic & international (f = 219), Proficiency (f = 210), Fundamental knowledge (f = 198), Judgement (f = 178), Reference (f = 148), Academic insights (f = 145), Intellectual property rights (f = 141), Academic papers (f = 138), Problem-solving (f = 138), Academic norms (f = 130), and High level (f = 103). These top 20 phrases cover all aspects of the socialization outcomes and draw a brief portrait of a qualified doctoral degree holder who is welcomed to the general scholars' community: an innovative researcher who has (deep) disciplinary and fundamental knowledge and (sharp) academic insights and judgement ability, is proficient in research methods and problem-solving skills, conducts high-level academic research at the frontiers, follows academic norms and protects intellectual property rights, and participates actively in domestic and international academic communications.

Second, we narrowed down our analysis to the chapters on academic literacy and ethics and chapters on academic and research skills for the 110 first-level disciplines, because the first chapters, i.e. the requirements for knowledge, are discipline-specific, and the fourth chapters, i.e. the requirements for the doctoral dissertation, are only related to one type of doctoral candidates' academic products. There are 5507 paragraphs in these two chapters of the 110 disciplines. We first analyzed the subtitles and found 7 common themes that appeared more than 100 times: Academic literacy, Academic ethics, Knowledge acquisition capability, Academic judgement capability, Scientific research ability, Academic innovation ability, and Academic communication skills. To better understand the connotation of the 7 themes, we

further analyzed the texts under each subtitle and generated 7 word clouds with phrases that appeared more than 3 times, as shown in Fig. 11.3.

As shown in Fig. 11.3, the word cloud for Academic Literacy, describing the overall expectation of a scholar, shares most key phrases with that for the whole text analysis as shown in Fig. 11.2. What pops up in Fig. 11.3a are Scientific spirit (f = 56), Sense of responsibility (f = 36) and Strong interest (f = 61). These phrases are the key elements of academic/scientific aspiration. Sense of responsibility is also a key word in Fig. 11.3b for Academic ethics. This suggests that a qualified

Fig. 11.3 Word cloud from text-mining of the 2nd & 3rd part of the *degree requirements* for doctorates (**a**) Academic literacy (**b**) Academic ethics (**c**) Scientific research ability (**d**) Academic innovation ability (**e**) Academic judgement capability (**f**) Knowledge acquisition capability (**g**) Academic communication skills

novice scholar not only needs to have professional knowledge and ability to conduct academic research and follow academic norms, but is also expected to have a high spirit for and strong commitment to scientific research.

Figure 11.3b further displays the virtues emphasized in the theme of Academic ethics. Obeying the Codes of academic ethics (f = 77) is the most frequently mentioned phrase. In the other 33 disciplines which do not exactly use the same phrase, most have either phrases with the same meaning such as Academic ethics, Academic codes, and Professional ethics, or more detailed aspects of academic ethics. This implies that obeying the codes is a general and universal requirement for doctoral degree holders in all disciplines. The next most frequently mentioned phrase is Intellectual property rights (f = 62), showing again the emphasis on protecting intellectual property rights as one of the most important academic ethics in academia.

The other frequently mentioned virtues are Seeking truth from facts (f = 37), Law-abiding (f = 28), Sense of responsibility (f = 25), and Laws and regulations (f = 21). Seeking truth from facts is a Chinese idiom which stresses authenticity and evidence. This is not only a code of academic ethics for scholars but also a virtue valued by the society. Similarly, sense of responsibility is also a social moral virtue. The other two phrases relate to abiding by laws and regulations, which is a basic quality of citizens. Putting together, it suggests that academic ethics in Chinese doctoral education have two main components: ethics related to academic research work, and ethics that are valued by the society.

Figure 11.3c–e presents the phrases under the themes of Scientific research ability, Academic innovation ability and Academic judgement capability, respectively. Figure 11.3f, g show the phrases under the themes of Knowledge acquisition capability and Academic communication skills. These figures show that, beside abilities directly related to research such as skills to write research grant proposals, the academia also stresses abilities valued by other fields. Such transferable skills include, for instance, innovative ability, problem-solving ability, critical and independent thinking ability, organization and coordination ability, information retrieval ability, language ability, and judgement.

To sum up, from the analysis of the official requirements on doctoral candidates, we find four aspects of doctoral education outcomes stressed by scholars' communities in China: disciplinary knowledge (including fundamental theories and field-specific knowledge), research and transferable skills, academic dispositions (including scientific spirits and interests), **and** ethics (including academic ethics and codes and socially valued moral virtues). In previous socialization models such as the Weidman, et al. (2001) model, ethics is included in dispositions. We distinguish these two concepts to emphasize the importance attached to moral education in Chinese doctoral education. As shown in Fig. 11.4, the four categories of socialization outcomes suggest three simultaneous development processes for Chinese doctoral students: academic professionalization with regard to knowledge learning and skills training, scholarly socialization with regard to familiarity with the conventions and culture of the scholars' community along with attitudes and commitment to scientific work, and moral cultivation with regard to the development of academic

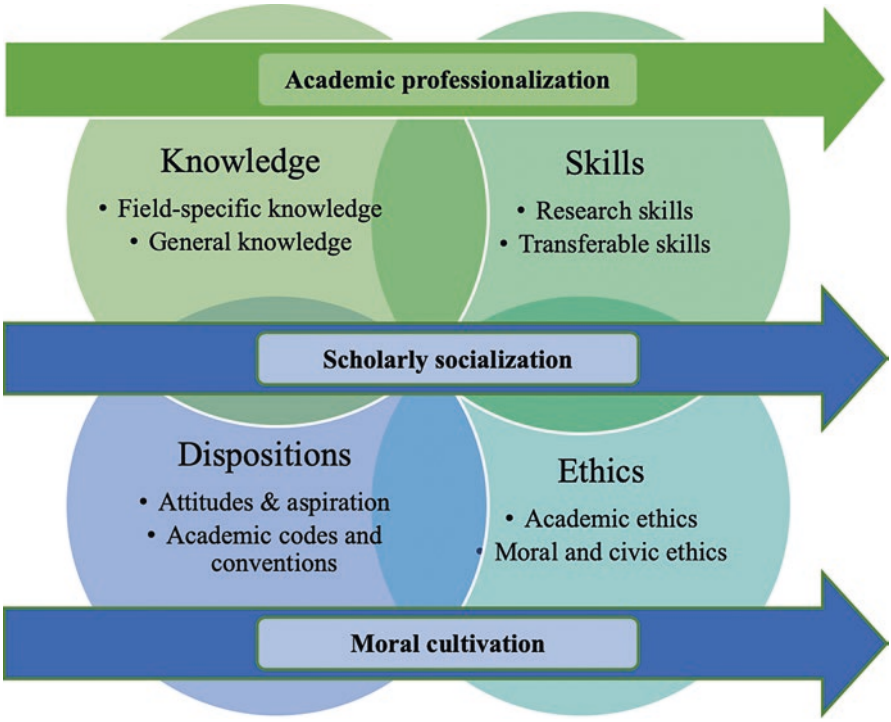

Fig. 11.4 Socialization outcomes in Chinese doctoral education

ethics, moral ethics, and citizenship. Through these three processes, Chinese doctoral students gain access to the broader scholar's world.

Features of Doctoral Education in China

To understand how doctoral students develop the desired outcomes, we need to first understand the environment where learning and development happens. Borrowing from the Western model, the current doctoral education in China shares many common characteristics with Western countries, particularly the United States. Typical doctoral programs in China consist of course taking and supervised research. Academic advisors play the most important role in training doctoral students. The assignment of advisor is usually done at the recruitment process or no later than the beginning of a doctoral program. For students, there are three milestones on the road to a doctorate: First, finish the required coursework in one or no more than 2 years. Most programs require students to pass a qualification exam after coursework. Second, choose a research topic for doctoral dissertation and present the proposal to an examination committee at least 1 year before the intended date of

dissertation defense. Finally, complete and defend the dissertation. Most programs also include academic publication as part of the degree requirements.

Yet, imbedded in the Chinese culture and social context, doctoral education in China also has its unique features. Based on previous studies on Chinese doctoral education and the influential factors on quality and outcomes, we identified four prominent features of Chinese doctoral education.

A Young Student Body

The first feature of Chinese doctoral education is that the majority of doctoral students are very young. Though lacking national statistics, empirical studies in different disciplines, institutions, and regions show that at least 60% of doctoral students are under the age of 30. Many apply to doctoral programs straightly after completing the master's or even the bachelor's degree (Ji, 2008; Peng, 2010; F. Wang, 2009; Z. Xu, 2018). There are some cultural reasons behind the young age. First, as mentioned previously, the title of "*Bo-Shi*" represents a great master of knowledge and virtue in ancient times and an owner of the highest education degree today. People with such a title have always been respected by others in the Chinese society which has a long tradition of emphasis on education. According to an empirical study of 1906 doctoral students in science and engineering in 35 Chinese higher education institutions, 38.7% of the sample admitted that the desire or dream to earn a doctorate was one of their main reasons for enrolling in a doctoral program (Z. Xu, 2018). Also because of the emphasis on education and the culture of collectivism, one's education success is seen as the glory of a whole community beyond the individual (Kember, 2000). Families are proud of their children's admission to doctoral programs and willing to provide full support to their education. Relying on family support as well as national and institutional scholarships, most Chinese doctoral students are able to finish their education with little financial burden.

The advantage of being young as a doctoral student is the continuity of education. Assuming the identity of student for years, young doctoral students keep good learning habits, have a good memory of fundamental knowledge, and are familiar with the university environment. However, the downside of spending most of one's life on campus and lack of social experience is also obvious. For one thing, many of the students are not motived to do scientific research. According to Z. Xu's (2018) study, only 12% of the sample claimed that they pursued doctoral education purely because of the interest in scientific research, while 42.5% admitted that their pursuit of doctoral degrees was only driven by extrinsic motives such as improving competitiveness in the labor market, the desire of doctorates, avoiding employment, etc. The problem also exists in top research universities. F. Guo, Kang, and Shi (2018) found that about 30% of the beginning doctoral students in Tsinghua University pursued the advanced degree just as "inertia" to continue studying. The low self-motivation may impede student development in doctoral study. Z. Xu (2018) found that students who were motived by extrinsic factors faced a higher level of

pressure and anxiety during study and showed a lower level of academic ability than those with genuine interest in research.

Under the protection of parents and schools for a long time, many doctoral students, though already adults, are not psychologically and emotionally mature. Doctoral training is a long and arduous journey. Students may face pressures both from study and research and from daily life such as interpersonal relationships, future development, etc. Without the capability to cope with pressures and difficulties, students may become diffident and depressed (Cui & Zhao, 2012; X. Wang, 2008). In recent years, as more extreme events (e.g., aggressive behaviors, suicide, etc.) caused by psychological problems have happened among doctoral students, helping young doctoral students to deal with pressures and promote their psychological and mental maturity has become one of the important issues of doctoral education in China (X. Wang, 2008).

An Emphasis on Moral Education

The second and related feature of Chinese doctoral education is the emphasis on moral education to cultivate upright and positive personalities, moral ethics, and the sense of social responsibility. In the "Double World-Class Construction" project, China's recent national strategic effort in developing higher education, the effort to "Strengthen Moral Education and Cultivate Talents" (立德树人) has been placed at the core of higher education. Such an emphasis also reflects the traditional Chinese culture of education. It is stated in the Confucian classics that the primary aim of education is to cultivate moral virtues and then to spread knowledge. It is widely accepted that learning to be a morally noble person is the basis of learning to be a knowledgeable scholar (为学先为人). It is well recognized that there is a virtue-oriented learning model in China which appreciates merits such as dedication, diligence, hard work, and persistence of learners instead of intelligence as emphasized in the mind-oriented model in most Western countries (J. Li, 2005).

At the doctoral level, the focus of moral education is reflected by the emphasis on academic ethics, social responsibility, and other moral virtues, which is not only listed as part of the SCADC's degree requirements, but also integrated into the whole process of doctoral training. Courses in ideology, such as *Marxism, Dialectics of Nature,* etc., and courses or workshops on academic ethics are required in every doctoral program, regardless of institutions and disciplines. Advisors and programs are responsible for the development of moral and academic ethics of doctoral students. The MoE and institutions have set up increasingly strict regulations on academic misconduct. In addition, each university has its own spirit and institutional culture that also play an important role. For instance, the university spirit of Tsinghua University is "Action speaks louder than words," the university motto is "Self-improvement and Social commitment," and the academic spirit is "preciseness, diligence, seeking the truth, and innovation." The university organizes many institutional-level activities to stress and reinforce faculty and students' understand-

ing of these spirits and mottoes. This gradually shapes its faculty's and students,' including doctoral students,' moral ethics and value orientations. Such personal virtues are found to be important to doctoral student dissertation success (Ma, et al., 2014).

A "Shi-men" Community Characterized by the Chinese "Guan-xi"

The third feature of doctoral education in China is tailored by the Chinese culture of "Guan-xi" (关系), the Chinese style of coping with interpersonal relationships. Compared to individualism in western countries, Chinese culture is characterized as relationalism (Z. Li, 2014, pp. 24–25). Previous studies suggest that the behaviors of Chinese people could be better understood when considering interpersonal relations as the basis and core point (Hsu, 1972; Zhai, 1993). The most salient relationship in education is the teacher-student relationship. In ancient China, the teacher-student relationship represented a moral-ethical relationship in a society with strict hierarchy and the concepts of superiority and inferiority under the influence of Confucianism and Legalism (Zhou, 2007). Teachers were considered as the elders or the parents in one's family, and an authority not only in knowledge but also in moral behavior. Students were in a humble status and required to respect and obey their teachers as well as avoiding direct conflict with them (Hwang, 1997). In modern times, though the relationship between faculty and students has become more and more equal, the idea that teachers are authorities and students need to show respects to teachers is still dominant and considered as a virtue in Chinese culture. These ideas shape the relationship between doctoral students and their advisors.

Another important relationship in Chinese postgraduate education is the relationship between peer students, especially between students with the same advisor. With the advisor being considered to be the parent, the students are all considered to be siblings in a big family. Such a community between advisor and students is called "*Shi-men*" (师门) in Chinese. Students in the same "*Shi-men*" are naturally closer to each other than those outside the "*Shi-men*". They meet with each other on a regular basis, formally and informally. Senior students are considered as the big brothers or sisters, and are expected to take care of and provide guidance to junior students. In most cases, a "*Shi-men*" is also a research team, as post-graduate students are usually required to participate in research projects supervised by the advisor. This provides students with more opportunities to interact with and learn from each other. Therefore, the "*Shi-men*" is considered as the primary and initial academic community where the socialization of doctoral students takes place (Yan, 2013).

Previous empirical studies provide evidence on the impact of advisor and the "Shi-men" on doctoral students. Positive correlations are found between advisor-

student academic interaction and student self-reported improvement in academic knowledge and skills (W. Li, 2015) as well as research productivity (Fan & Shen, 2013; Lin, 2012; Ma, Ren, Wang, & Zhao, 2014). With regard to the outcomes of scholarly socialization, F. Guo, Kang, and Shi (2018) found that advisors' scholarship guidance helped to maintain students' positive self-assessment of skill level and social integration, and improve their research aspirations.

As the core of this small community, the advisor's personality, academic ability, and working style greatly influence the culture, organization, and productivity of the *"Shi-men"* and the students (H. Liu & Peng, 2005). For instance, Song and Mei (2012) found that both the "intensive collaboration + strong authoritative guidance" mode of interaction between advisor and students and the "intensive collaboration + respect and understanding of students' perspectives" mode helped to facilitate the development of research and innovative ability, and improved the quality of dissertations. Yin and his colleagues (2016) found that supervisors' inclusive leadership and the error management climate in the research team would enhance the students' research creativity. The *"Shi-men*" or research teams of supervisors who are more open to students' opinions and can tolerate students' mistakes and failures tend to have a more positive culture of error management. Such teams are better at learning from mistakes and failures, helping students grow from them, and encouraging students to undertake adventures in scientific research. It is found that such a positive attitude of the supervisor and climate in the "Shi-men" are correlated with higher creativity of students (K. Yin et al., 2016).

A Publication-Based Quality Evaluation Orientation

The fourth significant characteristic of Chinese doctoral education is the great emphasis on academic products as an indicator of program and learning quality. Such an emphasis on publications, patents, competitive grants, and academic awards in scientific evaluation is prevalent in the current Chinese academia. To earn the doctorate, students are required to publish a certain number of academic papers in addition to completing the dissertation. This evaluation orientation makes the faculty and doctoral students concentrate more on research than other activities, including course taking. In many doctoral programs, the coursework could be finished in about a year and a not small proportion of the courses are ideology courses and English language courses (H. Wang, 2006). For many students, the actual learning of field-specific knowledge happens while conducting research.

Most doctoral students are engaged intensively in research projects. There are studies showing that doctoral students are the major contributors to Chinese academic publications. For instance, a study on publications in top Chinese social sciences journals found that 24% of the papers published during 2005–2006 were contributed by doctoral students (China Doctoral Education Quality Research Group, 2010). Another study showed that 40.9% of the first authors of academic publications in top Chinese journals during 2013–2014 were postgraduate students

(Yuan, Wang, & Wu, 2015). For English publication, one study showed that 52.86% of the first authors of ESI Hot Papers[3] published in 2011–2012 by China scholars were postgraduates (Yuan, Wang, Hu, & Feng, 2014).

Such a publication-oriented culture in Chinese doctoral programs is a double-edged sword. On one hand, it pushes doctoral students to get actively involved in research activities and therefore facilitates the development of research skills and promotes familiarity with the academia (Zeng, Luo, & Shen, 2016). On the other hand, it breeds a tendency towards utilitarianism, which prevents students from more in-depth engagement in research projects that require significant investment of time and intelligence (Q. Liu, 2009). Though the Chinese government and MoE have been aware of the problems brought by publication-oriented academic evaluations and introduced relevant policies recently, such a culture may not be changed in a short time.

To summarize, current doctoral education in China has four significant features: a relatively young student body, a national emphasis on moral education, a special "Shi-men" community, and a publication-based quality evaluation orientation. These features are shaped by the traditional and contemporary Chinese culture, and jointly form a unique environment for doctoral student development and socialization in Chinese universities.

Doctoral Student Socialization in Chinese Universities

Based on the foregoing discussion on the context and desired socialization outcomes of Chinese doctoral educations, we propose a theoretical framework to describe the socialization process of doctoral students in China. The framework is presented in Fig. 11.5.

Following the Weidman, et al. (2001) model, prospective students with their own background, knowledge, skills, dispositions, value orientations, and motives for pursuing doctoral education enter a doctoral program to learn to be a professional researcher, scientist or scholar. In Fig. 11.5, the three circles represent the academic communities with different members and environments that doctoral students will engage in. They are, from the inside to the outside : the "*Shi-men"* or the faculty-student research team, the academic program and the institution (i.e., department, college, or university), and the scholars' academic community in the field.

"*Shi-men*" is the first academic community where doctoral students start their research life. They meet and interact with the advisor and fellow students (i.e., students who have the same advisor) to learn the norms and culture of the "*Shi-men*", participate in research projects supervised by the advisor to learn field-specific knowledge and research skills, and receive support from the advisor and

[3] ESI Hot Papers of a field is one of the Essential Science Indicators referring to papers published within the last 2 years and being cited among the top one-tenth of 1 percent (0.1%) in a current bimonthly period. (See: https://clarivate.com/products/essential-science-indicators/)

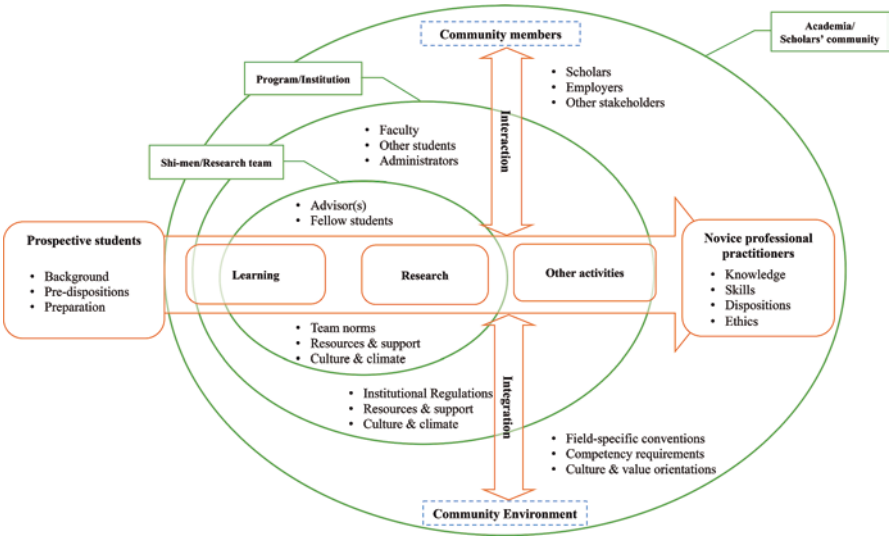

Fig. 11.5 Framework of Chinese doctoral student socialization

fellow students for further development. As Chinese doctoral education concentrates much more on research than coursework, *"Shi-men"* is usually the primary place where students spend most of their life as doctoral student.

The second and larger community is the institution, more specifically the academic program, the department, or the university. It is the official institution to which the student is registered. The institution is in charge of the administration and management of doctoral programs, setting up rules and regulations, organizing courses and other activities, and providing resources and support to both advisors and students. In this community, doctoral students are able to interact with more faculty and peer students and are steeped in and influenced by the institutional culture and climate.

The third and largest circle is the community of scholars in the field. There are scholars from other domestic and international institutions, potential employers, and other stakeholders such as collaborators from the industry and governments. It is not the traditional academia inside the ivory towers, but a community that is more open to people who are outside the academia but doing innovative research work in their jobs. This broader scholars' community has its own conventions and culture. Through communication and interactions with people there, doctoral students learn the conventions and culture. Such communication is encouraged by doctoral programs as discussed in the previous section.

Overall, by learning, doing research, and participating in other activities, doctoral students interact with community members in the three circles, and get integrated into the community environment. Such a process happens through three phases as separated by the three milestones of doctoral study: learning field-specific knowledge and skills, seeking research areas, and conducting independent research.

In the first stage, the young first-year doctoral students continue to assume the identity as student. As new-comers to the "Shi-Men," they are at the middle level of the invisible hierarchy—above master students, but under senior doctoral students and the advisor. In most times, they are playing the role of followers and practicing research skills under the guidance of senior students and the advisor.

Finishing the course work and passing the qualification exam move doctoral students into the second stage. They now need to choose their own research area and interest, and select a topic for their dissertation. For many students, this is the stage when they start to move forward from student to researcher, as the concentration of their work has been shifted from coursework to research, and the expectation on them has been shifted from acquiring existing knowledge to producing new knowledge. This is also the stage when they feel "lost," "confused," and "helpless." Despite support and help from their advisors and peers, it is students' own journey to find out their true interests in research and ways to contribute to the knowledge development in the field.

On the other hand, doctoral students at this stage are now considered to be "experienced members" in the "Shi-Men" and are expected to take some leading role in research. Through more active engagement with the advisor and fellow students in the "Shi-Men," their personalities, value orientations, and other dispositions interact with and start to influence the culture and climate of the "Shi-Men" or the research team. They are no longer learners but contributors to the team culture.

As the dissertation work goes on, doctoral students (now doctoral candidates) are expected to produce their first masterpiece of academic work. At this stage, they deepen their knowledge on a specific topic and develop their specialty. They sharpen their research skills and improve proficiency in conducting independent research. They strengthen their commitment to scientific research and form their own academic attitudes and aspirations. Now as the senior members in the "Shi-Men" or the research team, they take care of and give advice to junior students and become constructors of the team culture.

Through the above three phases, doctoral students gradually become innovative scholars. They obtain knowledge and skills required by the field, internalize the culture and conventions of the scholars' community, and develop moral ethics that are valued by the community and the society. Finally, with the completion of the dissertation work and other degree requirements, doctoral students earn the doctorate and enter the broader scholar's community in their field.

Conclusion and Discussion

Chinese doctoral education has its unique features tailored by the Chinese culture and socio-economic development. Based on an analysis of the requirements for doctoral degree qualifications and previous studies, we proposed a conceptual framework to understand Chinese doctoral student socialization. Through the interaction with members in and the integration with the cultures of the "Shi-men," the

institution, and the larger academia and broader scholars' community, doctoral students experience a development in field-specific knowledge, research skills, dispositions and academic and moral ethics. It is a simultaneous process of academic professionalization, scholarly socialization, and moral cultivation.

Compared with the general doctoral socialization model Weidman, et al. (2001) developed in the U.S., the emphasis on moral education is one of the unique Chinese features. Chinese scholars (e.g. Cui & Zhao, 2012; C. Xu, 2010) value the moral virtues beyond academic dispositions, such as ideological faith, social responsibility and obligation, and daily morality and virtues. Chinese universities place requirements on moral virtues such as dedication, steadfastness, integrity, and preciseness before requirements of knowledge, skills, and academic disposition (e.g. see the doctoral programs of Tsinghua University and Renmin University).[4] In comparison, the top elite universities in the U.S. (e.g., Harvard University and Columbia University[5]) do not mention moral virtues in their requirements for doctoral students. It is not to say that moral virtues are not valued in Western doctoral education but that Chinese doctoral education places more emphasis on it.

Another key feature of Chinese doctoral student socialization is the role of the advisor and the *"Shi-men."* The traditional Chinese culture of relationship between teacher and student continues to exert significant influence on advisor-student interaction and the culture of *"Shi-men"* in today's Chinese doctoral programs. This might be the most prominent difference the in doctoral student learning experience between China (or maybe the East Asian countries) and Western countries.

On the other hand, we recognize that there are limitations to our framework. First, the discussion of socialization outcomes is still based on consensus of the scholars' community within universities. To cultivate innovative talents for other sectors as a response to socio-economic demands in an era of rapid technology development, stakeholders outside academia should be invited to the discussion to expand the concept of doctoral student socialization beyond the ivory tower. Second, compared to the Weidman, et al. (2001) model which also discusses the internal stages of socialization, our model only focuses on the outcomes, environment, and process of socialization. Nevertheless, our work provides a starting point to discuss doctoral student socialization in the Chinese context. More in-depth investigations with qualitative and quantitative empirical evidence are invited in the future to verify and improve the model.

[4] Doctoral program of Education at Renmin University of China (http://soe.ruc.edu.cn/info/1085/1313.htm); Doctoral program of Education at Tsinghua University (http://www.ioe.tsinghua.edu.cn/publish/ioe/5372/2019/20190408110546826537896/20190408110546826537896_.html)

[5] Doctoral program of Education at Harvard University (https://www.gse.harvard.edu/doctorate/doctor-philosophy-education). Doctoral program of Education at Columbia University (https://www.tc.columbia.edu/organization-and-leadership/higher-and-postsecondary-education/degrees%2D%2Drequirements/higher-and-postsecondary-education-edd/)

References[6]

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*(4), 297–308.

∗Bao, W., Du, Q., & Ma, J. (2017). To be or not to be an academic. PhD students' career intentions to academia and its influential factors. *Journal of Higher Education, 38*(04), 61–70.

∗Bian, G. (2012). *Knowledge adventure and identity conversion: Research on the socialization process of doctoral students in social sciences*. Beijing, China: Peking University.

∗Cheng, J., & Li, M. (2016). The input-process-outcome quality impact path in doctoral education: Based on"college impact factor"model. *Journal of Graduate Education*, (05), 11–16.

∗China Doctoral Education Quality Research Group. (2010). *Chinese doctoral students quality report*. Beijing, China: Peking University Press.

∗Cui, H., & Zhao, Z. (2012). Study of three dimensions of academic character of PhD students in science and engineering. *Journal of Graduate Education, 3*, 31–35. +78.

∗Fan, A., & Shen, W. (2013). What is a good doctoral student academic guidance model: Empirical analysis based on Chinese doctoral quality survey data. *Academic Degrees & Graduate Education, 03*, 45–51. https://doi.org/10.16750/j.adge.2013.03.012

∗Gu, Y. (2017). *Originality of doctoral dissertation in the humanities and social science and its factors*. Nanjing, China: Nanjing University.

∗Gu, J., & Luo, Y. (2013). "Pipeline leak" or "training lag": Rethinking the reform of doctoral training in China from the career choice of doctoral graduates. *Journal of Higher Education, 34*(09), 46–53.

∗Gu, J., & Luo, Y. (2016). The influences of family capital on attainment of doctoral education quality and academic performance of doctoral students: An empirical study based on Jiangsu province. *Education Science, 32*(6), 63–71.

∗Guan, H. (2015). Identity of interdisciplinary doctoral programs: Crisis and reconstruction. *Journal of Graduate Education, 01*, 16–20.

∗Guo, Y. (2018). A review on the socialization of doctoral students in China. *Modern Education Science, 9*, 140–145.

∗Guo, L., & Wu, Q. (2013). An analysis of the social activities of American doctoral education for academic career development. *Academic Degrees & Graduate Education, 07*, 66–70. https://doi.org/10.16750/j.adge.2013.07.016

Guo, F., Kang, N., & Shi, J. (2018). Preparation for the scholar's role: First-year doctoral students in Tsinghua University. *Asia Pacific Education Review, 19*(2), 169–185. https://doi.org/10.1007/s12564-018-9529-6

∗Hou, S., & Ni, B. (2017). Exploration of new laws of Chinese PhD students' employment –based on the employment data of N a university from 2012 to 2016. *China University Students Career Guide, 17*, 34–39.

Hsu, F. (1972). *Americans and Chinese: Reflections on two cultures and their people*. New York: Garden City Doubleday Natural History Press.

∗Hu, D., Jin, L., Lin, C., & Wang, Y. (2017). The diversity of professional choice of engineering doctorates in Chinese top research universities and its countermeasures: Taking Tsinghua University as an example. *China Higher Education Research, 04*, 72–77. https://doi.org/10.16298/j.cnki.1004-3667.2017.04.10

∗Huang, X., & Wang, Z. (2017). Influential factors of academic professional socialization in American doctoral programs: Three-dimensional analysis of individual, disciplinary culture and system. *Jiangsu Higher Education, 9*, 100–104.

Hwang, K. (1997). Guanxi and Mientze: Conflict resolution in Chinese society. *Intercultural Communication Studies, VII*(1), 17–37.

[6] ∗indicates a reference published originally in the Chinese language

∗Ji, H. (2008). *Research on the status of physical exercise and mental health of the doctor graduate students in colleges of Jiangsu*. Taipei, Taiwan: Suzhou University.
Kember, D. (2000). Misconceptions about the learning approaches, motivation and study practices of Asian students. *The RoutledgeFalmer Reader in Higher Education, 40*, 99–121. https://doi.org/10.4324/9780203464045_chapter_2
Kuh, G. D. (2001). The national survey of student engagement: Conceptual framework and overview of psychometric properties. *Indiana University Center for Postsecondary Research & Planning, IN: Bloomington*, 1–26.
Li, J. (2005). Mind or virtue. Western and Chinese beliefs about learning. *Current Directions in Psychological Science, 14*(4), 190–194.
∗Li, Z. (2014). *A response to Michael Sandel and other matters*. Beijing, China: SDX Joint Publishing Company.
∗Li, W. (2015). *Research on the status and problem of education quality in doctor of philosophy in engineering: Based on the process management*. Tianjin, Taiwan: Tianjin University.
∗Lin, Y. (2012). *An empirical research on research performance of PhD and its impact factors*. University of Science and Technology of China.
∗Liu, Q. (2009). *A study on doctoral educating system of China: Based on rational choice institutionalism*. Wuhan, China: Huazhong University of Science and Technology.
∗Liu, H., & Peng, F. (2005). Combination and innovation: An analysis on operating mode of research-team in research university. *Tsinghua Journal of Education, 05*, 91–96. +102.
∗Ma, M., Ren, X., Wang, Q., & Zhao, N. (2014). The logic of practice for training high quality doctoral students: Based on retrospective evaluation of doctoral training by winners of award for 100 national excellent doctoral dissertations. *Journal of Graduate Education, 04*, 32–38.
Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research (Vol. 2)*. San Francisco: Jossey-Bass.
∗Peng, G. (2010). *A study on research incentive mechanism of science and engineering Ph.D students in China university*. Beijing, China: China University of Geosciences.
∗Qin, S. (2017). Investigation on the employment problem of doctoral students and countermeasure analysis. *Academic Degrees & Graduate Education, 01*, 43–49. https://doi.org/10.16750/j.adge.2017.01.010
∗Shen, W., Wang, D., & Zhao, S. (2015). Employment diversity of Ph.D. recipients and its policy reaction: A cross-national comparison. *Educational Research Monthly, 2*, 35–45. https://doi.org/10.16477/j.cnki.issn1674-2311.2015.02.008
∗Shen, W., Gao, Y., & Zhao, S. (2017). Single tutorial system or joint tutorial system: Doctoral students' preference for different guidance methods and their satisfaction. *Academic Degrees & Graduate Education*, 54–59. https://doi.org/10.16750/j.adge.2017.07.011
∗Song, X., & Mei, H. (2012). Supervisor-doctoral student interaction research in the process of doctoral training- based on the perspective of doctoral students. *China Higher Education Research, 08*, 50–54. https://doi.org/10.16298/j.cnki.1004-3667.2012.08.012
∗The Sixth Discipline Review Group of the Academic Degrees Committee of the State Council. (2014). Fundamental requirements for doctoral and master's degrees in first-level disciplines. Higher Education Press Beijing, China.
UK Council for Graduate Education. (2015). *The Oxford Statement*. Retrieved May 8, 2019, from http://www.ukcge.ac.uk/media/download.aspx?MediaId=1228
∗Wang, H. (2006). China's principles for the reform of the doctoral education system. *China Higher Education, 22*, 36–38.
∗Wang, X. (2008). Investigation and thinking on the social conflict and pressure of doctoral students. *Journal of Shandong Youth Administrative Cadres College, 02*, 39–42.
∗Wang, Caihong. (2009). The reconstruction of tutor-student relationship in doctoral education—The analysis on the basis of role theory. Huazhong University of Science & Technology.
∗Wang, F. (2009). *Research on medical doctor students' innovative behaviour driver and its structural model*. The Third Military Medical University of Chinese P.L.A.

∗Wang, Y. (2018). Research and practice on the academic socialization of American doctoral students. *Higher Education Exploration, 11*, 63–70.
∗Wang, C., & Zhao, S. (2017). On the eight tendencies of global doctoral education in the 21st century. *Education Researh (in Chinese), 38*(2), 142–151.
Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education, a perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf
∗Xu, C. (2010). Research on education quality satisfaction of university doctoral students. *Journal of Huazhong Normal University (Humanities and Social Sciences), 49*(2), 136–145.
∗Xu, Z. (2018). Learning motivation of doctorate students of science and engineering and its impact on academic performance and employment preference. *China Higher Education Research, 9*, 74–80. https://doi.org/10.22201/fq.18708404e.2004.3.66178
∗Xu, Z., & Niu, M. (2017). A study on the reform of doctoral education under the trend of employment diversification. *Exploring Education Development, 37*(09), 64–71. https://doi.org/10.14121/j.cnki.1008-3855.2017.09.011
∗Yan, G. (2013). Micro-environmental analysis of the operation of academic teams and the growth of talents. *Journal of Higher Education, 1*, 32–41.
∗Yao, Y., Chen, Z., Li, H., & Bi, C. (2014). Research on ideal characteristics of adviser-postgraduate interaction during the period of transition. *Journal of Northeast Normal University (Philosophy And Social Sciences), 02*, 207–210. https://doi.org/10.16164/j.cnki.22-1062/c.2014.02.047
∗Yin, X., & Gao, Y. (2014). Investigation and analysis of the factors that mainly influence the cultivation of innovation ability of doctoral students. *Journal of Southwest China Normal University (Natural Science Edition), 03*, 171–177. https://doi.org/10.13718/j.cnki.xsxb.2014.03.030
∗Yin, K., Sun, J., Xing, L., & Yang, J. (2016). The effect of graduate students' research role identification on research creativity: Roles of mentor's inclusive leadership and error management culture. *Psychological Development and Education, 32*(05), 557–564.
∗Yuan, B., & Yan, J. (2009). Analyses of present condition of the graduate innovative capability and its inflencing factors: Based on three large-scale quality surveys of graduate education in China. *Peking University Education Review, 7*(02), 12–20. +188.
∗Yuan, B., Wang, C., Hu, X., & Feng, L. (2014). How much contribution do Chinese postgraduates make to the publication of international high-level academic papers? *Academic Degrees & Graduate Education, 2*, 57–61. https://doi.org/10.16750/j.adge.2014.02.013
∗Yuan, B., Wang, C., & Wu, Q. (2015). An empirical research on postgraduates' academic contributions. *Research in Higher Education of Engineering, 1*, 154–160.
∗Zeng, Z., Luo, R., & Shen, Y. (2016). Can paper-oriented doctoral education improve the level of scientific research? *Journal of Graduate Education, 04*, 67–73.
∗Zhai, X. (1993). The trait of Chinese interpersonal relationship – The concept of locality and its model. *Sociological Research, 4*, 74–83.
∗Zhang, H. (2016). Discipline identity and socialization of interdisciplinary doctoral students. *Journal of Graduate Education, 04*, 41–45.
∗Zhang, Q., Sun, J., Bian, Q., & Hang, Z. (2009). An analysis of the quality of doctoral education and its influencing factors: A comparison between the perspective of doctoral students and that of their supervisors. *Academic Degrees & Graduate Education, 04*, 32–38. https://doi.org/10.16750/j.adge.2009.04.012
∗Zhao, S. (2009). Analysis of the scale structure of Chinese doctoral education. *Academic Degrees & Graduate Education, 08*, 61–65. https://doi.org/10.16750/j.adge.2009.08.014
*Zhao, X. (2015). *Research on academic training of Ph.D. students in Shanghai research universities*. Shanghai, China: East China Normal University.
∗Zhao, S., Shen, W., & Zhang, S. (2010). Analysis of study years of doctoral students and the influencing factors: Based on the perspective of comparison between China and the US. *Educational Research Monthly, 04*, 34–37. https://doi.org/10.16477/j.cnki.issn1674-2311.2010.04.024

∗Zheng, M. (2014). Overview of theoretical research on professional socialization of doctoral students. *Academic Degrees & Graduate Education, 2*, 62–66. https://doi.org/10.16750/j.adge.2014.02.014

∗Zhong, Z., & Cai, X. (2015). A comparative study of doctoral education and innovative talent strategies in world-class universities. *Fudan Education Forum, 13*(5), 99–105. https://doi.org/10.13397/j.cnki.fef.2015.05.017

∗Zhou, G. (2007). Reconstruction of the teacher – Student relationships in China's schools in the transformational age: Change and its regulations. *Theory and Practice of Education*, (13), 41–45.

Chapter 12
The Socialization of Doctoral Students in the Emergence of Structured Doctoral Education in Germany

Hanna Hottenrott and Matthias Menter

Doctoral education and training attracts increasing attention of scholars and policy-makers because of the role doctoral graduates play for the future of academic research as well as for knowledge transfer from academia to other sectors (Enders & De Weert, 2004; Roach & Sauermann, 2010; Sauermann & Roach, 2012; Thune, 2009). Reforms designed to improve efficiency and to increase the value to society have therefore addressed the training of doctoral students around the globe (e.g., Golde & Walker, 2006; Nerad, 2004). In Europe, the Bologna Declaration of 1999, which aimed at the creation of a more integrated European Higher Education Area, and the Lisbon Strategy of 2000 to strengthen the European Research and Innovation Area, played important roles. At the national level, countries have addressed the challenges related to the implementation of the policy agenda using a number of instruments (Kehm, 2006a, 2007; Park, 2005).

This chapter discusses developments in doctoral education in Germany since the 1990s where substantial reforms and initiatives have affected the organization of how junior researchers pursue their doctoral training (Ambrasat & Tesch, 2017; Guth, 2006; Kehm, 2006b). The support of Research Training Groups (RTG) and Graduate Schools (GS) accompanied by a substantial increase in funding for them by the German Research Foundation (DFG) is particularly interesting because it involves a fundamental change in the role and conception of doctoral education in Germany.

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Germany is an interesting setting to study reforms in doctoral education because since the first establishments of Research Training Groups in the late 1980s, structured doctoral education has evolved from nearly non-existence to the promotion of Graduate Schools as a pillar of the "Excellence Initiative," a public policy initiative, first implemented in 2005, to strengthen the German higher education system in order to catch up with the global research elite. As a response to concerns about the country's competitiveness regarding science and technology, the federal government committed in 2005 to providing additional funding to scientific institutes in order to establish elite research centers. This initiative constituted a substantial step away from the policy of egalitarianism of opportunity and research funding that characterized German university policy since the Second World War (Kehm, 2006a). Following the example of doctoral education in the USA, RTGs and GS not only offer a more structured and systematic doctoral training, but also increase the transparency of the overall process: starting with a selection procedure according to standardized criteria and regulations for joint determination of the goals of the dissertation and an agreed upon statement of supervision (Baldauf, 1998; BuWiN, 2017; Kehm, 2007).

This chapter addresses initiatives directed at reforming doctoral training and their possible implications for the socialization of young researchers, with a specific focus on Germany. Socialization of early career researchers typically occurs in institutions in which they work such as the department or research laboratory (Antony, 2002; Gardner, 2007; Golde, 2005; Hottenrott & Lawson, 2017; Tierney, 1997; Weidman & Stein, 2003; Weidman, Twale, & Stein, 2001). In particular, the professional relationship to the supervisor(s) has been identified as having an important formative influence on the values and perceived opportunities of their graduate students (Lee, 2008; Mangematin, 2000). Socialization processes have been shown to be crucial because they affect research performance (Hall, Mairesse, & Turner, 2007), attitudes towards knowledge transfer and commercialization (Bercovitz & Feldman, 2008) as well as teaching (McDaniels, 2010). They eventually also shape career decisions (Austin & McDaniels, 2006; Fuhrmann, Halme, O'Sullivan, & Lindstaedt, 2011; Weidman et al., 2001).

In the following, we first present the developments in doctoral education in Germany over the past decades before discussing the implications of these changes for the socialization of young researchers, drawing from the framework proposed by Weidman et al. (2001). We formulate expectations regarding the consequences of the shift towards structured doctoral education through the implementation of RTGs and GS by deriving implications for the socialization processes experienced by graduate students.

We conclude that continued promotion of structured doctoral education in Germany provides a wide set of benefits, but that structured doctoral education complements rather than substitutes chair- or research group-based training. Finally, besides the changes in doctoral education, reforms affecting institutional culture, working conditions, research funding, and (international) collaboration of academia in Germany may likewise contribute to improving conditions for young scholars at universities.

Structured Doctoral Education as a Paradigm Shift

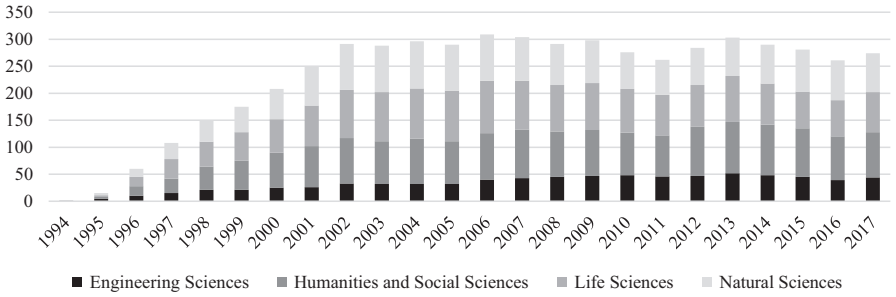
Research Training Groups – A Success Story

The traditional higher education system in Germany was characterized by a one-on-one relationship between PhD students and a supervising professor (a quasi-parental relationship referred to as *Doktormutter* or *Doktorvater*). Being enrolled as a doctoral student and employed at the university, a research institute, or in the private sector, the process of obtaining a doctorate was not very formalized and highly depended on the individual supervisor.

Unlike in the UK and the USA, doctoral education in Germany was not considered a separate stage. It was rather a form of professional work in a research environment with a doctoral candidate pursuing a research project "on the side". Doctoral students were usually employed as junior members of staff under a chair and were expected to complete their thesis in a maximum of 6 years after which this contract could, for legal reasons, not be prolonged. Doctoral education was also rather informal and highly tied to the chair under which candidates were employed (Baldauf, 1998). Moreover, PhD students were usually not obliged to take additional courses and the training of young researchers was usually taken care of by the supervising professor, commonly holder of the chair of employment, in a one-on-one fashion.

Disadvantages of this approach compared to doctoral training in Graduate School settings were identified as early as in the late 1980s, but inflexibility in work contracts and examination rules resulted in little change to the established system until the reforms that led to the Bologna and Lisbon agendas at the European level (European Commission/EACEA/Eurydice, 2015). Both sets of reforms paved the way for structural changes also in doctoral education (Enders, 2001). These reforms also recognized the importance of PhD supervision with the objective of "improving the supervision of PhD candidates, particularly through better training and monitoring of supervisors" and of "enhancing quality control and evaluation of PhD programmes" (European University Association 2008).

In an attempt to offer young researchers a more structured and more transparent doctoral training, reducing the sole dependency on a single supervisor, Germany introduced its first Research Training Group (RTG, *Graduiertenkolleg*) in 1985: "The idea was to move away from traditional individual doctoral training, encourage early independence and make doctoral programmes more structured as well as shorter" (DFG, 2010, p. 6). RTGs should provide young scholars with an excellent research environment while being supervised by a team of professors, pursuing also non-university collaborations with partners in industry or other public sector organizations. Due to the high demand and positive feedback, since then many more RTGs have been established and funded by the German Research Foundation (DFG) in all relevant fields of science, i.e. engineering sciences, life sciences, natural sciences as well as humanities and social sciences (see Fig. 12.1).



Source: DFG, own representation.

Fig. 12.1 Research training groups and graduate schools by discipline (# Ongoing). (Source: DFG, own representation)

RTGs typically consist of 20–30 doctoral students, have a narrowly defined research program, and try to create and foster a culture that allows intensive scientific exchange and practice orientation. *Anselm Fremmer*, DFG program director, hence describes the focus of RTGs as follows: "Topics shouldn't be defined so narrowly that everybody ends up working on the same project, yet they should be specific enough to allow doctoral researchers to communicate with each other at a scientific level" (DFG, 2010, p. 8). RTGs also encourage the interdisciplinary and international exchange, as so-called 'International Research Training Groups' have been introduced since 1999.

Graduate Schools – Another Success Story?

In order to further strengthen the higher education system in Germany and to promote top-level research, the German government launched the so-called "Excellence Initiative" in 2005.[1] The goal of this science policy program was to enhance Germany's competitiveness and catch up with the global research elite. As with the establishment of RTGs, the German government again broke with its traditional (egalitarian) approach and introduced three competitive funding schemes within the higher education sector: (1) 'Graduate Schools' to promote young researchers, (2) 'Clusters of Excellence' to promote topic-specific research and (3) 'Institutional Strategies' to develop top-level university-wide research agendas (DFG, 2013a). Organized by the DFG and the German Council of Science and Humanities (WR, *Wissenschaftsrat*), a total of 2.7 billion euros were provided in two phases (2005–2012 and 2012–2017) by the Federal and State Government to fund successfully submitted projects. The largest fraction of funding has been distributed to the third category, the Institutional Strategies. In order to qualify for this funding line, a university must have presented a long-term strategy detailing its approach to improving its research environment and researcher quality in the long run. However,

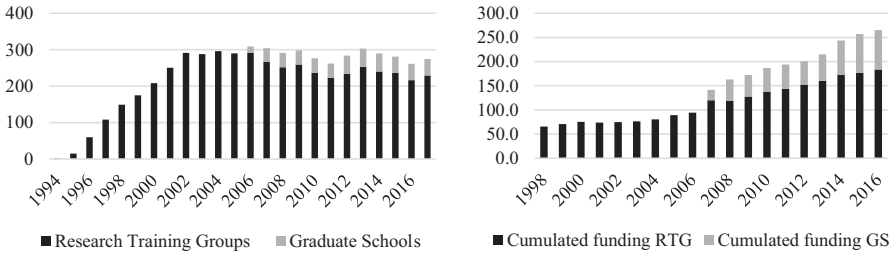
[1] See Kuratko and Menter (2017) for a more in-depth description of recent public policies in Germany, especially the Excellence Initiative.

to be eligible for funding in this category, universities must also have obtained a financial commitment in both of the other two Excellence Initiative categories. The initiative engendered a great deal of attention, both nationally as well as internationally, and triggered a self-selection process among German universities (see Abbott, 2017; Menter, Lehmann, & Klarl, 2018; Schiermeier, 2017).

Graduate Schools (GS) can be thematically broader than RTGs and are meant to complement RTGs. *Annette Schmidtmann*, head of the DFG Department Scientific Affairs, thus notes that "not least because of the Excellence Initiative, universities have been using their experiences with Research Training Groups to sharpen their profiles and restructure their doctoral programs" (DFG, 2010, p. 9). Graduate Schools can be differentiated by their thematic focus as well as their size, as four types schools exist: (1) GS with a narrowly defined research program, (2) GS with a more broadly defined research program, (3) GS with a focus on one field of expertise and (4) university-wide GS (GWK, 2015). Whereas type (1) schools consist of a maximum of 30 doctoral students and are comparable to RTGs, the number of doctoral students of type (2) and (3) schools range between 50 and 500. Graduate Schools of type (4) are generic and may host up to several thousands of doctoral students.

The categories (2) and (3) are more common than (1) and (4). Examples of type (4) are the GS at the Ruhr University Bochum (Ruhr-University Research School) and the GS of the Technical University Munich (TUM). While Humanities and Social Sciences as well as Life Sciences are most strongly represented among promoted GS, 30 out of the 51 funded Graduate Schools cover more than one scientific field, illustrating the multidisciplinary of these schools (see GWK, 2015). Thus, the transition from RTGs to GS was driven by the idea that universities should be given more flexibility with regard to the size of the school and the inclusion of different disciplines. Whereas RTGs were designed to support the qualification of doctoral researchers within the framework of a focused research program, GS are supposed to promote young scientists more generally including training in general (career-related) skills.

The left chart in Fig. 12.2 shows that the number of active RTGs increased substantially during the 1990s and has declined slightly since then. The additional implementation of GS has, however, made up for the decline so that the overall numbers remained at levels of 250–300 active schools since 2002. Figure 12.2 thus



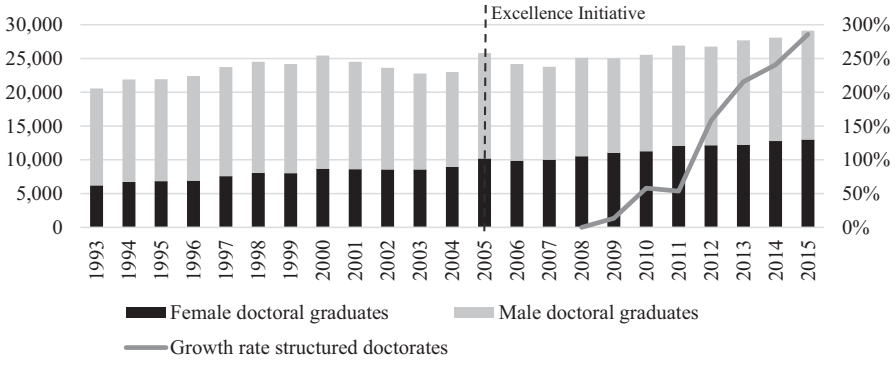
Source: DFG, own representation.

Fig. 12.2 Research training groups and graduate schools (# Ongoing) and funding for structured doctoral education (in Mio. Euro). (Source: DFG, own representation)

shows that the newly introduced Graduate Schools partly replaced the established model of RTGs. The right hand side of Fig. 12.2 depicts the development of funding for RTGs and GS over time. Funding typically covers the wages of the doctoral candidates, travel and training expenses. The two charts thus show the substantial increase in funding for both RTGs and GS by the German Research Foundation and in particular the increasing share of GS in the overall funding.

Following the example of the USA, Graduate Schools should not only offer a more structured and systematic doctoral training, but also increase the transparency of the overall process. In order to monitor respective achievements, the Excellence Initiative as a whole (including the Graduate Schools as one of the funding pillars) was subject to evaluations through the WR. In 2008 and 2015, the WR submitted joint reports with the DFG to the Joint Science Conference (GWK, *Gemeinsame Wissenschaftskonferenz*) (GWK, 2015). In 2016, the International Expert Commission to Evaluate the Excellence Initiative (IEKE, *Internationale Expertenkommission Exzellenzinitiative*) published its first evaluation report (IEKE, 2016). At the level of the individual institution, the evaluations revealed that the candidate selection as well as the determination of the standards have been professionalized. Compared to alternative doctoral training, the dropout rate of young scientists and researchers at Graduate Schools is low (1–6% percent compared to 16–66%) and a considerable share of the doctoral students remain within academia after their graduation (40–90% depending on the discipline, see Groenvynck, Vandevelde, & van Rossem, 2013; GWK, 2015, p. 46).

Despite the steep increase in the number of doctorates awarded to graduates from structured programs (see Fig. 12.3), in the academic year 2014/2015, only 23% of all doctoral students were enrolled in structured doctoral training (BuWiN, 2017).



Source: German Federal Statistical Office, own representation. Growth rate relative to 2008. Information for earlier years is not available.

Fig. 12.3 Annual number of graduated doctoral students and share of female graduates (all disciplines); growth rate of the number of graduates from structured programs. (Source: German Federal Statistical Office, own representation. Growth rate relative to 2008. Information for earlier years is not available)

Whether structured doctoral education will become the norm in Germany will depend on how future decision makers perceive the cost-benefit trade-off associated with it.

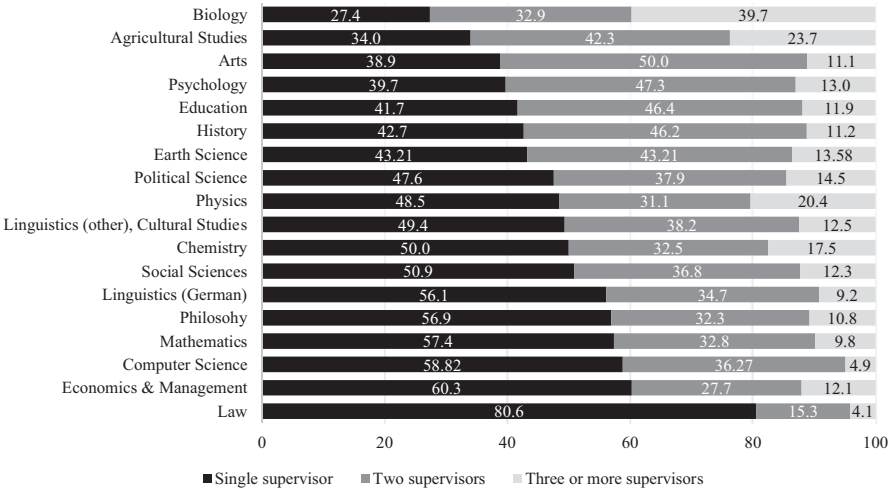
In the discussion regarding the success of structured doctoral education, however, little attention has so far been paid to differences in the socialization processes between the traditional style and structured doctoral education. The framework by Weidman et al. (2001) provides a valuable guide for analyzing socialization of doctoral students. The authors state that "changes in higher education institutions, often necessitated through increasing pressures from external constituents, challenge long-standing academic goals" (Weidman et al., 2001, p. 9). Although a review of the literature on professional and doctoral programs from the 1950s to the 1990s in the USA by Weidman et al. (2001) suggests that patterns of socialization still follow many of the long-standing norms associated with collegial culture, they identify increasingly less homogeneous socialization processes in more diverse student populations. The shift in the nature of the organization of doctoral education in Germany since the 1990s, in addition to such developments, may therefore provide a substantial force with potentially important consequences not only for doctoral students, but also for the institutions in which they are active.

Structured Doctoral Education and the Socialization of Graduate Students

Before discussing differences between socialization processes in a structured doctoral education versus the traditional approach and possible consequences from a stronger focus on the former, we need to define how we differentiate between organizational forms of graduate education in Germany. Ambrasat and Tesch (2017) distinguish five different groups of doctoral students based on their type of working contract and their enrollment in structured programs. Other previous studies contrast the emerging structural doctoral programs with either the master-apprentice model (Hornbostel, 2009; Janson, Schomburg, & Teichler, 2007; Kehm, 2006b) or the so-called individually-pursued doctorate (Mittelstraß, 2010).

In the following, much of the discussion will focus on the distinction between those enrolled in structured programs and those pursuing a more traditional "non-structured" doctorate. The latter represents the traditionally dominating organizational form of doctoral training in Germany organized within chairs and small research groups, led by a professor who is solely responsible for the doctoral candidates under his or her supervision. Explicit examination requirements, preparatory and accompanying courses are rather rare and – if existing – rather informal. The content and the design of the training is determined by the supervising professor according to his or her own standards, rules and values. We label this form of doctoral education as chair-centered or one-on-one training.

In contrast to this, we label doctoral education organized in GS or RTGs as structured doctoral training (see Korff and Roman (2013) for a detailed discussion of the organizational variety of structured programs). Although chair-based doctoral train-



Source: Survey data as presented in Hauss et al. (2012), own representation.

Fig. 12.4 Number of supervisors by discipline (in % of respondents). (Source: Survey data as presented in Hauss et al. (2012), own representation)

ing obviously also follows a certain structure, it is more supervisor-specific and dependent on the relationship between the chair-holder and the individual graduate student. In GS-based training the structure is similar for a larger cohort of students who have different supervisors, but still pursue their training under the same set of courses offered, same rules and standards and face fixed or at least pre-defined steps and milestones to be completed.

According to data collected by the 2017 National Report on Junior Scholars, in recent years 53–76% of doctoral candidates are supervised by multiple supervisors and students in structured programs are more likely to be supported by more than one supervisor (Ambrasat & Tesch, 2017; BuWiN, 2017). The differences between subject groups are substantial. Figure 12.4 shows the occurrence of single versus multiple supervisors by field of study based on a survey of doctoral students (see Hauss et al. (2012) for details). Having three or more supervisors is most common in Biology, Physics and Chemistry and least frequent in Law where one-on-one supervision is the norm. In Biology, 73% of students have multiple supervisors and about 40% of candidates are supported by three or more supervisors. In Law, multiple supervisors are rarer with just 19%.

We refer to individuals enrolled in either form of doctoral education as students although their self-perception may differ. Particularly doctoral students employed as researchers under a chair may perceive themselves as employees rather than students, even though they are the doctoral students of their supervisor. On the other hand, for individuals enrolled in Graduate Schools, it is usually self-evident that they carry the status of a student. In what follows, we base our discussion on the

model by Weidman et al. (2001) who define socialization as a non-linear process that shapes identity and role commitment through experiences with formal and informal aspects of university culture as well as through personal and professional interactions with reference groups outside the university.

The insight that events occurring early in the graduate program can be more decisive than at later stages goes back to Bragg (1976) and Staton (1990). Thus, early experiences can have more impact than those at later stages, when students have already been imprinted with certain traits. Moreover, junior researchers represent an important group simply by their relative size. Table 12.1 shows the increase in the number of early career researchers in Germany from 2000 to 2014. The increase of 91% (compared to 21 in the group of professors) was particularly high in the group of individuals younger than 34 years of age underlining the importance of this group in the higher education sector. The relatively high number of PhD graduates compared to available senior positions makes it further crucial to understand the mechanisms that filter out the most able for remaining in academia and hence for training future cohorts of researchers. At the same time the question emerges of how doctoral education can prepare graduates best for jobs outside academia and whether structured doctoral education is sufficiently flexible to transfer adequate skills for both 'inspired' and 'industrial' students (Louvel, 2012).

Graduate socialization necessitates shared conscious experiences with fellow students, faculty mentors and other role models. Thus, socialization occurs through experiences as students pass through formal and informal processes. The design of graduate education therefore affects these experiences or the set of possible experiences. Lee (2008) suggests that such experiences have long-lasting effects because own experiences determine the type of supervisor a junior researcher will become later in his or her career. The same applies to funding conditions, the nature of employment and the roles that students take on. Students "internalize behavioral norms and standards and form a sense of identity and commitment to a professional field" (Weidman et al., 2001, p. 6). In other words, socialization contains cognitive as well as affective dimensions. Knowledge and skills as curricular aspects and normative or dispositional aspects will affect professional commitment and identification with the profession. As Weidman et al. (2001, p. 5) put it "[…] graduate students must also experience their own particular kind of metamorphosis to move into their postgraduate careers". Since there are good reasons to believe that there

Table 12.1 Arts and science staff (excluding professors) up to 44 years old with fixed-term contracts at higher education institutions in Germany (2000–2014)

	2000	2005	2010	2014	Increase (2000–2014) in %
Arts and science staff (excluding professors)	82,403	87,344	128,547	144,927	76
… of whom up to 34 years old	57,613	60,524	98,052	109,880	91
… of whom 35 to 44 years old	24,790	26,820	30,495	35,047	41
In comparison: Professors	37,794	37,865	41,462	45,749	21

Source: 2017 National Report on Junior Scholars (BuWiN, 2017)

are substantial differences in the experience between structured doctoral training and individual training, the following section discusses possible implications for doctoral student socialization. The discussion follows the stages and core elements of socialization as laid out in the framework of Weidman et al. (2001).

Dimensions of Socialization and the Differences Between Structured and Traditional Doctoral Training in Germany

Early literature on student socialization distinguishes six polar dimensions, which go back to Van Maanen and Schein (1979) and have been discussed by Tierney and Rhoads (1994) and Weidman et al. (2001). The most obvious of these polar dimensions affected through the shift from a one-on-one doctoral education to Graduate Schools is the first, collective vs. individual. Students pursuing their doctoral education in a Graduate School experience collective socialization in the sense that they are all subject to the same set of rules that govern the school, a similar set of faculty and courses. Collective identity will possibly be stronger in students that are part of a cohort in such a structured PhD program. As Weidman et al. (2001, p. 7) note, compared to students in medical schools who "are herded through rounds with experienced physicians […] students in the arts and sciences generally have a more individualistic experience with their major professor". The same applies to the differences in the Graduate School experience versus a one-on-one thesis supervision.

The second is formal vs. informal socialization. Formal socialization describes experiences such as clear rules of conduct, a pre-defined curriculum and specific signifying progress toward degree completion. Informal socialization refers to the interactions between students in the school and emerging peer cultures. In Graduate Schools, formal and informal socialization may in fact complement each other as being more closely engaged with fellow students and relating to a certain culture may increase the likelihood that students also pass the more formal hurdles and achieve the expected goals.

The third polar dimension, random vs. sequential, is a particularly interesting one. Through a more formally structured process in doctoral schools sequential socialization defined as "discrete and identifiable steps for achieving an organizational role" (Tierney & Rhoads, 1994, p. 28) plays an important role. Students who must accomplish specific steps in their PhD program such as examinations and "December papers" might be more exposed to sequential socialization than individually-organized doctoral candidates who may experience random socialization to a larger extent.

A similar logic applies to the fourth polar dimension, fixed vs. variable pace in which experiences occur. A Graduate School environment usually prescribes a

fixed time line along which certain "points" must be collected or certain goals must be achieved. Thus, progression occurs rather uniformly compared to unstructured doctoral education where a variable pace will be more often observed with unclear time frames for the different milestones (if there are any defined at all). In the latter case, progress depend in a much stronger way on student and supervisor pace. As reported in the 2017 National Report on Junior Scholars, the median duration from start of the doctoral studies to graduation is indeed shorter in structured programs with estimates ranging from 3.25 to 3.6 years compared to 3.8 years in other forms of doctoral education (BuWiN, 2017). This is in line with the international experience that identified the doctoral training system, the doctoral program and the general research environment as import factors influencing completion rates and the time it takes for completion (Kyvik & Olsen, 2014; Spronken-Smith, Cameron, & Quigg, 2018). Most factors contributing to high submission rates are more likely to be provided within structured programs, e.g., close monitoring during candidature, provision of research training, a vibrant research culture, high-quality supervision and appropriate research funding incentives (Spronken-Smith et al., 2018).

The fifth polar dimension is serial vs. disjunctive progress. Serial socialization describes planned organizational structures and educational experiences through which PhD students are trained by faculty. Importantly, previous cohorts experienced the same structures and can therefore provide formal and informal guidance for future cohorts. In disjunctive socialization such learning from earlier generations is not possible or not valuable because of incomparable circumstances, rules and/or norms, i.e. when newcomers have no role models available from whom to learn. Disjunctive socialization may not only occur in times of a shift from unstructured to structured PhD education, but also when graduate programs are significantly altered from one generation to the next.

According to Tierney and Rhoads (1994, p. 29), progress to degree completion may be interdependent with the sixth polar dimension, investiture vs. divestiture. They define investiture and divestiture as follows: "Investiture (more affirming) concerns the welcoming of the new recruit's anticipatory socialization experiences and individual characteristics, whereas divestiture (more transforming) involves stripping away those personal characteristics seen as incompatible with the organizational ethos.". Weidman et al. (2001) therefore conclude that the socialization process requires investiture for a student's transformation during graduate education to be complemented with the internalization of values, attitudes, and beliefs. Investiture then means to confirm these values in the professional setting. The problem with disjunctive socialization is that differences between generations of graduate students increase pressures toward divestiture of orientations which are perceived to be undesirable. The current design of fixed-term funding of RTGs and GS in Germany and the potential of their discontinuation after the funding period ends may therefore result in disjunctive socialization despite the intrinsic potential of structured programs to facilitate sequential socialization.

The Stages of Socialization in the Weidman Model Applied to the German Context

The four stages of socialization in the Weidman et al. (2001) model provide a framework for understanding role acquisition through the dimensions of socialization of German graduate students (Fig. 12.5). Two basic assumptions underlay this framework. The first is that socialization is a developmental process and the second is that certain core elements such as knowledge acquisition, investment and involvement are linked to the development of role identity and commitment. The four stages in this framework reflect different states of identity and commitment that can be overlapping (Weidman et al., 2001). Differences between individual and structured doctoral education in Germany can thereby be identified at each stage.

- *The anticipatory stage:* In this stage of role acquisition, a prospective doctoral student "becomes aware of the behavioral, attitudinal, and cognitive expectations held for a role incumbent" (Weidman et al., 2001, p. 12). A student typically enters the recruitment phase with (field-specific) stereotypes and preconceived expectations regarding what a doctoral student is like. These views are shaped by the (mass) media or through interaction with role incumbents in the family or circle of friends. Individuals usually modify these views when they gain a clearer understanding of the reality as a junior researcher while they also make a com-

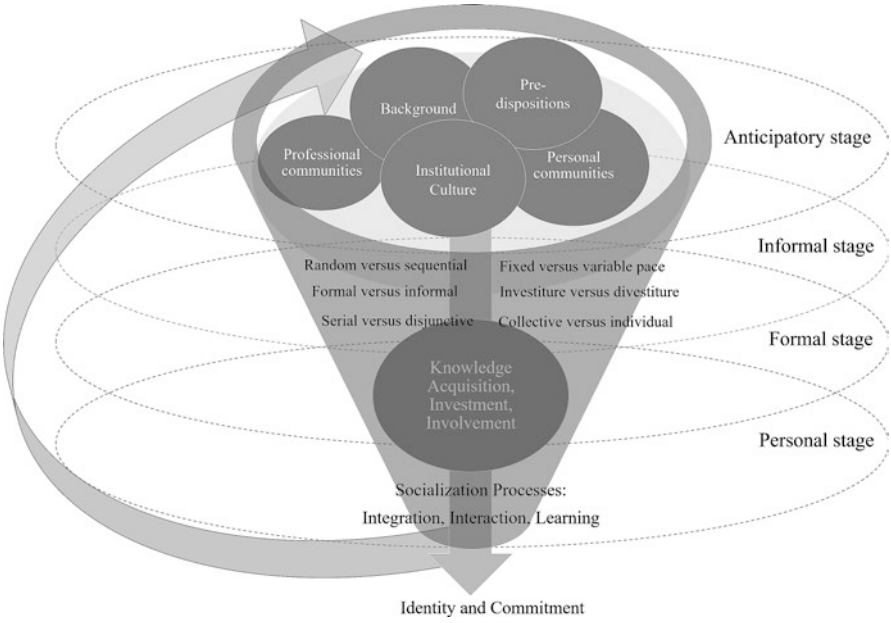


Fig. 12.5 Stages, dimensions and core elements of German doctoral student socialization. (Source: Own representation following Weidman et al. (2001))

mitment to the new role. They also adopt professional jargon, vocabulary, normative behaviors, and acceptable emotions in that process as communication tends to move in the direction from more senior faculty to junior researchers (Staton, 1990). This process might differ substantially depending on the organization of the graduate education a new student becomes involved in. The choice or assignment of a faculty advisor or supervisor can be critical to the socialization process and eventually to the success of the individual student. While the student-faculty relationship and interaction with the supervisor seems less important in structured programs, it may likely be even more important if the student is exposed to a broader set of potential role models. Interdisciplinary contacts may also be more frequent in structured programs (Ambrasat & Tesch, 2017). More remarkably, they also find that transferable skill courses were much more often taken by scholars in structured programs with more than 31% compared to only 13% of external candidates.

- *The informal stage:* During this stage, role expectations are formed not only through interaction with faculty and role incumbents, but also through involvement in and the development of peer culture. Social and emotional support among classmates becomes important as well. Differences between a chair-based traditional doctoral training and doctoral education in Graduate Schools may become particularly visible at this stage. As students pass through stages together they bond and develop their own social culture (Twale & Kochan, 2000). Structure may also help students in the first phases to navigate through their new environment and to understand the requirements and steps they need to take. Close-knit cohort groupings may further facilitate communication and mutual support making it easier for the individuals to see their fit to the program and academic work more generally. In situations that lack group-specific role models, for instance in case of female professors in STEM (Science, Technology, Engineering and Mathematics) programs, female doctoral students may find it easier to find confirmation and support among their peers. In Germany, as in most other developed countries, women are well represented as undergraduate students, but underrepresented in the professoriate. Female graduates are less likely to pursue doctoral studies and are not appointed to professorships at a rate that one would expect given the share of women among PhD students (BuWiN, 2017). Data from Germany suggests that Graduate Schools may have helped to increase the number of females (see Fig. 12.3) which might eventually also lead to more female professors.

While the cohort influences the learning process, professors and administrators have decisive influence on who enters the program as well as on the composition of each cohort. They not only set a minimum level of certain skills or grades, but they may also determine minimum levels of ethnic or gender diversity and a certain skill mix. Another objective of the expansion of structured doctoral programs in Germany is to reduce social selectivity in access to doctoral studies. A recent study by De Vogel (2017) finds that the effects of educational background on entering a structured doctoral program or grant program are lower compared to those found on transition to individual doctorates, but evidence for gender is less clear.

- *The formal stage:* According to the model of Weidman et al. (2001), also in this stage role expectations held by the new student remain idealized. During this stage, the new students learn about their fit to the program and build an expectation about their personal probability of successful completion. Formal instructions received during that stage help to derive these expectations. Young researchers also observe the activities of more senior researchers and learn about normative role expectations that are not visible to the general public. In this phase, newcomers also establish goals and seek feedback which helps them to develop their skills and competences. In structured doctoral education, this stage is often more professionally organized and standardized. The personal fit may be more accurately determined if milestones and specific learning objectives are clearly articulated. Faculty-student interaction, which is typically more formally prescribed and planned in structured programs, may lead to more integrative communication. As university systems such as the Germany system move towards a more structured design, the role of the supervisor also becomes more formal and professionalized. Finally, formal examinations provide a reliable indicator of a candidate's academic capacity providing an early indication of whether successful completion of the program is likely or not. Ambrasat and Tesch (2017) report in a study among doctoral students in Germany that the level of formalization as indicated by written agreements and attendance in colloquia and courses is indeed higher for candidates in structured programs compared to others.

For RTGs and GS in Germany, the German Research Foundation (DFG) provides clear ethical guidelines. The DFG's recommendations for safeguarding good scientific practice were first published in 1998 to "provide guidance and […] form the basis for a self-regulation system that has been initiated in every registered research institution and which since then has enjoyed a broad consensus. They are also an ever-present element in DFG research funding; every researcher submitting a proposal to the DFG must comply with the rules of good scientific practice" (DFG, 2013b). Every institution funded by the DFG including structured doctoral training programs has to comply with these standards. Moreover, graduate programs are typically required to formulate clear rules and criteria for evaluation in addition to the more general examination regulations that apply to every doctoral candidate. At the more micro relationship level, the DFG strongly recommends the use of formal "agreements of supervision" to be signed by the doctoral candidate and all supervisors and mentors involved to ensure awareness of responsibilities on both sides.

- *The personal stage:* In this stage, students form a professional identity and assume their role as researchers. They accept value orientation, resolve conflicts impeding a total role transformation and seek their own identity while at the same time realize that the "program is only preparatory to their professional goal and not the real thing" (Weidman et al., 2001, p. 15). The latter aspect may be particularly true in Graduate School environments when the training becomes the center of attention compared to the pursuit of advancing research projects and learning on the job. Chair-based doctoral students may to a larger extent be

involved in day-to-day research activities from the very beginning of their training. Rather than focusing on certain milestones, exams and compliance with general rules they may be paying more attention to the progress of the actual research conducted at the chair or research group. Table 12.2 shows the average time (in hours per day) doctoral researchers in Germany spend on thesis-related work, research, teaching and administration. Those enrolled in structured programs spend on average more time on their thesis project than students pursuing other forms of doctoral education. However, they are also less intensively involved in other research projects, teaching and administration.

Chair-based training may have a stronger influence of the supervisor on the identity formation of a student. Ambrasat and Tesch (2017) find that there are indeed differences between the perceived exchange intensity with the main supervisor between students pursuing different doctorate pathways and that on average, within structured programs the chance of candidates to exchange with their supervisor at least once a week is 3.8% points higher than in a non-structured context. The role and responsibilities of the supervisor may also differ depending on the nature of the doctoral education system. Pinheiro, Melkers, and Youtie (2014) show that co-publication with advisors is an important driving factor of future publication activity and therefore later career success. At the same time, stricter accountability and quality assurance requirements may be easier to comply with when monitored centrally at the Graduate School level and not solely by the individual supervisor.

However, at larger chairs fellow doctoral students, post-doctoral researchers and technical staff may also be important for the value orientation (Kiley & Mullins, 2005). Unlike in the USA, doctoral students in Germany are, to a large share, also employed at the universities – at least part-time. Formal recognition seeking through securing assistantships plays only a minor role, but the nature of the tasks may change according to specialty areas they are particularly interested in. Flexibility with regard to research orientation may be larger in a Graduate School environment compared to graduate students working at a single chair. At this stage, students also assess their competitiveness compared to students in the same cohort in their field or recognize misfits to the program, discipline or aca-

Table 12.2 Doctoral students' average number of hours spent per day on different activities by type of doctoral education (2011)

	Type of activity			
	Thesis writing	Other research	Teaching	Administration
Structured program	5.9 (2.6)	1.0 (1.4)	0.7 (1.3)	0.6 (0.8)
Junior researcher financed by a research grant	4.4 (2.8)	1.8 (1.9)	0.8 (0.9)	0.9 (0.9)
Junior researcher financed by a chair's core budget	3.3 (2.5)	1.3 (1.5)	1.7 (1.5)	1.2 (1.1)
Independent (without work contract)	4.7 (2.4)	0.9 (1.3)	0.8 (1.5)	0.7 (1.1)

Source: 2017 National Report on Junior Scholars (BuWiN, 2017), Standard deviations in parentheses

demic work more generally. Peer solidarity and peer affirmation that emerge in a Graduate School setting are moreover important factors that might influence the likelihood to succeed. Indeed, lower drop-out rates in structured programs seem to confirm this notion (Groenvynck et al., 2013).

The Core Elements of Socialization in the Model of Weidman et al. (2001)

The stages described above all comprise characteristics that Weidman et al. (2001) label as core elements. A central theme in Weidman's model of socialization of doctoral students is ***knowledge acquisition***. Sufficient cognitive skills are crucial for role performance. However, also affective knowledge including the awareness of normative expectations of the professional role and a realistic assessment of personal ability to pursue the desired career are important. According to Weidman et al. (2001), during socialization, knowledge shifts from being general to being specialized and complex. In all stages of socialization, outcomes will be affected by an individuals' accuracy of knowledge and personal assessment of the own capacity to perform the professional role successfully. Further, to invest in a role involves commitment of time and effort and giving up alternative careers. During the formal stage of socialization much of this ***investment*** is done in learning of specialized skills.

The supervisor or the team of supervisors plays another important role for investment and commitment. In Germany, a high share of doctoral students receive a *Vertrauensvorschuss* (trust in advance) in the form of an employment contract. Of those doctoral researchers working in higher education institutions, 93% have fixed-term contracts (in non-university research the share is 84%). Despite being limited in duration, salary levels are usually in line with collective labor agreements and doctoral students are generally not at risk of poverty with an average monthly net income of more than 1200 Euros, which is above the poverty threshold defined by the Microcensus 2010 (BuWiN, 2017). Overall, the design of RTGs and GS in the German context provides research funding, in particular funding for the wages of the doctoral candidates, which alleviates pressures on doctoral candidates to raise funding from alternative sources or to seek additional employment "on the side". It also reduces the burden on supervisors to raise funding for doctoral researchers through project-specific grants or consulting work.

The third core element is ***involvement***, which is defined as the "participation in some aspects of the professional role or in preparation for it" (Weidman et al., 2001, p. 19). Intensity of involvement varies not only over the course of the doctoral education cycle, but also between individuals. Involvement with senior scientists or older students provides the student with insights into professional ideology, norms and attitudes. While involvement is a crucial element, it is also one that can easily be influenced by those designing graduate programs and doctoral education. A key difference between chair-based education and structured programs is that in case of

the former, the supervisor has much control over the intensity of involvement that is offered to the student. The extent to which a student makes use of such offers will then determine the final degree of involvement. In structured programs, the intensity of involvement may be directly pre-defined by the scientific board that designs the program by fixing the number of hours of practice training or by indirectly limiting the time available to the student by determining the extent of certain program-related tasks. As can be seen from Table 12.2, doctoral students in structured programs devote more time to thesis-related work and less to administrative tasks compared to doctoral researchers working at a chair or on a grant-financed research project. The latter group, however, spends more time on research not directly related to their thesis, which may broaden their skill set and expertise. A priori, it is therefore unclear which model is more conducive to successful publishing during the doctoral education phase. Over the past decade, the dissertation style has evolved from monographs to paper-based, cumulative dissertations in most fields. A larger set of research projects may help to produce publishable research papers through the division of labor and support from multiple senior scholars (Horta & Lacy, 2011). Based on the study by Pinheiro et al. (2014), we would expect that any collaborative research supports future research performance through learning to "play the game". Being more intensively involved in teaching (as are doctoral students working at a chair), however, may better prepare doctoral students for teaching roles.

In a more normative tone, Weidman et al. (2001) conclude that socialization of graduate students should happen through mutual exchange rather than be a one-directional training by faculty done to students. Collaborative learning environments and being exposed to several teachers may also facilitate the recognition of talents and interests in students. These factors are more likely to be provided in a structured doctoral education setting compared to the system traditionally in place in Germany.

An important feature of the model of Weidman et al. (2001) is not only its non-linearity (see Stein & Weidman, 1989; Weidman & Stein, 1990), but also that it considers knowledge acquisition as an important element of socialization and not as an outcome. While the preparation for future jobs is obviously the central objective in the training of young researchers, the framework stresses the importance of how knowledge and skills are acquired and that there are interdependencies with other elements of socialization which will eventually affect a graduate's identity, commitment and work ethics that are all based on values, not knowledge alone. Learning is an important process of socialization and the learning environment matters. Moreover, the organization of graduate education in schools and at smaller units matters a lot more than one would derive when only focusing on knowledge acquisition as such. Together with financial and moral support, these factors define individual satisfaction of a doctoral student with his or her situation.

Table 12.3 shows results from a survey on doctoral students' levels of satisfaction with the quality of the supervision provided by type of doctoral program that they pursue. The data shows that doctoral students in structured programs tend to be more satisfied with the quality of their supervision than those pursuing their studies independently (without being enrolled in a program nor being employed at a chair or research group, see also Ambrasat and Tesch (2017)). The numbers for doctoral

Table 12.3 Doctoral students' satisfaction levels by type of doctoral education (2011)

		Satisfaction level with the overall quality of supervision		
		High	Neutral	Low
Structured program (RTG, GS)	N	415	88	46
	%	**75.6**	**16.0**	**8.4**
Chair-based	N	373	83	39
	%	**75.4**	**16.8**	**7.9**
Semi-structured (curricular program)	N	458	216	145
	%	**55.9**	**26.4**	**17.7**
Independent (without work contract)	N	243	111	87
	%	**55.1**	**25.2**	**19.7**
Total	N	1489	498	317
	%	**64.6**	**21.6**	**13.8**

Source: Survey data as presented in Hauss et al. (2012), own representation
N number of respondents

students in structured programs are, however, very similar to those reported by doctoral researchers pursuing their studies in a traditional chair-based way with a large majority of students being highly satisfied (about 75% in both groups) and only a small share reporting a low level of satisfaction (8.4% and 7.9% respectively). Remarkably, of those enrolled in semi-structured programs (neither RTGs nor GS, but with some curricular activities, e.g. selected courses to be completed) only 56% report to be highly satisfied and 18% report low satisfaction levels.

The eventual socialization outcome will therefore be a result of the experiences that a doctoral student makes at every stage and in every dimension while engaging in the core elements of the socialization process as illustrated in Fig. 12.5. There is not one ultimate desired outcome, but satisfaction with the professional activity may be a good indicator of the quality of a certain type of doctoral education.

Conclusions

Doctoral education is an important factor for the development of scientific research and thereby for the advancement of knowledge, technology and living standards in the long-run. Socialization processes may therefore not only differ between individuals, but may also depend on institutional factors and the design of the doctoral training. The transition of doctoral education from the master-apprentice model to structured programs through the establishment of discipline-focused Research Training Groups and eventually larger and more centrally organized, interdisciplinary Graduate Schools in Germany therefore comes with effects on the socialization of doctoral students.

Weidman et al. (2001, p. 50) stress the role that professionalism can play: "Professionalism is accomplished through a carefully structured professionalization process that revolves around students' immersion into an environment that exacts or is prototypical of the one to which the students aspires". They argue that typical ways to achieve certain levels of professionalism is to use certification and licenses or to use controls through professional boards to sanction malpractice. In academia, however, such measures are less effective as in other professions. It is therefore even more important that socialization processes transmit work ethics, norms, values and standards so that future scientists see it as natural to behave according to them and do not need to be forced into compliance.

These goals may be easier to achieve in structured programs, but there must also be an agreement on what these values are and how to transmit them. In Germany, the DFG took an important role in defining standards and setting objectives in terms of research ethics, diversity, and internationalization. Because of its role in distributing research funding not only for Graduate Schools, but also for later-stage research positions, the DFG was also in the position to reinforce these standards. A central novelty related to the establishment of Graduate Schools, was the delegation of doctoral education to these schools rather than leaving doctoral training solely to the individual supervisor. Chair involvement of doctoral students might still not be inferior to structured programs as on-the-job training is crucial and the involvement of doctoral students in day-to-day work may be important in this process. Skills are augmented with standards, acceptable values and behaviors. Formal rules can be taught in structured programs because they apply to every scientist and researcher. But there are also more implicit ethics. The best of both systems can probably be achieved by a combination of both worlds.

Overall, structured programs can increase the efficiency and quality of doctoral education. Standardized skills and general values, norms and ethics can be effectively transmitted and peer-effects in the socialization process and group learning can be valuable. Increased efficiency means that not every chair needs to provide the full, general set of training content, but can focus on the more topic-specific part of the skill set. This cannot only reduce the burden on senior researchers and professors, but can also allow for more interdisciplinary elements in the general part of the doctoral education (Boden, Borrego, & Newswander, 2011). It may also allow a larger group of students to be trained by stars and researchers at the frontier of science, a luxury that would not have been accessible if every chair provides exclusive training for the doctoral students employed at that chair.

However, structured programs should not be used as a tool to simply churn out high(er) numbers of PhDs. The substantial increase in the number of doctoral candidates in Germany may work against the quality objective. Being involved in collaborative research with the supervisor or senior researchers is crucial for career development. Such intensive learning relationships may require that a critical part of the training occurs within a chair, laboratory or department rather than in a separate organization. In addition, program administration needs to be taken into account

which can be intensive in case of the need for continuous adjustment of the curriculum to keep it state-of-the-art as doing so can be more effortful than adjusting it only in smaller organizational units. An additional challenge in structured programs arises from the assignment of responsibilities and alienation as well as impersonal relations may be a problem if schools grow too large. The initial design of research training schools with smaller groups of doctoral researchers may therefore be superior in this regard to the very large and even university-wide schools. These two models, however, do not necessarily exclude each other. Smaller training groups may be part of a larger network of schools that comprise a university's training strategy for young researchers.

In the case of Germany, there is not a "one size fits all" solution in the design of doctoral programs across disciplines and universities of different sizes, technical universities and polytechnics. Funding of graduate programs should therefore leave considerable flexibility to the individual institution also with regard to the extent to which students will be involved in research conducted at the chairs or research groups of their supervisors. Funding of Graduate Schools through the Excellence Initiative appears to be a valuable tool of standard setting and for incentivizing universities to invest in the training of future scientists. However, larger schools are not necessarily better for implementing the institutional factors identified above and the approach to offering support for differently sized schools should not be abandoned. Moreover, RTGs and GS should not be seen as substitutes, but as distinct instruments for achieving higher quality doctoral training.

It should also be stressed that in science systems with a strong public research sector outside universities' structural programs also offer opportunities for training researchers at public research institutes by involving them in trainings jointly with young university researchers. Supervising professors through their function as role models, their work experience, contacts and networks will still be important gate-keepers for those who stay in academia and who move to other career paths. Graduate Schools, however, can expand the set of opportunities for young researchers and improve experience of graduate students as well as of the senior researchers and faculty who train them. As an increase in the quality of conducted research should constitute the ultimate objective, policymakers and university officials need to implement long-term strategies and consider the respective institutional context, enabling structures that avoid additional bureaucratic procedures and inflexible performance targets (see Martin, 2016).

References

Abbott, A. (2017). The secret to Germany's scientific excellence. *Nature, 549*(7670), 18–22.

Ambrasat, J., & Tesch, J. (2017). Structured diversity – The changing landscape of doctoral training in Germany after the introduction of structured doctoral programs. *Research Evaluation, 26*(4), 292–301.

Antony, J. S. (2002). Reexamining doctoral student socialization and professional development: Moving beyond the congruence and assimilation orientation. In J. C. Smart & W. G. Tierney (Eds.), *Higher education: Handbook of theory and research* (pp. 349–380). Dordrecht, The Netherlands: Springer.

Austin, A. E., & McDaniels, M. (2006). Preparing the professoriate of the future: Graduate student socialization for faculty roles. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. XXI, pp. 397–456). Dordrecht, The Netherlands: Springer.

Baldauf, B. (1998). Doctoral education and research training in Germany: Towards a more structured and efficient approach? *European Journal of Education, 33*(2), 161–182.

Bercovitz, J., & Feldman, M. (2008). Academic entrepreneurs: Organizational change at the individual level. *Organization Science, 19*(1), 69–89.

Boden, D., Borrego, M., & Newswander, L. K. (2011). Student socialization in interdisciplinary doctoral education. *Higher Education, 62*(6), 741–755.

Bragg, A. K. (1976). *The socialization process in higher education* (ERIC/AAHE Research Report, No. 7). Washington, DC: American Association for Higher Education.

BuWiN. (2017). *2017 national report on junior scholars*. Consortium for the National Report on Junior Scholars.

De Vogel, S. (2017). Wie beeinflussen Geschlecht und Bildungsherkunft den Übergang in individuelle und strukturierte Promotionsformen? *Kölner Zeitschrift für Soziologie und Sozialpsychologie, 69*(3), 437–471.

DFG. (2010). *20 years of research training groups – Matrix for new doctoral cultures: Innovative, interactive, international*. Bonn, Germany: German Research Foundation (DFG).

DFG. (2013a). *Excellence initiative at a Glance*. Bonn, Germany: German Research Foundation (DFG).

DFG. (2013b). *Safeguarding good scientific practice*. Bonn, Germany: German Research Foundation (DFG).

Enders, J. (2001). A chair systems in transition: Appointments, promotions, and gate-keeping in German higher education. *Higher Education, 41*(1–2), 3–25.

Enders, J., & De Weert, E. (2004). Science, training and career: Changing modes of knowledge production and labour markets. *Higher Education Policy, 17*(2), 135–152.

European Commission/EACEA/Eurydice. (2015). *The European higher education area in 2015: Bologna process implementation report*. Luxembourg, Luxembourg: Publications Office of the European Union.

Fuhrmann, C., Halme, D., O'Sullivan, P., & Lindstaedt, B. (2011). Improving graduate education to support a branching career pipeline: Recommendations based on a survey of doctoral students in the basic biomedical sciences. *CBE Life Sciences Education, 10*(3), 239–249.

Gardner, S. K. (2007). I heard it through the grapevine: Doctoral student socialization in chemistry and history. *Higher Education, 54*(5), 723–740.

Golde, C. M. (2005). The role of the department and discipline in doctoral student attrition: Lessons from four departments. *Journal of Higher Education, 76*(6), 669–700.

Golde, C. M., & Walker, G. E. (2006). *Envisioning the future of doctoral education* (Preparing stewards of the discipline – Carnegie essays on the doctorate). San Francisco: Jossey-Bass.

Groenvynck, H., Vandevelde, K., & van Rossem, R. (2013). The PhD track: Who succeeds, who drops out? *Research Evaluation, 22*(4), 199–209.

Guth, J. (2006). The Bologna process: The impact of higher education reform on the structure and organisation of doctoral programmes in Germany. *Higher Education in Europe, 31*(3), 327–338.

GWK. (2015). *Bericht der Gemeinsamen Kommission zur Exzellenzinitiative an die Gemeinsame Wissenschaftskonferenz*. German Research Foundation (DFG) and German Council of Science and Humanities (WR).

Hall, B. H., Mairesse, J., & Turner, L. (2007). Identifying age, cohort, and period effects in scientific research productivity: Discussion and illustration using simulated and actual data on French physicists. *Economics of Innovation and New Technology, 16*(2), 159–177.

Hauss, K., Kaulisch, M., Zinnbauer, M., Tesch, J., Fräßdorf, A., Hinze, S., et al. (2012). *Promovierende im Profil: Wege, Strukturen und Rahmenbedingungen von Promotionen in Deutschland. Ergebnisse aus dem Profile-Promovierendenpanel* (iFQ-Working Paper Nr. 13). Berlin, Germany: iFQ

Hornbostel, S. (2009). Promotion im Umbruch – Bologna ante Portas. In M. Held, G. Kubon-Gilke, & R. Sturn (Eds.), *Jahrbuch Normative und institutionelle Grundfragen der Ökonomik* (pp. 213–240). Marburg, Germany: Metropolis Verlag.

Horta, H., & Lacy, T. A. (2011). How does size matter for science? Exploring the effects of research unit size on academics' scientific productivity and information exchange behaviors. *Science and Public Policy, 38*(6), 449–460.

Hottenrott, H., & Lawson, C. (2017). Flying the nest: How the home department shapes researchers' career paths. *Studies in Higher Education, 42*(6), 1091–1109.

IEKE. (2016). *Endbericht der Internationalen Expertenkommission zur Evaluation der Exzellenzinitiative*. International Expert Commission to Evaluate the Excellence Initiative (IEKE).

Janson, K., Schomburg, H., & Teichler, U. (2007). *Wege zur Professur: Qualifizierung und Beschäftigung an Hochschulen in Deutschland und den USA*. Münster, Germany: Waxmann.

Kehm, B. M. (2006a). The German 'initiative for excellence' and rankings. *International Higher Education, 44*, 20–22.

Kehm, B. M. (2006b). Doctoral education in Europe and North America. A comparative analysis. In U. Teichler (Ed.), *The formative years of scholars* (Vol. 83, pp. 67–78). London: Portland Press.

Kehm, B. M. (2007). Quo vadis doctoral education? New European approaches in the context of global changes. *European Journal of Education, 42*(3), 307–319.

Kiley, M., & Mullins, G. (2005). Supervisors' conceptions of research: What are they? *Scandinavian Journal of Educational Research, 49*(3), 245–262.

Korff, S., & Roman, N. (2013). *Promovieren nach Plan? Chancengleichheit in der strukturierte Promotionsförderung*. New York: Springer.

Kuratko, D. F., & Menter, M. (2017). The role of public policy in fostering technology-based nascent entrepreneurship. In J. A. Cunningham & C. O'Kane (Eds.), *Technology-based nascent entrepreneurship: Implications for economic policymaking* (pp. 19–52). New York: Palgrave Macmillan.

Kyvik, S., & Olsen, T. B. (2014). Increasing completion rates in Norwegian doctoral training: Multiple causes for efficiency improvements. *Studies in Higher Education, 39*(9), 1668–1682.

Lee, A. (2008). How are doctoral students supervised? Concepts of doctoral research supervision. *Studies in Higher Education, 33*(3), 267–281.

Louvel, S. (2012). The 'industrialisation' of doctoral training? A study of the experiences of doctoral students' and supervisors' in the French life sciences. *Science and Technology Studies, 25*(2), 21–43.

Mangematin, V. (2000). PhD job market: Professional trajectories and incentives during the PhD. *Research Policy, 29*(6), 741–756.

Martin, B. R. (2016). What's happening to our universities? *Prometheus, 34*(1), 7–24.

McDaniels, M. (2010). Doctoral student socialization for teaching roles. In S. K. Gardner & P. Mendoza (Eds.), *On becoming a scholar: Socialization and development in doctoral education* (pp. 29–44). Sterling, TX: Stylus.

Menter, M., Lehmann, E. E., & Klarl, T. (2018). In search of excellence: A case study of the first excellence initiative of Germany. *Journal of Business Economics, 88*(9), 1105–1132.

Mittelstraß, J. (2010). Der Königsweg zur Promotion. In M. Wintermantel (Ed.), *Promovieren heute: Zur Entwicklung der deutschen Doktorandenausbildung im europäischen Hochschulraum* (pp. 35–41). Hamburg, Germany: Edition Körber-Stiftung.

Nerad, M. (2004). The PhD in the US: Criticism, facts, and remedies. *Higher Education Policy, 17*(2), 183–199.

Park, C. (2005). New variant PhD: The changing nature of the doctorate in the UK. *Journal of Higher Education Policy and Management, 27*(2), 189–207.

Pinheiro, D., Melkers, J., & Youtie, J. (2014). Learning to play the game: Student publishing as an indicator of future scholarly success. *Technological Forecasting and Social Change, 81*, 56–66.

Roach, M., & Sauermann, H. (2010). A taste for science? PhD scientists' academic orientation and self-selection into research careers in industry. *Research Policy, 39*(3), 422–434.
Sauermann, H., & Roach, M. (2012). Science PhD career preferences: Levels, changes, and advisor encouragement. *PLoS One, 7*(5), e36307.
Schiermeier, Q. (2017). Golden Germany – Government's push for excellence is creating a golden age of opportunity for scientists flocking to the country. *Nature, 549*, 119–121.
Spronken-Smith, R., Cameron, C., & Quigg, R. (2018). Factors contributing to high PhD completion rates: A case study in a research-intensive university in New Zealand. *Assessment & Evaluation in Higher Education, 43*(1), 94–109.
Staton, A. (1990). *Communication and student socialization*. Norwood, OH: Ablex.
Stein, E. L., & Weidman, J. C. (1989, November 2–5). *Socialization in graduate school: A conceptual framework*. Paper presented at the annual meeting of the association for the study of higher education, Atlanta, GA.
Thune, T. (2009). Doctoral students on the university-industry interface: A review of the literature. *Higher Education, 58*(5), 637–651.
Tierney, W. G. (1997). Organizational socialization in higher education. *Journal of Higher Education, 68*(1), 1–16.
Tierney, W. G., & Rhoads, R. A. (1994). *Enhancing promotion, tenure and beyond: Faculty socialization as a cultural process*. Washington, DC: George Washington University.
Twale, D., & Kochan, F. (2000). Assessment of an alternative cohort model for part-time in an educational leadership program. *Journal of School Leadership, 10*(2), 188–196.
Van Maanen, J., & Schein, E. H. (1979). Toward of theory of organizational socialization. *Research in Organizational Behavior, 1*, 209–264.
Weidman, J. C., & Stein, E. L. (1990, October 26–28). *The professional socialization of graduate students in educational administration*. Paper presented at the annual meeting of the University Council for Educational Administration, Pittsburgh, PA.
Weidman, J. C., & Stein, E. L. (2003). Socialization of doctoral students to academic norms. *Research in Higher Education, 44*(6), 641–656.
Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Part V
Diversity and Interdisciplinarity in STEM Graduate Student Socialization

Chapter 13
Doing, Caring, and Being: "Good" Mentoring and Its Role in the Socialization of Graduate Students of Color in STEM

Kimberly A. Griffin, Vicki L. Baker, and KerryAnn O'Meara

Many scholars have focused on the important role mentoring plays as a central conduit for teaching and learning, and have identified the intensive relationships students and faculty form as the foundation of graduate education (e.g., Barnes & Austin, 2009; Kelly & Schweitzer, 1999; Nakamura, Shernoff, & Hooker, 2009). Mentoring relationships and close interactions with faculty are also important in the socialization process in graduate education, creating opportunities for faculty to help students learn knowledge and skills in their field, introduce academic norms, enhance student confidence and self-efficacy, and help students gain access to resource and information-rich networks. Access to these experiences and opportunities to learn can translate to both persistence in graduate education and later professional success (Austin, 2002; Belcher, 1994; Dixon-Reeves, 2003).

Although foundational to graduate education and a key factor in student socialization, mentoring researchers suggest students of color have uneven experiences with these relationships, challenging whether and how they develop connections and learn the norms and values of the field (Felder, Stevenson, & Gasman, 2014; Patton, 2009). Students may seek connections with faculty who share their racial and/or gender identities, allowing them to benefit from insights of individuals who may have navigated similar marginalization and identity related issues in the acad-

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emy (Baker, Pifer, & Griffin, 2014; Blake-Beard, Bayne, Crosby, & Mueller, 2011; Patton, 2009). However, given the underrepresentation of Black, Latinx, and Native American faculty, particularly in science (NSF, 2017), there may be fewer opportunities for students to make these connections. Further, Curtin, Malley, and Stewart (2016) found that underrepresented minority students, particularly women of color, have less access than their White, Asian, and male peers to instrumental mentoring, which offers specific guidance through core tasks like research and other professional issues. Challenges students from underrepresented minority backgrounds encounter establishing and having their needs met within mentoring relationships may translate to diminished sense of belonging, science identity, and interest in science careers (MacLachlan, 2006).

Although researchers have addressed the relational challenges graduate students of color may encounter, little research addresses how Black and Latinx students define their needs as they are being socialized in the field, and whether or not their mentoring needs are being met. This chapter offers a deeper understanding of mentoring relationships as a vehicle for socialization in graduate education, focusing on Black and Latinx students' perceived access to and outcomes associated with "good mentoring" in science. Our findings suggest that while access to research experiences are critical to becoming a scientist, mentors must go beyond providing students with research experiences as they socialize graduate students of color into the field. Students value the role faculty can play as supportive guides, demonstrating how to think through science problems, and how to approach their work. Students grow from faculty taking the time to care for them as individuals. Experience, guidance, and care collectively fostered students' confidence in and understanding of the field, highlighting the nuanced ways relationships can foster socialization.

Background

Two related frameworks guide our examination of whether and how graduate students from underrepresented backgrounds gain access to norms and develop the skills and identities necessary for success in science through their mentoring relationships. First, we use Weidman, Twale, and Stein's (2001) framework for graduate and professional student socialization. The authors identify three core elements related to graduate students' development of an identity congruent with the norms and values of their field: knowledge acquisition, investment, and involvement. Knowledge acquisition captures how students learn skills and information that will help them perform well in their new roles, as well as an understanding of what is required for success. Investment reflects the student's commitment to learning and understanding the skills and values associated with their new roles, which requires a commitment of time, energy, reputation, or other things of personal value. Finally, involvement reflects the student's participation in the development of their identities and fit for their role. The student must be willing to train and practice, as well as

initiate and develop relationships with others, to learn the skills and values associated with their field.

Although the socialization framework focuses attention on the student and the degree to which they are learning and engaged in the process of immersion into field norms and values, our second framework, sociocultural conceptions of learning (SCL) focuses on the role of social interactions and how they inform and support learning and the identity development processes. As individuals seek to earn legitimacy in a given community, they engage in community practices as a means of moving from the periphery to a more central, actively engaged role, fostering a sense of identity and connection to the community (Wegner, 2000). SCL emphasizes the social process of becoming a part of an academic community, as students learn central concepts, ways of validating knowledge, and values of their specific field, leading to a sense of identity and connection to their area of study (Baker & Lattuca, 2010).

Previous research suggests community membership and engagement are central to how students learn what it means to be a scientist. While developing competency in science may be rooted in learning content and developing research skills in classes and through research experiences, it is important to note that norms and values of the field are primarily transmitted outside of the classroom (Anderson & Louis, 1994). Studies have increasingly turned attention to the importance of participation in programmatic and social activities, as well as departmental and disciplinary cultures, as critical factors for graduate student success (Austin et al., 2009; Bair, Haworth, & Sandfort, 2004; Golde, 1996; Lovitts, 2001).

Faculty members, who serve as well-established and experienced community members, play an important role in this process, as they provide insights into the accepted (and unaccepted) practices of a given community through modeling of behaviors and by sharing access to their professional networks. In this way, they serve as stewards, or individuals who engage in the intellectual community, generating new ideas and knowledge, preserving the fundamental principles and ideas of an existing disciplinary domain, and playing an active role in using knowledge to transform the intellectual community (Walker, Golde, Jones, Bueschel, & Hutchings, 2008). Stewards work to bring in new community members and assume responsibility for such inclusion. Further, faculty members in their role as stewards can validate community membership for doctoral students as they seek to move from a peripheral to a more central role through engagement in community practices (Baker & Lattuca, 2010).

A framework that directly addresses the importance of social processes and relationships as a vehicle for community membership and shared identity is particularly useful when focusing on the experiences of marginalized populations in higher education generally, and graduate from underrepresented backgrounds in science, specifically. Research suggests that many Black and Latinx graduate students struggle with establishing relationships that could translate to deeper connections to their respective fields (Gildersleeve, Croom & Vasquez, 2011).

Students of color often face social isolation as one of few or the only racial or ethnic minority student in their academic programs, struggling to form relationships

that could lead to a sense of belonging and connection to their programs and disciplines (Gasman, Hirschfeld, & Vultaggio, 2008; Gildersleeve, Croom, & Vasquez, 2011; Howard-Hamilton, Morelon-Quainoo, Johnson, Winkle-Wagner, & Santiague, 2009). This isolation may be especially salient in science, where Black, Latinx, and Native American students are represented in very small numbers (Malone & Barabino, 2009; Ong, Wright, Espinosa, & Orfield, 2011). Further, research suggests many students of color encounter racism and low expectations when engaging faculty, which can interfere with their ability to develop and deepen relationships, and limits their ability to broaden their networks in their respective fields (Daniel, 2007; Felder, Stevenson, & Gasman, 2014; Gardner, 2008; Noy & Ray, 2012). Centering students' needs within relationships allows us to shift focus from student-based interventions to strategies that address the marginalization graduate students of color face. Such a focus allows us to see not only how to improve access to mentoring relationships, but also how to address relationship quality, building productive relationships that prioritize the needs of students of color as they seek to become community members.

Methods

This chapter features a case study in which we explored the mentoring experiences of a group of Black and Latinx students to better understand how graduate students of color in science define good mentoring and identify their needs in mentoring relationships. We also sought to learn more about how behaviors associated with mentoring relationships translate into socialization and community membership. Study participants are students who participate in the AGEP PROMISE Program, which is an NSF funded program serving graduate students within the University of Maryland System (for more on the history of PROMISE, please see Tull, Rutledge, Warnick & Carter, 2012). PROMISE offers financial resources, academic programming, mentorship, and support to facilitate the retention, success, and career development of underrepresented STEM graduate students and postdoctoral scholars throughout the University of Maryland System.

Study Participants

Data were collected from 17 participants, all enrolled as graduate students in the sciences in one of three institutions in the University of Maryland system. Two of the represented institutions are classified as "very high research activity" while the third is classified as a "special focus institution." Eight participants were male, and 9 were female. Fifteen are Black/African American and two identified as Latinx. There was substantial diversity in the STEM degree programs in which students were enrolled. This study employs the NSF's broad definition of STEM fields,

Table 13.1 Participant information and demographics

Name	Race/Ethn	Sex	Field	Career Aspirations
Angie	Black	Female	Chemistry	Industry
Brianna	Black	Female	Engineering	Industry
Camille	Black	Female	Molecular Medicine	Undecided
Erica	Black	Female	Environmental Science	Academy
Felton	Black	Male	Engineering	Industry
Henry	Black	Male	Engineering	Industry
Jackson	Black	Male	Engineering	Industry
Jordan	Black	Female	Chemistry	Industry
MacKenzie	Black	Female	Chemistry	Undecided
Marco	Latino	Male	Computer Science	Academy
Owen	Black	Male	Engineering	Undecided
Perry	Black	Male	Engineering	Undecided
Ray	Latino	Male	Biology	Undecided
Richard	Black	Male	Chemistry	Industry
Sandra	Black	Female	Engineering	Industry
Sheila	Black	Female	Biology	Industry
Tanya	Black	Female	Molecular Medicine	Undecided

which includes chemistry, computer and information science, engineering, geosciences, life sciences, mathematical sciences, physics and astronomy, social sciences (e.g., anthropology, economics, psychology, and sociology), and STEM education and learning. Seven participants were enrolled in engineering programs, one was in computer science, and one was in environmental science. Four were in chemistry, two in biology, and two in molecular medicine. Table 13.1 provides descriptive information about the respondents.

Data Collection

Each interested student participated in an individual, semi-structured interview either in person or by phone. All interviews were recorded, and later transcribed for analysis. Interviews were approximately 1 h long, and participants were asked to share information about the nature and quality of their experiences in graduate school. As they reflected on their experiences, participants were asked to explain: (a) their definitions of mentoring, (b) the degree to which they received mentoring support, (c) the general nature of their relationship with peers and faculty, (d) the types of activities in which they engage, and (e) whether and how mentoring is related to their achievement and success as a graduate student and beyond. Rather than focusing only on relationships with their principal investigators and advisors, students were asked to think broadly about any individual that provided them with support. They also were asked to consider what influenced how they interact with

faculty, exploring whether and how PROMISE activities are related to their developmental interactions.

Data Analysis

All data collected in this project were organized through a systematic coding process, which was adapted from the qualitative analytic strategy utilized in team-based studies conducted by the Center for Disease Control (see MacQueen, McLellan, Kay, & Milestein, 1998 for details). All interviews were read multiple times by the investigators. Each investigator wrote memos articulating key ideas and emerging themes appearing in each individual interview, as well as comprehensive memos that captured trends in the data overall. These memos were reviewed by members of the research team and served as the foundation of a report of preliminary findings, documenting the emerging themes.

The data were then coded to further analyze the accuracy of investigators' early perceptions of trends in the data. Deductive codes were developed based on the interview protocol, theoretical frameworks, and key findings in the published research on mentoring relationships in higher education (e.g., personal support, career support, specific interview questions). Inductive codes were developed based on a review of the memos and the identified emerging themes (e.g., networking, the importance of care). The inductive and deductive codes were combined into one comprehensive codebook, and applied to the full dataset using Dedoose analytic software. After coding was complete, data were sorted by applied codes and clustered into themes to determine the trustworthiness of early impressions of the emerging themes and findings.

Findings

In the following section, we share our participants' experiences and perspectives about mentoring. Specifically, we demonstrate how mentoring relationships serve as an important mechanism whereby students of color are socialized into the role of scientist and the academic environment. Our findings reveal the importance of mentors providing opportunities to students of color to engage in the work of scientists (e.g., community practices) as a critical component of the socialization process for graduate students of color in STEM. In addition, narratives note the importance of care and personal connection in these relationships, and how they deepen opportunities for socialization.

Facilitating Engagement in Community Practices

Participants' assessments of good mentoring primarily focused on how mentors used their knowledge and experience to guide students while engaged in community practices. The most frequently cited community practices deemed critical for developing the necessary knowledge and acceptance in the field included: laboratory research, research presentations, coursework, and working as teaching assistants. Students developed a deeper understanding of a scientist identity and learned "how to be a scientist," (knowledge acquisition) through direct engagement in the work of science (involvement, community practice), learning skills and developing competency in their respective fields. Camille, for example, appreciated how faculty in her program interacted with students in the classroom, teaching them to "think about issues as scientists" by asking tough questions without the provision of answers, pushing them to engage in the process of critical thinking.

Students' exposure to knowledge acquisition through involvement in community practices largely took place outside of the classroom. Jackson noted that interacting with his mentor in the laboratory provides him with, "a good sense of the major questions I should be asking when doing research or doing some type of independent study…I am learning [through these interactions and questions] how to be a good researcher." Jackson expected that his growth and learning would expand over time, sharing "I expect that I'll be working a lot more intimately with him…even telling him what I think the direction [of the lab] should be and giving him advice on that." Thus, Jackson described this evolution in his involvement as providing him the needed knowledge and acumen to run a successful and productive lab in the future. MacKenzie also spoke very positively about her mentor, and explained how he creates opportunities for her to attend conferences and meetings to present her work. Their relationship is also a productive one, by academic standards. At the time of data collection, MacKenzie co-authored her third publication with her mentor, and she served as the first author, or leading scholar on their collaborative work: "All three of those are first-author for me. [My mentor] is very supportive; we go back and forth with drafts, [mentor] is always open to my suggestions, and [mentor] allows me pretty much creative license." MacKenzie's involvement in academic conferences and writing translated to her skill development, and at the same time, her work with her mentor drew her into the academic community, as she was increasingly independent and contributing to the discourse.

While participants spoke about the important ways in which their mentors contribute by providing them with opportunities to be involved in community practices, they also noted how support from faculty was lacking, making these relationships less beneficial and resulting in fewer opportunities for meaningful knowledge acquisition. Marco reflected on a lack of guidance during his research experience. While he had access to a laboratory and opportunities to participate in research, Marco's advisor was not his mentor and offered few insights that would help him grow and develop an identity as a scientist or member of the science community,

> We've never, for example, talked about how we acquire data, what data we are going to work with, which is very strange to me. I feel like I need more involvement from them and more guidance as to how to become a stronger academic.

Brianna also spoke about the importance of the appropriate level of guidance in her reflections on mentorship. Brianna appreciated that her faculty advisor during her Master's program offered her "guidance, but she [also] wanted to know how I thought… she let you go but if you have a concern, if you had a question, that was taken seriously." Her current advisor, who she did not perceive as a mentor, wanted to meet frequently, and was more critical and hands on than Brianna would have liked, providing her with less independence and fewer opportunities to explore and develop knowledge and understanding on her own. These insights illustrate the important role mentors play in not only creating opportunities for engagement in community practices, but also guiding opportunities for learning and knowledge acquisition during these experiences.

Providing Examples of Future Roles

Participants also noted that good mentoring included opportunities for knowledge acquisition about the technical realities of science as a profession, and how to navigate those realities. While this could include involvement in specific tasks and laboratory activities, participants often gained insights through conversations, observations, and opportunities to develop deeper relationships with their mentors. For instance, Felton described conversations with his mentor, where he could ask questions such as, "How would I do this?" or "How would they do this?" when referring to other colleagues in the field. These questions allowed his mentor to offer advice based on his experience and those of other professionals in the field, such as how to design an experiment and seek funding to support it. Felton summed up these interactions by noting, "It's having teachable moments where [my mentor] helped me learn how to problem-solve just by listening to him, and his using others' experiences to illustrate key ideas." Jackson shared similar observations about his interactions with his mentor when he said, "From my current advisor [also identified as a mentor], I feel like I just get a good sense of the major questions I should be asking when doing research or doing some type of independent study ….I am learning [through these interactions and questions] how to be a good researcher." Ray echoed Jackson's belief about the important role mentors can (and should) play in shaping critical disciplinary and professional understandings:

> You don't really get a sense of what it's like to publish, what it's like to collaborate with people, or what it's like to write grants before you have a good relationship with your mentor and you can actually see how it works in the real world. I think your mentor is very crucial to your development with that. In order to be able to write a paper or a grant, your success in these activities, could depend a lot on how good you are mentored.

Brianna was not interested in a career in academia, and wanted to work in industry. She saw the importance of engaging with mentors that could provide her with insights into that field, sharing, "I need to be there to experience – to see how the process works and what they're doing." She appreciated engaging with mentors in industry that could explain how they thought about opportunities with which they were presented, and how to gain access to similar opportunities herself. Brianna, Felton, Jackson, and Ray shared interactions where mentors offered a preview or rehearsal of intended career tasks. These rehearsals had the dual benefit of enhancing knowledge and skills and signaling students belonged in the career.

Care and Affirmation

As they described their perceptions of good mentoring, participants most often focused on opportunities to engage community practices that helped them to develop disciplinary knowledge and technical skills. However, several participants also noted the importance of psychosocial and emotional components of their relationships. Participants who discussed the importance of psychosocial support in their mentoring relationships most often shared the desire to be seen and cared about as individuals. Some missed more personal forms of support and openness in their relationships with faculty. MacKenzie described her mentoring relationship as "good, very positive," providing her with access to a great deal of career guidance and support. But she also noted that it was "very professional, and not really personal in any way. He is very understanding if there are personal issues that you have to deal with, but we don't talk on a personal level."

Jackson described his relationship with his advisor as "purely professional," and when asked what he would change, wished that their interactions could be "a little bit more personal, like almost not always an exchange of information about what we're working on, what your next steps are, and things like that, but just learning more about how we are." He went on to connect more personal interactions to his comfort engaging professionally: "… being able to speak on a more personal level [would] make asking certain questions easier down the road…" Thus, for Jackson, having the opportunity to connect personally would create new opportunities for knowledge acquisition. Personal connection would increase Jackson's willingness to openly share his questions and concerns.

Participants considered support and affirmation to be an asset in any faculty relationship, particularly fostering students' investment, or commitment to the norms and values of science and scientists. Felton did not want a close personal relationship with his advisor, but believed his advisor's reputation as an "excellent teacher and a really good person" drew people to the lab, and led to a positive training environment for students. Sandra had a unique relationship with her two advisors. They were not engaged with her lab work, which at times was frustrating in her process of knowledge acquisition and required her to solve problems independently. However, she applauded their support and faith in her and her abilities,

> My advisors have always been supportive and have always had a lot of faith in me. And so that's been really encouraging because I think that if my advisors were as busy as they are now, but also maybe not as supportive or not as encouraging, I might have not gotten this far. Because it's really just been too difficult to deal with unsupportive advisors who are also not available.

Despite their limited presence in the laboratory, Sandra was able to appreciate the psychosocial support and encouragement she received, highlighting its importance in relationships.

Confidence and Motivation

Participants also saw the benefits of having mentors that pushed them and encouraged them to persist, especially when they faced challenges during their training. For example, as she searched for a mentor, Tanya wanted someone who would push her to, but not beyond, her capacity: "a mentor is someone who really guides you and shows you the way but not pushing you past your limit but pressing you towards your limit."

Participants felt this kind of encouragement signaled that their faculty mentors were confident in their abilities. Tanya hoped to find a mentor that would be patient with her mistakes, ultimately having confidence in her abilities and potential to learn. Perry had two advisors, and his primary advisor's motivation style included affirmation, reminding him to stay focused on his strengths when facing a challenge in the classroom:

> My primary advisor was really good at motivating me and saying, "Okay, it's okay. The classes are one thing, but you're doing great things in the research… Just balance a little better, just get through. It will be fine." So one is great at motivating that way.

MacKenzie shared a similar experience she had with her mentor. She had doubts about her abilities after receiving feedback on a research paper, and described how his interactions with her were motivational and a reminder of his confidence in her work:

> … when we published our first paper we sent it to a couple of our competitors, just to get a first line of review. And they came back and the reviews were terrible. I was broken-hearted like, "Oh my God they tore my work apart! I'm good for nothing! I got to start all over. I [have to] come up with the whole new project." And he is like, "What? No! They're just – they're mad they didn't think of it. We did really good work. We're going to publish this" … He really put things in perspective for me.

In this interaction, MacKenzie's mentor role modeled a way of framing peer critique. He not only provided insight into the context of the review and how to address feedback; he also offered encouragement. Through such experiences students learned that mistakes and challenges are critical aspects of doing good science. Encouragement, affirmation, and belief in their abilities as scientists appeared

important as students took risks and moved forward in pursuit of their goals, facilitating their investment in the field.

Discussion

Scholars, institutional leaders, and policymakers have repeatedly offered mentorship as a viable means of support to foster retention and student success, and particularly valuable for students of color as they navigate less than welcoming environments in science (Carlone & Johnson, 2007; George & Neale, 2006; Ong et al., 2011). While many have argued that students from underrepresented backgrounds need more access mentors, less attention has been focused on the quality of these relationships and how to make sure students' needs are met. Ultimately, we hope the findings of this research can help improve the quality of relationships between students of color and their academic advisors and mentors. Deeper understandings of students' expectations and needs within these relationships can inform mentoring interventions, especially as they relate to fostering student growth, development, and community membership.

This chapter uncovered new ways of understanding the relationships between mentorship and guidance, student socialization, sociocultural conceptions of learning, and student agency as we explored how a group of Black and Latinx students perceived their relational needs as they navigated graduate school and learned how to become scientists. While researchers have documented the challenges graduate students of color face as they try to find and establish mentoring relationships (Brown, Davis, & McClendon, 1999; Thomas, Willis, & Davis, 2007), this work focused on how students' articulate their mentoring needs and how the roles and actions of mentors can foster socialization and community membership. Our findings suggest students of color desired connections with advisors, with strong communication and investment in their careers. When these were present, students felt it was easier to acquire skills, understandings, and identity as scientists.

The complementary frameworks of Weideman et al.'s (2001) socialization and Wegner's (2000) sociocultural conception of learning (SCL) helped us explore and understand how doctoral students developed the necessary knowledge to not only be successful in their respective fields (e.g., "doing" science), but also be accepted community members (e.g. "being" scientists). Integrating SCL helped us understand why, and in what ways, doctoral students' engagement and involvement in community practice, often mediated by mentoring relationships, supported their socialization journey as they began to develop the identities of scientist and academic.

When asked to identify their mentoring needs and what made for good mentorship, participants largely described the value of specific guidance through core tasks, as well as advocacy and exposure to important experiences. Participants called for their advisors to teach them the norms of science, and give them a glimpse into their future careers in the field through opportunities to develop their skills

through internships, lab experiments, teaching class sessions, writing grants, submitting and leading article revisions, or negotiating collaborative research partnerships. In many ways, these needs reflect common principles associated with socialization, addressing the need for knowledge acquisition, both in terms of skills and values needed to be successful (Weidman et al., 2001). This finding is consistent with previous work showing that one of the major contributions academic departments and faculty can provide their students are opportunities to experience firsthand the work professors do (Baker & Lattuca, 2010; Baker & Pifer, 2014). Given the importance of these concrete experiences, it may be useful to develop and implement inventories of practical work experiences available within academic programs. These inventories could be used to ensure students have equal access to these experiences, and be used to guide training experiences and developmental guidance and mentorship offered by students' advisors.

Integrating SCL allowed us to further explore the connections between knowledge acquisition (doing science) and identity development (being a scientist), and how relationships and social interactions can foster community membership. Students sought opportunities to learn and understand the details of scientific and academic life; they wanted to go beyond completing experiments to understanding all of the components of the scholarly process and what it would look like to engage in that process themselves. Participants coupled opportunities to engage in the community practices central to science (research, teaching, presenting scholarship), with the need for guidance and insight into how to complete various tasks and engage activities. Interestingly, while guidance and direction were key, students also sought autonomy. They hoped mentors would provide insight based on their past experiences, but ultimately allow them to make their own decisions.

This insight may be valid and applicable in mentoring relationships in graduate education generally. However, it is particularly important to note when discussing the development of students from underrepresented backgrounds given the attention focused on cultivating science identity (e.g., Carlone & Johnson, 2007, Chang, Eagan, Lin, & Hurtado, 2011; Chemers, Zubriggen, Syed, Goza, & Bearman, 2011) and providing access to research opportunities (e.g., Hurtado, Cabrera, Lin, Arellano, & Espinosa, 2009) as strategies to promote equity in STEM. As these opportunities are developed, these findings suggest it is important to consider whether and how Black and Latinx students are guided through the learning process, and whether these opportunities are accompanied by an appropriate balance of guidance and independence. Our findings suggest striking this balance creates not only deeper opportunities for knowledge acquisition and the development of science skill, but also feeling like a scientist and a connection to community. Many graduate students from underrepresented backgrounds face marginalization and report experiences that exclude them from their academic communities; faculty are often the perpetrators in these encounters (Felder, Stevenson, & Gasman, 2014; Gasman, Hirschfeld, & Vultaggio, 2008; Gildersleeve, Croom, & Vasquez, 2011; Howard-Hamilton et al., 2009; Johnson-Bailey, Valentine, Cervero, & Bowles, 2009). Thus, this finding reminds that faculty must be vigilant about not only whether they are providing students with opportunity, but also the quality of their

interactions as they are engaging and guiding students in the midst of community practice.

While psychosocial support was not explicit in participants' definitions of good mentoring, the Black and Latinx graduate students participating in this study made direct connections between the psychosocial aspects of their relationships and learning norms, values, and community practices. Care, support, and a belief in their abilities seemed connected to students' learning, identity development, confidence, risk taking, and persistence through the challenges of academic research. While participants did not describe needs in their mentoring relationships that were explicitly connected to their racial or ethnic identities, the desire to integrate care and personal connection may be uniquely important for underrepresented populations. Research suggests that students of color often desire and pursue close, personal relationships with faculty (e.g. Guiffrida, 2005; Patton, 2009). However, extant literature addressing the nature of the relationships between graduate students of color and faculty emphasizes the ways in which their relationships fall short in terms of personal connection, trust, recognition of their racial/ethnic identities, and socio-emotional support (Daniel, 2007; Felder, Stevenson, & Gasman, 2014; Gardner, 2008; Patton, 2009). Previous scholars have noted how a lack of mentorship or close relationships with faculty can translate to less opportunities, resources, and belonging in graduate education (Gopaul, 2011; Griffin et al., 2015). These findings also highlight how a lack of care may interrupt the socialization process and becoming a member of the science community, and conversely, how psychosocial support can encourage the academic and career development of underrepresented students. Thus, acknowledging and intentionally integrating the importance of emotional support and care in developmental relationships may be important as educational leaders seek to increase the representation and engagement of students from underrepresented backgrounds in STEM.

These findings also add nuance to our understanding of how students' stated expectations of mentors may not fully reflect their relational needs. The emphasis participants placed on mentorship that provided access to scientific training and introduction to community practices may be a reflection of scientific norms, which privilege objectivity, the development of skills, and the minimization of personal identity outside of the laboratory (Anderson & Lewis, 1994; Ong, 2005, Ong et al., 2011). STEM mentors and graduate students may not be socialized to recognize personal support as critical to developmental relationships (O'Meara, Knudsen, & Jones, 2013), shaping both students' and faculty members' expectations of what faculty-student relationships could and should look like. Further, STEM faculty may de-emphasize social and emotional dimensions of academic training (Anderson & Louis, 1994), and research suggests these faculty less often provide psychosocial mentorship (Curtin, Malley, & Stewart, 2016).

Further, it is also important to note that "advisor" and "mentor" may be used synonymously in academic spaces; however, it may be helpful to note the differences between advisors and mentors and how they can support graduate students of color. Advisors provide more practical academic support such as offering guidance on program requirements or milestones. Conversely, mentors offer more relational

and career-related support beyond mere academic requirements such as advocating for a mentee on the job market and providing access to community practices as a means of gaining exposure and experience in the intended field and career (Baker & Griffin, 2010). Although they may be labeled or refer to themselves as "mentors," faculty members may feel more comfortable providing advisory support due to a lack of experience or the perceived time commitment psychosocial support requires. Some faculty mentors may wish to offer personal encouragement and support, but feel as if they lack the skills or understanding of how to do so without crossing personal boundaries (O'Meara et al., 2013). Some embrace a "colorblind" perspective, not acknowledging identity, but also assuming their Black and Latinx students are less capable or interested in pursuing research careers. Others also may feel less well equipped to support graduate students from underrepresented backgrounds, perceiving them as having unique needs that are outside of their area of expertise (McCoy, Winkle-Wagner, Luedke, 2015).

It is important to note that good advising is critical to student success and development (Baker & Griffin, 2010); however, it also appears that intentional integration of the psychosocial dimensions of developmental relationships may be beneficial in supporting students from underrepresented backgrounds. Thus, faculty and institutional leaders should consider how they recognize the importance of the psychosocial dimensions of mentorship, determining how to assess not only quantity, but the quality of the relationships faculty form. Professional development workshops for faculty that focus on the development of emotional and social competency skills could be particularly useful as faculty develop skill in this area (O'Meara et al., 2013; Pfund, Pribbenow, Branchaw, Lauffer, Handelsman, 2006). Faculty might also look to models such as the National Research Mentoring Network (https://nrmnet.net/) funded by the National Institutes of Health as a resource for professional development on becoming stronger mentors.

In conclusion, our study suggests that notions of good mentoring should go beyond opportunities for knowledge acquisition. Our use of socialization and SCL as complementary frameworks sheds light on the conditions scaffolding student learning and retention in STEM careers. An analysis of narratives collected from Black and Latinx science graduate students suggests that becoming a scientist and learning scientific norms and values has a relational component, and requires a balance of access to opportunity within the academic environment with guidance, career insights, and care. Integrating these components in meaningful ways in mentoring and advising relationships may have implications for the satisfaction and success of students of color as we aim to retain them in STEM fields and the academy.

References

Anderson, M. S., & Louis, K. S. (1994). The graduate student experience and subscription to the norms of science. *Research in Higher Education, 35*(3), 273–299.

Austin, A. E. (2002). Preparing the next generation of faculty: Graduate school as socialization to the academic career. *The Journal of Higher Education, 73*(1), 94–122.

Austin, A. E., Campa, H., Pfund, C., Gillian-Daniel, D. L., Mathieu, R., & Stoddart, J. (2009). Preparing STEM doctoral students for future faculty careers. *New Directions for Teaching and Learning, 2009*(117), 83–95.

Bair, C. R., Haworth, J. G., & Sandfort, M. (2004). Doctoral student learning and development: A shared responsibility. *NASPA Journal, 41*(4), 709–727.

Baker, V., & Griffin, K. A. (2010). Beyond mentoring and advising: Towards understanding faculty "developers" and developmental networks in student success. *About Campus, 14*(6), 2–8.

Baker, V. L., & Lattuca, L. R. (2010). Developmental networks and learning: Toward an interdisciplinary perspective on identity development during doctoral study. *Studies in Higher Education, 35*(7), 807–827.

Baker, V. L., & Pifer, M. J. (2014). Preparing for practice: Parallel processes of identity development in stage 3 of doctoral education. *International Journal of Doctoral Studies, 9*, 137–154.

Baker, V., Pifer, M. J., & Griffin, K. A. (2014). Mentor-protégé fit: Identifying and developing effective mentorship across identities in doctoral education. *International Journal for Researcher Development, 5*(2), 83–98.

Barnes, B. J., & Austin, A. E. (2009). The role of doctoral advisors: A look at advising from the advisor's perspective. *Innovative Higher Education, 33*(5), 297–315.

Belcher, D. (1994). The apprenticeship approach to advanced academic literacy: Graduate students and their mentors. *English for Specific Purposes, 13*(1), 23–34.

Blake-Beard, S., Bayne, M. L., Crosby, F. J., & Muller, C. B. (2011). Matching by race and gender in mentoring relationships: Keeping our eyes on the prize. *Journal of Social Issues, 67*(3), 622–643.

Brown, M. C., Davis, G. L., & McClendon, S. A. (1999). Mentoring graduate students of color: Myths, models, and modes. *Peabody Journal of Education, 74*(2), 105–118.

Carlone, H. B., & Johnson, A. (2007). Understanding the science experiences of successful women of color: Science identity as an analytic lens. *Journal of Research in Science Teaching, 44*(8), 1187–1218.

Chang, M. J., Eagan, M. K., Lin, M. H., & Hurtado, S. (2011). Considering the impact of racial stigmas and science identity: Persistence among biomedical and behavioral science aspirants. *The Journal of Higher Education, 82*(5), 564–596.

Chemers, M. M., Zurbriggen, E. L., Syed, M., Goza, B. K., & Bearman, S. (2011). The role of efficacy and identity in science career commitment among underrepresented minority students. *Journal of Social Issues, 67*(3), 469–491.

Curtin, N., Malley, J., & Stewart, A. J. (2016). Mentoring the next generation of faculty: Supporting academic career aspirations among doctoral students. *Research in Higher Education, 57*(6), 714–738.

Daniel, C. (2007). Outsiders-within: Critical race theory, graduate education and barriers to professionalization. *Journal of Sociology & Social Welfare, 34*(1), 25–42.

Dixon-Reeves, R. (2003). Mentoring as a precursor to incorporation: An assessment of the mentoring experience of recently minted Ph. Ds. *Journal of Black Studies, 34*(1), 12–27.

Felder, P. P., Stevenson, H. C., & Gasman, M. (2014). Understanding race in doctoral student socialization. *International Journal of Doctoral Studies, 9*, 21–42.

Gardner, S. K. (2008). "What's too much and what's too little?": The process of becoming an independent researcher in doctoral education. *The Journal of Higher Education, 79*(3), 326–350.

Gasman, M., Hirschfeld, A., & Vultaggio, J. (2008). "Difficult yet rewarding": The experiences of African American graduate students in education at an ivy league institution. *Journal of Diversity in Higher Education, 1*(2), 126–138.

George, Y. S., & Neale, D. (2006). *Report from study group meetings to develop a research and action agenda on STEM career and workforce mentoring*. Washington, DC: American Association for the Advancement of Science Directorate for Education and Human Resources Programs.

Gildersleeve, R. E., Croom, N. N., & Vasquez, P. L. (2011). "Am I going crazy?!": A critical race analysis of doctoral education. *Equity & Excellence in Education, 44*(1), 93–114.

Golde, C. M. (1996). *How departmental contextual factors shape doctoral student attrition*. Doctoral Dissertation, Stanford University.

Gopaul, B. (2011). Distinction in doctoral education: Using Bourdieu's tools to assess the socialization of doctoral students. *Equity & Excellence in Education, 44*(1), 10–21.

Griffin, K. A., Gibbs Jr., K. D., Bennett, J. C., Staples, C., & Robinson, T. (2015). "Respect me for my science": A Bourdieuan analysis of women scientists' interactions with faculty and socialization into science. *Journal of Women and Minorities in Science and Engineering, 21*(2), 159–179.

Guiffrida, D. (2005). Othermothering as a framework for understanding African American students' definitions of student-centered faculty. *The Journal of Higher Education, 76*(6), 701–723.

Howard-Hamilton, M., Morelon-Quainoo, C. L., Johnson, S. D., Winkle-Wagner, R., & Santiague, L. (2009). *Standing on the outside looking in: Underrepresented students' experiences in advanced-degree programs*. Sterling, VA: Stylus.

Hurtado, S., Cabrera, N. L., Lin, M. H., Arellano, L., & Espinosa, L. L. (2009). Diversifying science: Underrepresented student experiences in structured research programs. *Research in Higher Education, 50*(2), 189–214.

Johnson-Bailey, J., Valentine, T., Cervero, R. M., & Bowles, T. A. (2009). Rooted in the soil: The social experiences of black graduate students at a southern research university. *The Journal of Higher Education, 80*(2), 178–203.

Kelly, S., & Schweitzer, J. H. (1999). Mentoring within a graduate school setting. *College Student Journal, 33*, 130–148.

Lovitts, B. E. (2001). *Leaving the ivory tower: The causes and consequences of departure from doctoral study*. New York: Rowman & Littlefield.

MacLachlan, A. J. (2006). *Developing graduate students of color for the professoriate in science, technology, engineering, and mathematics (STEM)*. Retrieved from http://escholarship.org/content/qt3892k4rm/qt3892k4rm.pdf

MacQueen, K. M., McLellan, E., Kay, K., & Milstein, B. (1998). Codebook development for team based qualitative analysis. *Cultural Anthropology Methods, 10*(2), 31–36.

Malone, K. R., & Barabino, G. (2009). Narrations of race in STEM research settings: Identity formation and its discontents. *Science Education, 93*(3), 485–510.

McCoy, D. L., Winkle-Wagner, R., & Luedke, C. L. (2015). Colorblind mentoring? Exploring white faculty mentoring of students of color. *Journal of Diversity in Higher Education, 8*(4), 225–242.

Nakamura, J., Shernoff, D. J., & Hooker, C. H. (2009). *Good mentoring: Fostering excellent practice in higher education*. San Francisco: Wiley.

National Science Foundation, National Center for Science and Engineering Statistics. (2017). *Women, minorities, and persons with disabilities in science and engineering: 2017*. Special Report NSF 17-310. Arlington, VA: Author. Retrieved from www.nsf.gov/statistics/wmpd

Noy, S., & Ray, R. (2012). Graduate students' perceptions of their advisors: Is there systematic disadvantage in mentorship? *The Journal of Higher Education, 83*(6), 876–914.

O'Meara, K., Knudsen, K., & Jones, J. (2013). The role of emotional competencies in faculty-doctoral student relationships. *The Review of Higher Education, 36*(3), 315–347.

Ong, M. (2005). Body projects of young women of color in physics: Intersections of gender, race, and science. *Social Problems, 52*(4), 593–617.

Ong, M., Wright, C., Espinosa, L., & Orfield, G. (2011). Inside the double bind: A synthesis of empirical research on undergraduate and graduate women of color in science, technology, engineering, and mathematics. *Harvard Educational Review, 81*(2), 172–209.

Patton, L. D. (2009). My sister's keeper: A qualitative examination of mentoring experiences among African American women in graduate and professional schools. *The Journal of Higher Education, 80*(5), 510–537.

Pfund, C., Pribbenow, C. M., Branchaw, J., Lauffer, S. M., & Handelsman, J. (2006). The merits of training mentors. *Science, 311*(27), 473–474.

Thomas, K. M., Willis, L. A., & Davis, J. (2007). Mentoring minority graduate students: Issues and strategies for institutions, faculty, and students. *Equal Opportunities International, 26*(3), 178–192.

Tull, R. G., Rutledge, J. C., Warnick, J. W., & Carter, F. D. (2012). PROMISE: Maryland's alliance for graduate education and the professoriate enhances recruitment and retention of underrepresented minority graduate students. *Academic Medicine, 87*(11), 1562–1569.

Walker, G. E., Golde, C. M., Jones, L., Bueschel, A. C., & Hutchings, P. (2008). *The formation of scholars*. San Francisco: Jossey-Bass.

Wegner, E. (2000). Communities of practice and social learning systems. *Organization, 7*(2), 225–246.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Chapter 14
Emancipatory Research Counter-Spaces: Re-Examining Black Doctoral Student Socialization

Robin Phelps-Ward

In their 2015 "Doctoral Initiative on Minority Attrition and Completion" report, Sowell, Allum, and Okahana argued for increased efforts to address underrepresented minority (URM) student participation in doctoral education given workforce demands in science, technology, engineering, and mathematics (STEM) and the United States' ability to compete in a global environment. However, key pieces of data indicate a more specific need to look more closely at the experiences and retention of Black (African American) doctoral students, particularly those in STEM. When examining completion rates alongside the number of doctoral degree conferrals within the Black community, the observations are disheartening and only made worse when coupled with the countless narratives of discriminatory and isolating experiences within doctoral programs.

In their latest "Status and Trends in the Education of Racial and Ethnic Groups" report, Musu-Gillette, Robinson, McFarland, KewalRamani, Zhang, and Wilkinson-Flicker (2016) included data that reflected a major increase (about 60%) in African American doctoral degree conferrals from the 2002–2003 period to the 2012–2013 period. Nevertheless, doctoral degrees to Black students constituted 7% of all degrees conferred in the 2012–2013 period and almost 8% in 2014–2015 (McFarland et al., 2017)—dismal statistics considering Black people comprise 13.4% of the total U.S. population (United States Census Bureau, 2017). Further, in their work with the Ph.D. Completion Project, a seven-year, two-phase research study examining Ph.D. completion and attrition, Sowell, Zhang, Bell, and Redd (2008) found that although African American 10-year completion rates were the same or higher than their white counterparts in life sciences and humanities (respectively), the rates were lower in engineering, mathematics, and the physical sciences. Such disparity could be attributed to the feelings of isolation, alienation, standing out/tokenization,

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being treated like a criminal, peer disconnection, disrespectful faculty, psychological distress and depression, and dehumanization Black doctoral students experience within their programs (Burrow & Ong, 2010; Dortch, 2016; Gildersleeve, Croom, & Vasquez, 2011; Henfield, Woo, & Washington, 2013; Ingram, 2013; Lewis, Ginsberg, Davies, and Smith, 2003; Torres, Driscoll, & Burrow, 2010). This combined data tells a chilling story of both doctoral-granting institutions' ability to recruit and enroll Black students *and* their inability to retain and support students' well-being as they progress toward completion.

In their implications for practice and research Okahana, Allum, Felder, and Tull (2016) provided suggestions for future steps to address URM doctoral student attrition and completion. Among their recommendations was a call for scholars to explore students' perceptions of campus environments and academic success support systems. However, to explore such perspectives scholars need a theoretical framework that not only takes into consideration the activities, processes, and practices programs and institutions are engaged in to support students, but students' identities and the environmental factors (oppressive systems) also at play. A socialization theoretical framework provides a lens through which to examine institutional efforts to retain Black students along their doctoral journeys and support their growth as developing professionals in a given field. Further, a socialization theoretical perspective challenges researchers to not only examine students' learning and development of social capital, but to also consider such growth in association with the sociocultural factors (e.g., societal beliefs, attitudes, and values, social interactions, and political institutions) at work within the collegiate environment students walk into.

In this paper I apply such a sociocultural theoretical perspective, and more specifically, use Weidman, Twale, and Stein's graduate socialization framework (2001), informed by critical and intersectional theorizing (Collins, 2000; Collins & Bilge, 2016; Combahee River Collective, 1995; Crenshaw, 1991; Freire, 1970), to ultimately offer the concept of emancipatory research counter-spaces as a framework for examining the socialization processes of interaction, integration, and learning, which graduate education leaders should attend to. By applying the graduate socialization framework to a specific case of students engaged in a co-curricular research activity, I descriptively discuss how interaction, integration, and learning (aspects of Weidman, Twale and Stein's model) function to support their socialization as doctoral students and potential future faculty. I end with suggestions for expanding the graduate socialization framework based on Twale, Weidman, and Bethea's (2016) recommendations, and discuss strategies to further address students' racialized experiences in doctoral programs and improve teaching and mentoring practices in STEM, doctoral programs, and graduate education.

As Twale et al. (2016) expressed in their paper, conceptualizing socialization for graduate students of color, "our goal remains to provide all students with what we feel they need to succeed knowing it may not be all they really need or desire based on differences we do not share with all our students" (p. 91). Applying a socialization theoretical perspective and expanding the lens to focus on the experiences of minoritized students in doctoral education serves a greater purpose of dismantling

barriers and oppressive systems for all students. That said, when connected to the concept of trickle up activism (Spade, 2015), Nicolazzo (2017) explained the need to "work to attain rights for those who are most marginalized and who experience extreme threat" (p. 138) because expansion of rights, access, and supports to the least in the academy builds opportunity for the most. Thus, through this re-examination of the graduate socialization framework and application to a specific case, I not only consider Black doctoral students, but students at the intersections of identities (e.g., race and gender, race and ability, class and ability, etc.) and the ways in which socialization processes in doctoral education (particularly interactions, integration, and learning) can be expanded with attention to, acknowledgement of, and value for doctoral students' multiple marginalized identities within intersecting systems of oppression.

Weidman's Socialization Model

Built from Weidman's widely recognized 1989 conceptual piece in which he extended the research on college impact using a sociological perspective, the Weidman et al. (2001) graduate socialization framework centers on processes influencing the development of knowledge, skills, and dispositions. Weidman (1989) asserted that

> socialization involves the acquisition and maintenance of membership in salient groups (e.g., familial, occupational, organizational) as well as society at large. Consequently socialization can always usefully be considered from the perspective of the society (or its constituent groups) as well as the individual. (p. 294)

In reference to graduate student socialization, Weidman et al. (2001) defined socialization as "the processes through which individuals gain the knowledge, skills, and values necessary for successful entry into a professional career requiring an advanced level of specialized knowledge and skills" (p. iii). Four stages (i.e., anticipatory, formal, informal, and personal) encompass the socialization process through which graduate students progress, and with each stage of the process students grow in their knowledge and ability to navigate the norms, expectations, and culture of academic programs. The *anticipatory* stage refers to the information the student knows prior to enrolling in a graduate program and their expectations about graduate school before enrolling. Such expectations are formed through interactions with family, friends, peers, and media, which depict what it looks and feels like to be in graduate school. The *formal* stage of the socialization process includes the courses and specific departmental and programmatic onboarding procedures to help students understand the norms and culture of the profession. This stage includes the university, college, department, and program-level orientations students experience during the initial weeks of their first semester in graduate school and coursework. In the *informal* stage students gain access to some of the hidden curriculum as they perceive cues about acceptable and unacceptable behavior within the academic culture. Lastly, the *personal* stage occurs when the student begins to internalize their

new role as a graduate student and begin to truly form a self-identified image of themselves as a professional in a field. As students develop understanding of their program and particular discipline, they may begin to identify within the field as a professional through various activities that may or may not be course bound. Essentially, the student has assimilated to the ways of the profession, institution, or organization in which they are being socialized. While this discussion of stages may seem to indicate a linear sequence of steps, Weidman et al. (2001) explained that "socialization in graduate programs is a nonlinear process during which identity and role commitment are developed through experiences with formal and informal aspects of university culture as well as personal and professional reference groups outside academe" (p. 36). The interplay of all of internal and external dynamics within the socialization process demonstrates the numerous sociocultural factors in motion throughout the graduate education experience.

Socialization and Graduate Students

This nonlinear socialization process in which personal and professional associations influence students' socialization lies at the crux of the Weidman-Twale-Stein (2001) graduate socialization framework. Within this framework a student's background, professional communities, the university, personal communities, and future role as a novice professional and practitioner are connected and in simultaneous interaction with each other. Experiences with the culture of the institution, socialization processes (i.e., interaction, integration, and learning), and core elements of socialization (i.e., knowledge acquisition, investment, and involvement) lie at the center of the socialization process for graduate students. Weidman et al. (2001) described knowledge acquisition as a student's ability to secure capital (e.g., teaching or research assistantships), investment as reaching academic milestones for completion (e.g., comprehensive exam and proposal defenses), and involvement as a student's ability to build relationships with peers and faculty as well as engage in the work of the discipline (e.g., establishing a research agenda, publishing, and securing external funding). The core elements of socialization just described fuse to form the concept of engagement, which leads students to developing "skills, competencies, and knowledge … to succeed in doctoral programs" (Twale et al., 2016, p. 91). Through this framework leaders in graduate education (i.e., deans, associate deans, assistant deans, department chairs, program coordinators/directors, and faculty) can closely examine the particular strategies they employ to not only support and challenge students at each area of the socialization process, but to also consider the ways in which their efforts are influenced, supported, and connected to factors external to the institution (i.e., family members, professional organizations, and personal communities).

In their re-visitation of the Weidman-Twale-Stein graduate student socialization framework, Twale et al. (2016) examined the role of race, gender, language, culture, and socioeconomic status in the experiences of college students and drew connec-

tions to the framework by suggesting potential manifestations of socialization activities at each stage of the graduate student socialization experience. For example, they noted that students should "establish same race student-faculty dyads" within the core element of involvement during the formal socialization phase, and "participate in informal mentoring, role modeling, and peer mentoring" in the core element of investment as part of the informal phase of socialization (p. 88). These suggestions draw attention to the socialization strategies students can engage in to support their growth. Further, their suggestions illustrate ways for program faculty and university leaders in graduate education to cultivate opportunities to support students' socialization in their graduate programs. Of course, all of these strategies are for naught if faculty, administrators, and staff— in interaction with Black doctoral students—neglect to acknowledge students' racialized experiences and the power of race and racism in supportive relationships (i.e., advising, mentoring, supervising, instructing, etc.). Scholars across disciplines have stressed the importance of recognizing race as a powerful influence and thus in the next section I review some of the literature that illustrates the experiences of Black doctoral students with particular emphasis on the key aspects that influence their experiences (i.e., campus leaders, faculty, and peer relationships).

Black Doctoral Student Socialization

The experiences of Black students navigating through doctoral programs range from overt to covert racism on individual and structural levels, open to subtle hostility from peers and faculty, and include various forms of psychological and emotional distress. The combined literature dedicated to Black doctoral student socialization lies in four major areas. These areas include a focus on the importance of centering race, the forms of marginalization students experience, the significant role and influence of faculty (both Black and non-Black), and the strategies faculty and institutions must engage to support students, encourage their completion, and make their lives more livable. This important body of literature not only provides concrete insight into students' day-to-day experiences with racism, but speaks to the specific actions leaders in graduate education should take to mitigate the systemic oppression Black doctoral students encounter. To destabilize the system of racism students experience, graduate education leaders must first center race.

Centering Race

Empirical studies exploring the experiences of Black doctoral students support the notion that those who care about the retention and well-being of Black doctoral students *must not* disconnect race from the conversation (Blockett, Felder, Parrish, & Collier, 2016; Davidson & Foster-Johnson, 2001), especially given the volumes

of evidence that powerfully illustrates the racism present at every level of encounter (i.e., programmatic, departmental, and institutional). Through their qualitative case study of the experiences of three Black doctoral students in education-based programs, Acosta, Duggins, Moore, Adams, and Johnson (2015) found that authenticity in faculty-student relationships (faculty ability to recognize race), systemic institutional support (a value of Black presence within the institution's mission and goals), and psychocultural tools (a desire for education as a means for racial uplift) supported students' persistence. Moreover, Acosta et al. (2015) emphasized the need for faculty and administrators to develop opportunities for race work within their departments as a strategy to cultivate more sociopolitical authenticity in which faculty recognize the powerful influence of race in the academy. Davidson and Foster-Johnson (2001) also stressed the importance of centering race because so many faculty members have neglected to acknowledge or discuss race in their mentoring and advising relationships and thus they encourage faculty to gain self-knowledge by asking themselves the following questions:

> How do you feel about mentoring someone who is a different race or culture? What are your views on acculturation or assimilation versus cultural pluralism? What is your preferred method for addressing race and culture in a mentoring relationship? What is your stage of racial identity development? (p. 564)

Such questions can guide white faculty, in particular, to consider their race in relationship to their roles as support systems for Black doctoral students. Such a focus on fostering sociopolitical authenticity (the ability to recognize and understand the power of race, racism, and systems of oppression in the academy) not only takes the onus off of students and prevents deficit-minded perspectives that suggest students change their attitudes and behaviors, but moves the work to postsecondary leaders. Acosta et al. noted,

> Weak institutional structures that bring BDS [(Black doctoral students)] together without a focused agenda absolves institutions of further responsibility to ensure the persistence of BDS and leaves students on their own to figure out how to succeed. In these instances, BDS remain unsupported within a supposedly supportive environment. (p. 45)

Until campus leaders create infrastructures that provide clear, concrete, and tangible support systems, students are at risk of sustained exposure to oppressive academic environments that pose obstacles to their socialization and success.

Student Experiences

Such obstacles that result in Black doctoral attrition and negative programmatic experiences include dehumanization, isolation, alienation, and depression (Blockett et al., 2016; Burrow & Ong, 2010; Gay, 2004; Gildersleeve et al., 2011; Henfield et al., 2013; Lewis et al., 2003; Torres et al., 2010). More specifically, based on their systematic literature review and content analysis of the Black doctoral student socialization literature, Blockett et al. (2016) discussed three main areas of Black

doctoral student marginality in the form of faculty mentorship, professional involvement, and environmental support. Gay (2004) also conceptualized students' experiences in terms of marginality and explained the various forms of isolation (physical, cultural, and intellectual), benign neglect, and problematic popularity graduate Students of Color experience and noted the "intellectual and scholarly abandonment" (p. 281) students suffer as a result. Through a critical race theory analysis, Gildersleeve et al. (2011) examined the experiences of 22 doctoral Students of Color who expressed a narrative of "Am I going crazy?!" as part of the reality of living through a doctoral program. They explained:

> Put simply, the "Am I going crazy?!" narrative represents the tentativeness, insecurity, and doubt that can be projected onto doctoral students of color. It also represents the active engagement with struggle and resiliency required by doctoral students of color. The narrative is a mode of participation for students, a way of being and negotiating the racialized terrain of American graduate schools. In sum, the "Am I going crazy?!" narrative operates as a dehumanizing social artifact that ubiquitously shapes the experience of doctoral students of color. (p. 100)

Through a critical race theory perspective Gildersleeve et al. (2011) focused on the racism present within programs and how racism can lead doctoral Students of Color to censor their own thoughts and research agendas, question their abilities, evaluate rules and norms, and seek peer support communities to work through contradictory messages received within programs. These findings mirror the narratives Boylorn (2006) poetically illustrated in her ethnographic work as an outsider within a doctoral program as well as those Ingram (2013) described in a qualitative study examining 18 African American men's experiences with marginality in racism. The men described being viewed as criminals by classmates, microaggressed by faculty in class, and isolated in programs as one of few Black-identified men. According to Ali and Kohun (2007), such social isolation (lack of meaningful relationships) has less to do with individuals and more to do with institutions. Lovitts (2001) explained, "it is not the background characteristics students bring with them to the university that affect their persistence outcomes; it is what happens to them after they arrive. The causes of attrition are deeply embedded in the organizational culture of graduate school and the structure and process of graduate education" (p. 2). In their examination of the factors that contribute to social isolation Ali and Kohun (2007) suggested strategies of peer interaction and collaboration among doctoral students as a mediating factor to combat social isolation. They also encouraged faculty to help students form "focus groups" (p. 45) as a means to inquire and learn about their peers' prior experiences. However, such strategies to promote peer interaction and collaboration within predominantly white programs may not have the desired effect if individual, institutional, and social/cultural racism and oppression (Hardiman & Jackson, 2007) remain unchecked and unacknowledged within programs.

In a study of 40 underrepresented doctoral students who believed they did not fit the mold of doctoral education because of their gender, race, age, parental status, or part-time enrollment, Gardner (2008) found that students cited a host of issues. However, within the subset of the population who identified as a Student of Color, Gardner explained that the students experienced issues with integration and lack of

satisfaction. Through this research Gardner advocated for more socialization models that take into consideration students' personal characteristics as well as differences across disciplines and institutions. Gardner further explained: "For underrepresented students the experience of graduate education and its normative socialization patterns may not fit their lifestyles and the diversity of their backgrounds, making them feel they do not 'fit the mold'" (p. 135). Gardner's research, along with numerous other empirical studies citing the normative messages communicated through socialization practices in doctoral education, supports a need to look more closely at processes and environments.

Faculty Influences

Faculty members play a significant role in the environment Black doctoral students walk into, what students learn, and how they are supported. The literature dedicated to the role of faculty in the socialization of Black doctoral students addresses students' perceptions of faculty mentorship and advising, faculty behaviors, and the role of diverse faculty in student socialization (Davidson & Foster-Johnson, 2001; Felder, 2010; Felder & Barker, 2013; Felder, Stevenson, & Gasman, 2014; Heggins, 2004). This body of literature supports the positive impact faculty can have in preparing future faculty.

In her study of African American doctoral students' perceptions of faculty relationships, Felder (2010) found that faculty played a crucial role in students' socialization related to research, scholarship, and career development; however, interactions were not always positive. While faculty served to unveil some of the secrets of the academy granting them access to information about the often unspoken aspects of the field (e.g., perceptions of types of degrees, importance of collaboration), students did not always have the degree of access to faculty (due to faculty research) they would have liked. However, when Black doctoral students *are* able to make meaningful connections with faculty about their research (oftentimes research that examines race and racism) and have opportunities to have impromptu conversations with faculty about research, they are "more effective students and contributors to their academic communities" (Felder et al., 2014, p. 35). These forms of relationships with faculty have the potential to empower students because of the interest convergence present. Spurred from Derrick Bell's (1980) work, Felder and Barker (2013) explained interest convergence as a "mandatory relationship shaped by institutional policy that includes a student who is interested in attaining an educational experience and an advisor who is interested in facilitating it" (p. 16). With the goal of high interest convergence in which reciprocal learning between the faculty and student takes place, as well as collaboration in the form of co-research, co-authorship, and co-facilitation, the student faculty-relationship can reap great socialization benefits like those which Weidman et al. (2001) discussed as the lynchpin in students' movement through the interactive socialization process from anticipatory to personal. That said, not all faculty are willing to fully engage stu-

dents in such a way that the students' racial identity and research interests are supported. Gay (2004) described the intellectual isolation some students experience in the form of professors who fail to challenge students by questioning their ideas, providing critical feedback, and extending meaningful opportunities to teach. Faculty can make or break a students' experience and lead them to careers in the academy. Thankfully, scholars have discussed the numerous ways faculty and institutions can address the marginalization Black doctoral students experience.

Strategies

The strategies higher education scholars reveal as ways to better support Black doctoral students live in three interrelated realms: the faculty advising realm, programmatic realm, and extra-programmatic. In terms of the faculty advising realm, scholars have encouraged faculty to provide formative feedback to students and use a holistic asset-based approach to understand students' backgrounds (Blockett et al., 2016), employ a variety of teaching strategies in class content and ensure diversity objectives are integrated into courses (Davidson & Foster-Johnson, 2001), and above all, gain racial awareness (Acosta et al., 2015; Davidson & Foster-Johnson, 2001; Felder et al., 2014; Ingram, 2013) to effectively mentor, advise, and support Black doctoral students with whom they work. Within the programmatic realm (which includes graduate schools, academic colleges, departments, and individual programs), scholars call for the development of opportunities for Black doctoral students to collaborate with faculty on research, discuss race and racism within curriculum, mentoring programs, Black faculty recruitment, and a system that allows students to express their concerns and issues (Blockett et al., 2016; Davidson & Foster-Johnson, 2001; Heggins, 2004). Scholars also note extra-programmatic forms of support beyond the bounds of the institution, which provide students with opportunities for socialization (Blockett et al., 2016; Heggins, 2004). Examples include programs and movements like the Preparing Future Faculty Program, Black Doctorates Matter, and the Institute on Teaching and Mentoring through the Southern Regional Education Board, which allow students a chance to come together to learn about the professoriate, share experiences, and access resources for navigating doctoral programs. These various realms of strategies represent the myriad opportunities to support Black doctoral students. However, campus climate plays a major role in the execution of such strategies.

Griffin, Muñiz, and Espinosa (2012) pointed to the work of graduate diversity officers (GDOs) and their role in cultivating campus environments to support URM graduate students. "[Graduate Diversity Officers] are institutional agents—typically full-time administrators with advanced degrees—who are specifically charged with the recruitment and retention of underrepresented minority graduate students at their respective institutions" (p. 536). Within their study of 14 GDOs from a diverse array of institutions in various geographic regions, Griffin et al. applied the campus racial climate framework (Hurtado, Milem, Clayton-Pedersen, & Allen, 1999) to

explore the barriers GDOs face in carrying out efforts to support the recruitment and retention of URM students. The researchers identified five types of challenges GDOs experienced including "(a) diversity and social outlets in the surrounding community, (b) diversity and racism in the campus environment, (c) the graduate admissions process, (d) support from senior leadership and faculty, and (e) access to financial resources" (p. 554). To address some of the challenges Griffin et al. recommended institutional leaders attend to all aspects of the campus racial climate framework in order to promote recruitment and retention, provide rewards to those who maintain inclusive environments, and remain informed about the policy landscape. Thus, all realms of socialization strategies must function together to improve the experiences of Black doctoral students.

Although the empirical and conceptual literature on the experiences of Black doctoral students specifically is limited, scholars continue to note the power of relationships that support students within marginalizing programs, faculty-student relationships, and racist campus climates. In the next section I look at a specific case of Black doctoral students engaged in a co-curricular research team and use it as an example of socialization strategies long-supported by higher education scholars as instrumental for graduate Students of Color.

The Action Research Collective

During my first semester as a faculty member in higher education and student affairs at a predominantly White university in the south (Clemson University), I could count on my two hands the number of Students of Color I taught in my classes. Likewise, my interactions with Black women at the university were few and far between—I did not see many people who looked like me and I was passionate about developing relationships with students who felt isolated (like me) at the institution. After becoming acclimated with the culture and meeting students at the institution (both undergraduate and graduate) I was quickly thrust into relationships with many Students of Color as they sought me out for numerous reasons. For some students, they came to my office because they wanted to learn about my scholarship and potential opportunities for collaboration. For others, they requested to meet with me over coffee because they were considering a faculty career and wanted to learn about my path to the professoriate. However, the greatest number of students I met with—and subsequently formed relationships with—wanted to connect because they were looking for someone to talk to about their experiences of isolation and marginalization on campus in their assistantships, classes, and in the city. Most of these students identified as Black and all shared a desire for someone to empathetically listen to their frustrations. The needs represented within this large group of students I swiftly came to build relationships with illustrates the major reasons why I chose to initiate the Action Research Collective (ARC).

Origins and Purpose of ARC

With departmental support, I initiated ARC's efforts during the fall of 2016 as an initiative supported by the Clemson University Graduate School Faculty Fellow program wherein faculty were charged with launching projects that would creatively support graduate student professional development. During the first academic year, I focused on recruiting students to work as part of a team, and with the support of a doctoral assistant, defined the group's mission, goals, and vision. Through interactions with students in the educational leadership doctoral program and student affairs master's program I taught within and ties to the NASPA Undergraduate Fellows Program (NUFP), I was able to recruit students with whom I had previous relationships. This led to a team of ten graduate students (three master's students, six doctoral) and one undergraduate student interested in graduate school. The majority of the students were in education-based academic programs with one in engineering and another in women's leadership. Additionally, eight students identified as Black, African American, or of African descent, one as White, and another as Latino. Half of the group identified as women and the other half as men.

The Action Research Collective (ARC) is a student-driven initiative that uses critical and participatory action research design to teach ethical and effective research practices while answering questions vital to student success. ARC connects research with the local contexts and lived experiences of its research partners (Clemson University students, particularly graduate students), and aligns with Clemson University's strategic plan for student learning. Students who participate develop the necessary tools to enact change far beyond the institution through research activities, and in doing so, serve to shape the university into a more socially just campus and community.

ARC centers the expertise of the community most impacted by issues of access and equity, and seeks to enable the talents of undergraduate and graduate students through collaboration via a participatory action research project. The team's first project is dedicated to exploring the experiences of support, obstacles, and thriving for graduate students of color at the university using photovoice (see Latz, 2017; Wang, 1999) as a method. This collaborative framework trusts in the talent and agency of students to inquire, learn, and lead. Within the first year of the ARC team's establishment, students determined the research question based on their own experiences and identified their own specific professional development needs to develop throughout the course of the academic year. Such goals included publishing, improving research skills, and learning more about graduate and doctoral education. With an overarching goal of supporting underrepresented student enrollment in graduate school, the ARC team collects and analyzes data, and communicates findings from the research to relevant audiences within the university community and externally to those who are dedicated to supporting the student of color pipeline to doctoral education. Ultimately, ARC envisions a campus community where all students can confidently and competently engage in critical scholarly inquiry

committed to positive sustainable change at the university level and have the resources to succeed and achieve beyond baccalaureate and post-baccalaureate education.

We spent the first year (meeting every other week during the fall and spring) getting to know each other, developing an identity as a team, learning about participatory action research and photovoice, and sharing information with the university community about our mission and goals through campus PechaKucha presentations (a simple and visual presentation format in which speakers narrate 20 slides at 20 seconds per slide while images advance automatically [PechaKucha, n.d.]). As a result of the first year, students increased their knowledge of research methods through the identification of a research problem and development of a research protocol, reflected and communicated with others about their own developing journeys as students, and identified specific professional development goals for the upcoming academic year.

Currently in our second year (as of spring 2018), the team consists of 10 members, six of whom are Black doctoral students in educational leadership. The remaining four include a postdoctoral researcher who was a former team member as a doctoral student in educational leadership, two master's students in student affairs, and an undergraduate student. Within this paper, I focus on the six Black doctoral students within the ARC team as a case for examining graduate student socialization and the implications for doctoral teaching and mentoring practices.

Participatory Action Research

With an emphasis on participatory action research (PAR), which emphasizes collective action, group decision-making, community engagement, flexibility, individual and communal learning and improvement, and knowledge production, (McTaggart, 1994), the ARC team's efforts are rooted in a constructionist epistemology that values interaction, collective pursuit, and decentralization (Chaudhary, 1997). Such values show up in various ways within the team. In terms of collective action and decision-making, during the first year, the ARC team began by identifying problems associated with the graduate school experience. Several weeks of storytelling, reflection, and brainstorming (Fig. 14.1) led to an array of shared narratives associated with support (mental, physical, financial), guidance (from counselors, mentors, peers, and family), fear (failure, incapability, self-doubt), sense of belonging and isolation, and self-actualization (motivation, resilience, and identity development). These narratives led the team to reach consensus about its overarching research question: What are the experiences of graduate Students of Color at Clemson University? The team is also dedicated to understanding the ways graduate students of color thrive, experience support, and obstacles at the institution.

After weeks of discussion and brainstorming, the group started to engage with the university community to both share information about the ARC team and support current undergraduate students contemplating graduate school pursuits.

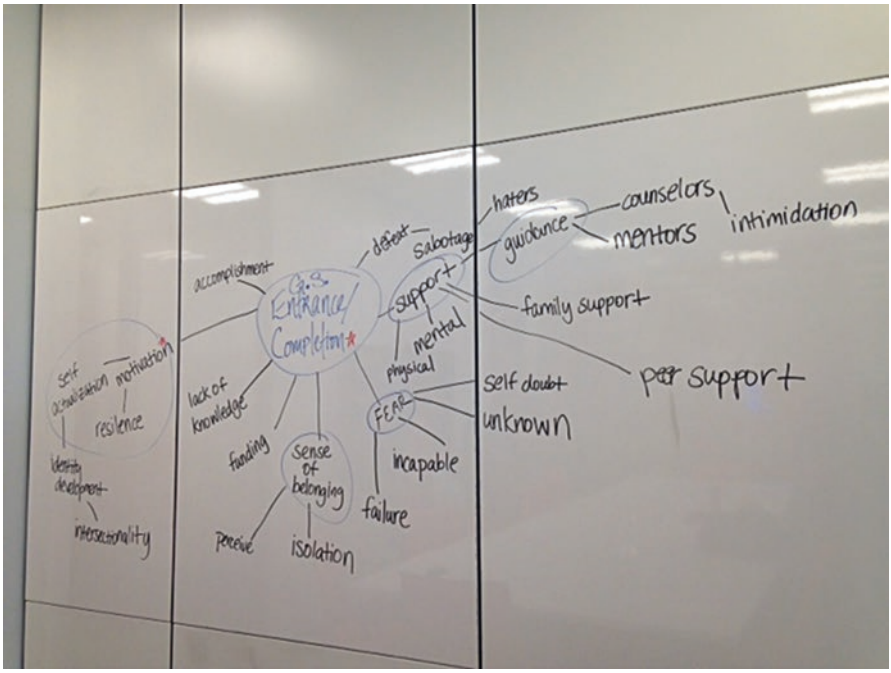

Fig. 14.1 A fall 2016 brainstorm of problems graduate students of color encounter

Through a fall PechaKucha in collaboration with the Minority Student Success Initiative and a spring presentation during the Graduate School's research week, the ARC team connected with students at the university and helped spark others' interest in research, graduate school, and the team's work. Because PAR is the underlying approach that guides the ARC team's efforts, a value for flexibility is a mainstay. Although goals exist for each bi-weekly meeting, our conversations not only include time for the team's tasks, but also provide space and opportunity for students to talk about their personal, academic, and professional lives while connecting those experiences with extant literature. Students discuss upcoming exams and defenses as well as news, pop culture, and politics. Most importantly, because of the relationships developed within the group we also engage in conversations about the inequitable racist situations each of us have encountered, overcome, and are still experiencing in the academy. I recall a conversation I had with one Black woman on the team waiting at the airport terminal waiting to board a plane to our conference destination. She shared about some of the challenges of serving in a role as president of a graduate student organization while experiencing both sexism and racism. I shared a similar situation from my own experience and how I responded as a young, pre-tenure, Black woman still trying to navigate misogynoir on a regular basis. In this moment we both had an opportunity to tell our stories and engage in an honest and impromptu conversation we would not have had the chance to if not for the time spent together presenting our work with the ARC team at a national

conference. Such interactions like this allow the group to connect with empathetic listeners who can identify and help identify next steps and paths forward. While some of this navigational capital (Yosso, 2005) is innate, Black doctoral students practice and cultivate this skill regularly through interactions with each other.

Relative to individual and communal learning, the students drive discussion and share reports based on the areas they have volunteered to lead (e.g., conference proposals, participant recruitment, team promotion, and student organization collaboration). Additionally, students identify specific learning and professional development goals (e.g., publishing, reaching a doctoral program milestone, applying to and securing jobs) to pursue during the semester, share the goals with the group, and develop plans to accomplish those goals throughout the semester. A structure of identifying and sharing with the group their specific, measureable, attainable, realistic, and time-sensitive (SMART) goals—in tandem with an individual development plan—encourages individualized learning and growth, accountability within the group, and built-in support and encouragement.

Finally, rather than the typical assumption of a banking model of education (Freire, 1970) that assumes students are blank slates or empty vessels without knowledge and experience, the team operates from the standpoint that students are knowers and producers of information with valuable experiential knowledge and skills to share with the team. Thus, current and former team members have led discussions about photo-elicitation, photography, and marketing while simultaneously learning together about research methodology, PAR, and photovoice. Further, the students drive the research design. Such a practice reinforces students' roles as leaders, knowledge producers, and learners as the group moves forward collectively with the research. This practice is aligned with Felder and Barker's (2013) concept of culturally receptive advising, which serves to intellectually empower students as they move through their doctoral programs. The above examples illustrate the ways in which PAR not only serves as part of the method for the study design, but works as a epistemological orientation to the team's work.

ARC Activities

During meetings, the ARC team prioritizes the activities of planning, practicing, reflecting, and information sharing. During the second year, the team focused on planning the logistics of the research design. This included drafting recruitment scripts, designing a demographic questionnaire, gaining CITI training certification, and developing all other documentation for IRB approval. Additionally, in the planning phases the team learned more about photovoice—and the use of photos to capture lived experiences—by reading relevant literature and engaging with a guest lecture from photovoice scholar in higher education (Latz, 2017). During this interactive guest lecture the students had an opportunity to hear examples of photovoice in action, ask specific questions about the method, and discuss aloud options that would lend to research design (e.g., providing cameras versus using smartphones to

take pictures). Because varying skill levels and experiences with research existed across team members, the team took time to engage in research practice during meetings. This practice came in the form of conducting mock research interviews, developing items for IRB application, practicing fieldnoting, and writing abstracts for conference proposals during meetings. Throughout the team's work, advanced doctoral students and I shared experiences and provided explanations, definitions, and examples of key concepts (e.g., epistemology, methodology, and sampling) within the research process as we went through each step. The team continuously engages in the practice of self-reflection to examine how their past experiences, social identities (e.g., race, class, gender, sexual orientation, ability, national origin, religion, etc.), and research competencies affect their work as a research team member through oral and written reflection. The excerpts that follow come from two students' end-of-the-year written reflections—I have included them within this chapter with their permission.

> Looking back over this year, I cannot believe we accomplished so much in such a short time. ARC has made an amazing impact within research and on campus at Clemson for students of color. I was able to be on a team that valued my opinion and is passionate about improving the experience of all grads of color. I've grown as a researcher and a scholar and how I become a future professor of research and practice.

> After two years, I have a true understanding of PAR and photovoice. Over the past year, the thing that I have valued the most is the rapport of the group. ARC served as an escape from class and a safe space throughout the year. I finally felt as if I could truly impact policies here at Clemson. Moving forward, I want to continue using action research as a means to breakdown silos within higher ed. I believe I have found research that I could marry.

The two Black doctoral student reflections illustrate the meaningfulness of belonging to a team and community of other doctoral students who they feel safe around, as well as a space to develop the skills needed to succeed in the academy. Further, their excerpts reflect the importance of engaging in research that will lead to action and improvement of the campus climate.

Lastly, because the ARC team includes students active on campus as leaders (i.e., university organization presidents, vice presidents, secretaries, etc.), members regularly provide updates about collaborations with the efforts their respective campus organizations are also engaged in. For example, a team member who is also the president of the Graduate Student Government facilitates partnerships with the Graduate School to make space in online communication about the team's progress. The students' positions at the university, previous experiences, identities, and efforts as ARC research team members combine to create a unique experience that advances their socialization as doctoral students while acknowledging, centering, and examining race and racism.

Re-Examination of Socialization Processes

In the previous section I described the Action Research Collective, its goals, impetus, and activities. To further examine this case and glean new observations for expanding the Weidman-Twale-Stein (2001) graduate student socialization framework, I next examine the socialization processes of interaction, integration, and learning at work within the ARC team. Weidman (2006) described the set of socialization processes as combined concepts which encompass engagement and "[occur] as students develop attachments to persons and environments within higher education" (p. 257) as a result of activities within academic programs and within a particular discipline or field (i.e., professional associations) (Weidman, 2010). Here, I describe and distinguish the three socialization processes using ARC as a case before moving into a discussion about the opportunities for expanding the framework through articulation and discussion of emancipatory research counter-spaces.

Interaction

As a socialization process, *interaction* functions as the set of activities and relationships in which graduate students connect with peers, faculty, campus agents, and professional groups internal and external to their program, department, and institution to learn about how to exist and succeed as a student and professional in a particular field or discipline (Weidman et al., 2001). These interactions teach students about written and unwritten norms and expectations within a given culture (e.g., presentation format and attire at professional conferences). Students in the ARC team engage in the socialization process of interaction on peer, faculty, university, and professional levels. At the programmatic level—within the ARC team—students learn from each other through sharing experiences about interacting with faculty, taking courses, completing exams, and attending conferences. At the faculty level, students interact with me, an assistant professor of higher education and student affairs, as I share information and facilitate conversations about conducting research, discuss my own expectations of doctoral program milestones, and share my own experiences as a young, Black, woman and mother working toward tenure.

Within the university level, students interact with administrators in the Graduate School, graduate students outside of their program, and undergraduate students to share information about the ARC team's efforts and progress. Such interaction allows students to develop skills in communicating about research while gathering information and feedback from key constituents associated with the research activities. Lastly, through conference and professional association membership, students interact and are socialized into the professional culture as they present research and engage with professionals in the field. While there are likely more influences on students' socialization, the peer, faculty, university, and professional interactions are specific to the case of the ARC team and its work.

Integration

Weidman and Stein (2003) described the socialization process of *integration* as developing a "sense of fit with the expectations of faculty and peers" (p. 643). Aligned with the personal stage of the four-stage socialization model, integration exists as a socialization process in which doctoral students make decisions about how they will (or will not) align their identities with the current culture of their profession. Such alignment and assimilation into a prescribed professional identity has numerous consequences, especially for those who embody identities that lie outside of traditional, stereotypical conceptions of the professional culture. Integration as a socialization process includes the push-and-pull dialectic between self and profession in that multiple forces act at once. While institutions work to change doctoral students, doctoral students simultaneously work to change institutions in an attempt to save and make space for their authentic selves. In academic environments where doctoral students are socialized by peers, faculty, programs, universities, and professional organizations in the ways they ought to speak, dress, research, write, and even address concerns, integration as a socialization process is fraught with multiple identity tensions. We discuss these tensions in our candid conversations with each other, ask each other critical questions, and situate our responses and values related to various issues within the sociopolitical climate of the Trump era we currently live in. I remember vividly our first meeting after the 2016 presidential election and the heightened energy and dedication within the room as we collectively recognized the increased significance of our work.

Learning

Finally, *learning* is an embedded piece within the entire concept of the socialization process in which students gain the knowledge and skills necessary for effective professional practice" (p. 643). However, here I make a distinction between in-class and out-of-class learning to address and highlight the informal learning that takes place outside of the classroom space through the ARC team's work, which is co-curricular in nature and lies adjacent to students' in-class learning. Although doctoral students typically experience some sort of self-directed research opportunity with the guidance and direction of a research supervisor (typically a faculty member), doctoral students do not typically work outside of course curriculum or labs to engage in research with a group of students who share similar research passions and identities.

Through the ARC team activities students engage in the learning socialization process as they practice research, writing, presenting, and community building within the education discipline. The combined activities of the ARC team not only allow a hands-on opportunity for students to further learn about and practice research, but serve as a space for students to have conversations about navigating

graduate school, doctoral education, and the broader culture of academy. Connecting with other coursework, field experiences, future research efforts, and dissertation writing, students within the ARC team incorporate their learning from multiple academic contexts. Further, through interaction with a faculty member within the ARC team, students gain access to a version of what it might look like to navigate teaching, research, and service while on the tenure-track. Several concurrent sites of learning work together through doctoral students' participation in the ARC team's efforts. Further, activities that allow students to both interact with an array of individuals who can help them consider how such learning integrates with their own identities, values, and ways of knowing, demonstrates the enmeshment of the socialization processes of interaction, integration, and learning.

Expanding the Framework

Throughout this paper I have discussed the origins of Weidman et al. (2001) graduate socialization framework, described the Action Research Collective as a case, and applied the socialization processes of interaction, integration, and learning to the case. To further advance theorizing about graduate student socialization and improve practices to support and socialize Black doctoral students (particularly those in STEM who experience heightened isolation, alienation, and discrimination in their programs), I now discuss opportunities for expanding the Weidman-Twale-Stein framework by adding attention and detail to the aspects of interaction, integration, and learning within the area of socialization processes (Fig. 14.2) as a way to more explicitly center the unique needs of Black doctoral students.

These insights on expansion of the framework are informed by Twale et al. (2016) in which they advocated for a more sociocultural understanding of graduate socialization to better comprehend how students' race impacts their entry into graduate programs, interactions, and internalization of scholarship. With recommendations from Twale et al. (2016), experience working with a group of Black doctoral researchers through the Action Research Collective, and knowledge of the scholarly literature related to critical pedagogy and intersectionality, I discuss the role of emancipatory research counter-spaces next.

Emancipatory Research Counter-Spaces

When Black doctoral students are looking for a space that acknowledges and centers their identities rather than neglects or dismisses who they are, where do they go? When Black doctoral students want to use their research to make an impact on practices, policies, and processes that improve the experiences of people with whom they share similarities, what do they do? When students need opportunities to further develop their skills in research, writing, or presenting, who do they turn to?

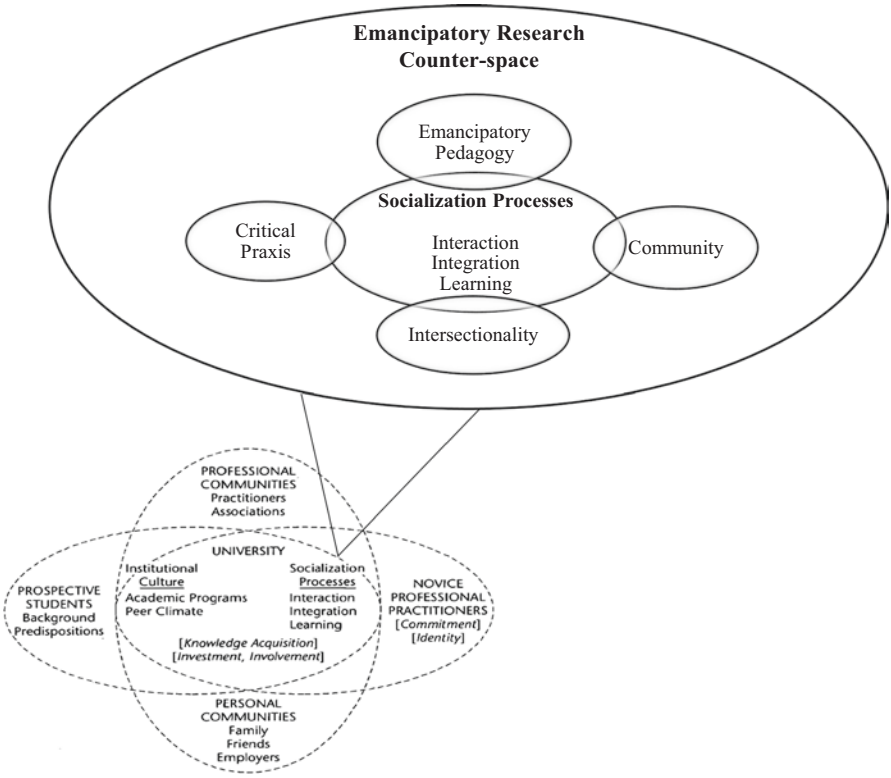

Fig. 14.2 Emancipatory research counter-space depicted within the socialization processes of the Weidman-Twale-Stein (2001) framework for graduate and professional student socialization

Given the climate many Black doctoral students live within, answers to these questions cannot always be found in faculty advisors, doctoral programs, or even in the graduate school (if such an entity exists at their institution). Nonetheless, Black doctoral students have found ways to navigate and complete their programs. Truth be told, Black doctoral students have been creating identity-affirming spaces in which their research interests and identities are acknowledged and integrated since the beginning of doctoral education. However, as Blockett et al. (2016) reiterated, "movements started by minoritized persons for self-preservation and affirmation should be supplemental to and not entirely responsible for Black doctoral student support and socialization" (p. 107). Graduate education leaders must take on responsibility for creating and nurturing spaces for Black doctoral students and pour material resources into this cause.

Thus, I present emancipatory research counter-spaces as both a vision and a guide for the future of graduate education, not as another task for students. In this section I offer emancipatory research counter-spaces as a concrete framework of socialization processes in action for doctoral students at the margins. This theoretical expansion is a result of reflections on my own graduate experiences, work as a

faculty member mentoring Black doctoral students, reflexivity about my own educational practice noting opportunities to be more intersectional and embodied in my pedagogy, and countless calls from higher education scholars to more holistically, intentionally, and critically improve students' experiences through socialization strategies.

Emancipatory research counter-spaces are locations where students experience socialization processes of interaction, integration, and learning within an environment dedicated to inquiry that embraces emancipatory pedagogy, community, intersectionality, and critical praxis. While counter-spaces "…serve as sites where deficit notions of people of color can be challenged and where a positive collegiate racial climate can be established and maintained" (Solórzano, Ceja, & Yosso, 2000, p. 70), emancipatory pedagogy empowers students through the belief that education should support the creation of a democratic society (Freire, 1970; Giroux, 1983; Nouri & Sajjadi, 2014). When combined with aspects of community-building and attention to interlocking systems of oppression (intersectionality), and praxis to transform communities, emancipatory research counter-spaces have the potential to dramatically shift how scholars think about doctoral socialization and how campus agents develop strategies to recruit, retain, and support doctoral students. In order for faculty and campus leaders in graduate education to both fully acknowledge the oppressive policies, practices, and curriculum doctoral students come into contact with *and* address the discrimination and isolation they experience, they must consider how to foster emancipatory research counter-spaces within programs, departments, and doctoral-granting institutions. Though the work of the ARC team includes elements of collaboration, critical pedagogy, and community-building, and exists as an evolving and nascent socialization strategy, I present the conceptualization of emancipatory research counter-spaces as an achievable—though not actualized—aspirational goal leaders can cultivate to support not only Black doctoral students in STEM, but doctoral students who are underrepresented, minoritized, and marginalized within their programs and institutions. Such support includes a range of students: students with multiple intersecting minoritized identities, students who are not underrepresented numerically, but still work daily to resist model minority myths, and students whose minoritized identities may not be visible or yet acknowledged by postsecondary leaders given the sociopolitical and neoliberal context of the academy or life in an academic program. To envision what an emancipatory research counter-space could look and feel like as both a theory and strategy of support and socialization for doctoral students, I proceed with a conversation about the each aspect of the concept: *emancipatory pedagogy*, *community*, *intersectionality*, and *critical praxis* and pose questions and strategies (Table 14.1) for leaders dedicated to the socialization of doctoral students, particularly Black doctoral students.

Table 14.1 Emancipatory research counter-space socialization strategies

	Interaction *Activities and relationships that teach students how to succeed*	**Integration** *Sense of fit with the expectations of faculty, peers, and profession*	**Learning** *Gaining knowledge and skills necessary for effective professional practice*
Emancipatory pedagogy *Teaching centered in dialogue and critical consciousness*	Create and nurture spaces for Black doctoral students to come together (informally and formally) to learn about the taken for granted culture, norms, and expectations of the academy while problematizing it	Value, incentivize, and reward culturally relevant and responsive faculty pedagogical practice and innovation	Organize opportunities for students to learn about culturally relevant and responsive teaching pedagogies
Community *Being in contact with individuals who understand, listen, and empathize compassionately*	Facilitate internal and external opportunities for Black doctoral students to be in community with other Black doctoral students through programs like the Institute on Teaching and Mentoring	Establish mentoring opportunities between Black doctoral students and recent alumni so students can gain perspective about how others navigate the culture and expectations of the academy	Bring Black doctoral students together regularly to learn, discuss, and practice culturally relevant and responsive teaching strategies, research methodologies, and communication forms (e.g., grant writing, research briefs, poster and conference presentations, workshop facilitations, etc.), and ways to navigate socio-emotionally in the academy
Intersectionality *Active acknowledgment and dialogue about interlocking systems of oppression that affect the lives of people who hold minoritized identities*	Facilitate town halls, small group discussions, and focus groups with Black doctoral students to learn about how they experience institutional practices, processes, and policies from their multiple, intersecting identities (i.e., not just as Black students)	Facilitate dialogue among faculty advisors, mentors, and doctoral program leaders about the effects of interlocking oppressive systems on cultural practices in the academy (e.g., White supremacist patriarchy effects on research methodologies, authorship, hiring, mentorship, etc.)	Incorporate discussions about systems of oppression throughout program curriculum and co-curriculum

(continued)

Table 14.1 (continued)

Critical praxis *Using reflection and knowledge of the experiences of those at the margins to transform the world*	Use knowledge gained from Black doctoral students about their experiences to improve practice; invite all Black doctoral students to be part of the process of implementing innovations; and avoid placing the burden of the work on Black doctoral students (i.e., identify full-time staff who will lead efforts)	Discuss among faculty and integrate cultural pluralism within advising and mentoring practices. Communicate this actualized value with doctoral students	Create opportunities for Black doctoral students to transform their research, theorizing, and conceptualizing into action with guidance and feedback along the way

Emancipatory Pedagogy

Derived most notably from Paulo Freire's critique of banking educational models, emancipatory pedagogy centers critical conscientization (awareness of one's political, social, and economic situation) through dialogue (Freire, 1970). Further, emancipatory pedagogy emphasizes dialogue through conditions of love for the world and commitment to others, humility, faith in humanity, mutual trust between those in dialogues, hope in the transformative power of action, and critical thinking. Such a view of education lies counter to more prevalent perspectives within higher education.

> Authentic education is not carried on by "A" *for* "B" or by "A" *about* "B," but rather by "A" *with* "B," mediated by the world—a world which impresses and challenges both parties, giving rise to views or opinions about it. (p. 93)

When faculty and graduate education leaders cultivate environments that center emancipatory pedagogy—particularly in spaces where students with minoritized identities carry out research—numerous opportunities abound related to the socialization processes at work within doctoral education. Through an emancipatory framework faculty can decrease power distance between themselves and doctoral students so mentorship can develop and students can gain access to the learning, interaction, and integration necessary to socialize into a program and profession. Such an authentic and potentially close relationship with a faculty member allows students an opportunity to ask specific questions about the hidden curriculum of an academic culture and tap into the social capital needed to succeed.

Along with decreased power distance between students and faculty, an emancipatory approach to nurturing counter-spaces of inquiry encourages efforts to foster a more democratic and equitable society. With global and national issues related to the economy and unemployment, equitable healthcare, poverty, and climate change, a pressing need exists for doctoral students to engage in inquiry about the world's problems—and to engage in such inquiry using critical methodologies like

participatory action research. When doctoral students from minoritized backgrounds come together to share lived experiences and pose research questions that touch them personally, students not only engage in research that is for them, but by them. Such efforts are empowering and allow students to resist cognitive scripts of impostor syndrome so they can integrate a researcher identity into their professional identity.

When emancipatory research counter-spaces exist, doctoral students also have the opportunity to engage in dialogue that raises their critical consciousness about their particular social, political, and economic situation. Such dialogue promotes socializing interactions between students and can address and reduce the frequency of moments when doctoral students from racially minoritized backgrounds ask, "Am I going crazy?!" (Gildersleeve et al., 2011). Through engagement in ongoing dialogue that helps students become aware of oppressive systems in place affecting how they interface with people, practices, and policies within the institution, students can better work to transform systems. For institutions, students' critical conscientization can drive awareness of the specific needs that must be addressed to improve systems of support within programs, departments, and colleges.

Through a perspective of education as transformative, political, empowering, and based in dialogue, emancipatory pedagogy serves as a crucial component to building emancipatory research counter-spaces. Thus, graduate education leaders (i.e., deans, associate deans, assistant deans, department chairs, program directors/coordinators, and faculty) must ask themselves: in what ways can the institution build an infrastructure to support emancipatory research counter-spaces through faculty education and training, internal grants, rewards through promotion and tenure, student events and programming, or inter-institution collaborations? How can we challenge faculty to develop spaces of inquiry for graduate students that avoid the reification and replication of oppressive practices? How can we better support doctoral students as they engage in research related to their own experiences, identities, and communities?

Community

In addition to emancipatory pedagogy, which emphasizes dialogue, emancipatory research counter-spaces must also include a focus on community and collective action. Though some doctoral programs include a cohort model in which they begin with peers at the same stage in their doctoral journey, such a format is not a rule. Moreover, with the vast body of literature from scholars in higher education who describe the experiences of isolation, alienation, exclusion, and marginalization graduate and doctoral Students of Color feel on predominantly White campuses, a clear case for community-building—as a supplement and/or complement to interactions within programs—persists. Thus, the aspect of community lives within the emancipatory research counter-space model to illustrate the need for relationships with individuals who understand, empathize with, and are able to attentively and

compassionately listen to doctoral students' stories. Community not only serves as strategy for interaction and socialization within a profession with peers in an affinity group, but as a preventative measure against social isolation (Ali & Kohun, 2007), which can lead to stopping out, dropping out, and declined health on numerous fronts. Thus, graduate education leaders must ask: How can we cultivate spaces (on campus, off-campus, and virtually) where students have regular, intentional opportunities with peers, faculty, and other campus agents with whom they perceive similarity and belonging?

Intersectionality

Doctoral students cannot reap the socialization benefits of engaging within an emancipatory research counter-space without an intersectional lens. Failing to acknowledge interlocking systems of oppression, which operates in structural, disciplinary, cultural, and interpersonal domains (Collins & Bilge, 2016), significantly diminishes efforts of equity and inclusion. Such distortion leads to institutional efforts that only aim to address a singular aspect of oppression (e.g., racism) while intersecting systems comingle and reproduce barriers for students. Collins and Bilge advocated for higher education leaders to employ intersectionality as an analytic tool "to provide a more expansive lens for addressing the complexities of educational equity" (p. 188). Graduate education leaders facilitating emancipatory research counter-spaces must attend to the intersecting systems of oppression within conversations as doctoral students share counter-stories about their own experiences on campus and analyze aspects of racism, sexism, classism, heterosexism, transphobia, xenophobia, ableism, and other oppressions at play within the given situation at individual and structural levels.

Likewise, dialogue about intersecting systems of oppression must take place throughout the research process from problem identification and design to data analysis and communication of findings or results. Although an intersectional focus can add complexity to issues related to research and community-building, while problematizing what some might know about themselves and those with whom they are in contact with, an intersectional perspective lends to intersectional solutions that lead to greater outcomes of equity. Therefore, those involved in emancipatory research counter-spaces must not limit conversation about students' experiences to one form of oppression (e.g., racism), but must ask the following questions based on Collins' (2017) discussion of intersectionality and participatory democracy: how are systems of oppression interconnected and mutually constructed through one another within graduate programs and how can we disrupt these systems? What social inequalities are graduate programs replicating within intersecting systems of oppression? How might the standpoint of those in power within doctoral programs affect perceptions of the problems that exist and strategies for addressing such problems? In what ways can and should doctoral programs make time to listen to the voices of students caught within intersecting systems of oppression?

Critical Praxis

Finally, the work of emancipatory research counter-spaces must center critical praxis to actually spur change. Freire (1970) described praxis as "reflection and action upon the world in order to transform it" (p. 51) and explained that although the reflexive process of coming to a realization of oppression while experiencing it could feel oppressive, the process aids in confronting reality critically in order to act upon it. Collins and Bilge (2016) further explained critical praxis as using "…the knowledge learned within everyday life to reflect on those experiences as well as on scholarly knowledge" (p. 42). With a view that scholarship and practice are inextricably tied and mutually-informing, Collins and Bilge reject the idea that theory is better than practice. Thus, critical praxis—when coupled with inquiry like the participatory action research efforts of the ARC team—can lead to scholarly activism that involves coalition building, solidarity across groups experiencing intersecting systems of oppression, and transformative action to develop solutions that address concerns of several communities. Based on the combined aspects of emancipatory pedagogy, community, intersectionality, and critical praxis, all graduate education leaders should engage in discourse about how spaces of inquiry within their institutions serve as sites for praxis to transform climates and advance theorizing asking: How can doctoral student inquiry and praxis lead to social justice on our campus?

Implications

Within this chapter I have called for increased efforts to address the barriers Black doctoral students experience given national level data and empirical research on the racist practices, policies, and climates students experience. Using Weidman et al. (2001) graduate socialization framework advanced by Twale et al. (2016) I applied the theoretical perspective to a case of a co-curricular participatory action research project—the Action Research Collective—and focused on the socialization processes of interaction, integration, and learning.

Through the application of the Weidman-Twale-Stein framework to the ARC case I discussed insights for expansion of the graduate socialization framework and conceived of a model of emancipatory research counter-spaces, which serve to support and socialize graduate students from minoritized backgrounds while engaging emancipatory pedagogy, community, intersectionality, and critical praxis. I advocate for emancipatory research counter-spaces not only as a theoretical concept to examine how programs build structures of support for doctoral students from minoritized backgrounds, but as a strategy to actualize such support and liberatory socialization.

Given that socialization processes of learning, interaction, and integration do not operate within a vacuum removed from institutional, geographic, political, or social contexts as Weidman et al. (2001) model explains, emancipatory research

counter-spaces function as locations where socialization processes take place within graduate institutions and offer opportunities for students to engage in collective, emancipatory, and collaborative work. Graduate education leaders and scholars who engage socialization theoretical perspectives to examine the experiences of minoritized students *must* consider how the professionalization and socialization of students exists within a hegemonic culture and nurture emancipatory research counter-spaces as strategies and *sites* of support, resistance, and transformation.

References

Acosta, M., Duggins, S., Moore, T. E., Adams, T., & Johnson, B. (2015). "From whence cometh my help?" Exploring black doctoral student persistence. *Journal of Critical Scholarship on Higher Education and Student Affairs, 2*(1), 32–48.

Ali, A., & Kohun, F. (2007). Dealing with social isolation to minimize doctoral attrition – A four stage framework. *International Journal of Doctoral Studies, 2*, 33–49.

Bell, D. (1980). Brown v. Board of Education and the interest-convergence dilemma. *Harvard Law Review, 93*(3), 519–533. https://doi.org/10.2307/1340546

Blockett, R., Felder, P. P., Parris, W., & Collier, J. (2016). Pathways to the professoriate: Exploring African-American doctoral student socialization and the pipeline to the academic profession. *Western Journal of Black Studies, 40*(2), 95–110.

Boylorn, R. M. (2006). E pluribus unum (out of many, one). *Qualitative Inquiry, 12*(4), 651–680. https://doi.org/10.1177/1077800405282798

Burrow, A. L., & Ong, A. D. (2010). Racial identity as a moderator of daily exposure and reactivity to racial discrimination. *Self and Identity, 9*(4), 383–402. https://doi.org/10.1080/15298860903192496

Chaudhary, A. (1997). Toward an epistemology of participatory research. In R. McTaggart (Ed.), *Participatory action research: International contexts and consequences* (pp. 113–124). New York: State University of New York.

Collins, P. H. (2000). *Black feminist thought: Knowledge, consciousness, and the politics of empowerment* (2nd ed.). New York: Routledge.

Collins, P. H. (2017). The difference that power makes: Intersectionality and participatory democracy. *Investigaciones Feministas, 8*(1), 19–39. Retrieved from https://revistas.ucm.es/index.php/INFE/article/download/54888/51188

Collins, P. H., & Bilge, S. (2016). *Intersectionality*. Malden, MA: Polity.

Combahee River Collective. (1995). A Black feminist statement. In B. Guy-Sheftall (Ed.), *Words of fire: An anthology of African American feminist thought* (pp. 232–240). New York: New Press.

Crenshaw, K. (1991). Mapping the margins: Intersectionality, identity politics, and violence against women of color. *Stanford Law Review, 43*, 1241–1299.

Davidson, M., & Foster-Johnson, L. (2001). Mentoring in the preparation of graduate researchers of color. *Review of Educational Research, 71*(4), 549–574.

Dortch, D. (2016). The strength from within: A phenomenological study examining the academic self-efficacy of African American women in doctoral studies. *Journal of Negro Education, 85*(3), 350–364. https://doi.org/10.7709/jnegroeducation.85.3.0350

Felder, P. (2010). On doctoral student development: Exploring faculty mentoring in the shaping of African American doctoral student success. *The Qualitative Report, 15*(2), 455–474.

Felder, P., Stevenson, H. C., & Gasman, M. (2014). Understanding race in doctoral student socialization. *International Journal of Doctoral Studies, 9*, 21–42.

Felder, P. P., & Barker, M. (2013). Extending Bell's concept of interest convergence: A framework for understanding the African American doctoral experience. *International Journal of Doctoral Studies, 8*, 1–20.

Freire, P. (1970). *Pedagogy of the oppressed*. New York: Continuum Books.

Gardner, S. K. (2008). Fitting the mold in graduate school: A qualitative study of socialization in graduate education. *Innovation in Higher Education, 33*, 125–138. https://doi.org/10.1007/s10755-008-9068-x

Gay, G. (2004). Navigating marginality en route to the professoriate: Graduate students of color learning and living in academia. *International Journal of Qualitative Studies in Education, 17*(2), 265–288.

Gildersleeve, R. E., Croom, N. N., & Vasquez, P. L. (2011). "Am I going crazy?!": A critical race analysis of doctoral education. *Equity & Excellence in Education, 44*, 93–114. https://doi.org/10.1080/10665684.2011.539472

Giroux, H. A. (1983). *Theory and resistance in education: A pedagogy of opposition*. New York: Bergin and Garvey.

Griffin, K. A., Muñiz, M. M., & Espinosa, L. (2012). The influence of campus racial climate on diversity in education. *The Review of Higher Education, 35*(4), 535–566. https://doi.org/10.1353/rhe.2012.0031

Hardiman, R., & Jackson, B. (2007). Conceptual foundations for social justice education. In M. Adams, L. A. Bell, & P. Griffin (Eds.), *Teaching for diversity and social justice* (pp. 35–66). New York: Routledge.

Heggins, W. J. (2004). Preparing African American males for the professoriate: Issues and challenges. *Western Journal of Black Studies, 28*(2), 354–364.

Henfield, M. S., Woo, H., & Washington, A. (2013). A phenomenological investigation of African American counselor education students' challenging experiences. *Counselor Education & Supervision, 52*, 122–135. https://doi.org/10.1002/j.01556-6978.2013.00033.x

Hurtado, S., Milem, J., Clayton-Pederson, A., & Allen, W. (1999). *Enacting diverse learning environments: Improving the climate for racial/ethnic diversity in higher education* (ASHE-ERIC higher education report 26(8)). Washington, DC: The George Washington University, Graduate School of Education and Human Development.

Ingram, T. N. (2013). Fighting F.A.I.R. (Feelings of alienation, isolation, and racism): Using critical race theory to deconstruct the experiences of African American male doctoral students. *Journal of Progressive Policy & Practice, 1*(1), 1–18. Retrieved from http://caarpweb.org/wp-content/uploads/2013/09/INGRAM11.pdf

Latz, A. O. (2017). *Photovoice research in education and beyond: A practical guide from theory to exhibition*. Thousand Oaks, CA: Routledge.

Lewis, C. W., Ginsberg, R., Davies, T., & Smith, K. (2003). The experiences of African American Ph.D. students at a predominantly White Carnegie I – research institution. *College Student Journal, 38*(2), 231–245. Retrieved from http://libproxy.clemson.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=eft&AN=507913193

Lovitts, B. E. (2001). *Leaving the ivory tower: The causes and consequences of departure from doctoral study*. Lanham, MD: Rowman & Littlefield.

McFarland, J., Hussar, B., de Brey, C., Snyder, T., Wang, X., Wilkinson-Flicker, S et al. (2017). *The condition of education 2017* (NCES 2017-144). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved from https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2017144

McTaggart, R. (1994). Participatory action research: Issues in theory and practice. *Educational Action Research, 2*(3), 313–337. https://doi.org/10.1080/0965079940020302

Musu-Gillette, L., Robinson, J., McFarland, J., Kewal Ramani, A., Zhang, A., & Wilkinson-Flicker, S. (2016). *Status and trends in the education of racial and ethnic groups 2016* (National Center for Education Statistics Report 2016-007). Washington, DC: U.S. Department of Education.

Nicolazzo, Z. (2017). *Trans* in college: Transgender students strategies for navigating campus life and the institutional politics of inclusion*. Sterling, VA: Stylus.

Nouri, A., & Sajjadi, S. M. (2014). Emancipatory pedagogy in practice: Aims, principles and curriculum orientation. *International Journal of Critical Pedagogy, 5*(2), 76–87. Retrieved from http://libjournal.uncg.edu/ijcp/article/download/228/671

Okahana, H., Allum, J., Felder, P. P., & Tull, R. G. (2016). *Implications for practice and research from Doctoral Initiative on Minority Attrition and Completion*. Washington, DC: Council of Graduate Schools.

PechaKucha. (n.d.). *Frequently asked questions*. Retrieved from https://www.pechakucha.org/faq

Solórzano, D., Ceja, M., & Yosso, T. (2000). Critical race theory, racial microaggressions and campus racial climate: The experiences of African American college students. *Journal of Negro Education, 69*(1/2), 60–73. Retrieved from https://www.middlesex.mass.edu/RLOs/748/Critical-Race-Theory.pdf

Sowell, R. S., Zhang, T., Bell, N., & Redd, K. (2008). *Ph.D. completion and attrition: Analysis of baseline demographic data from the Ph.D. Completion Project*. Washington, DC: Council of Graduate Schools.

Spade, D. (2015). *Normal life: Administrative violence, critical trans politics, and the limitations of law* (2nd ed.). Durham, NC: Duke University.

Torres, L., Discoll, M. W., & Burrow, A. L. (2010). Racial microaggressions and psychological functioning among highly achieving African-Americans: A mixed-methods approach. *Journal of Social and Clinical Psychology, 29*(10), 1074–1099. https://doi.org/10.1521/jscp.2010.29.10.1074

Twale, D. J., Weidman, J. C., & Bethea, K. (2016). Conceptualizing socialization for graduate students of color: Revising the Weidman-Twale-Stein framework. *Western Journal of Black Studies, 40*(2), 80–94. Retrieved from http://www.pitt.edu/~weidman/2016-ConceptSocGrad-StudColor.pdf

United States Census Bureau. (2017). *Quick facts*. Retrieved from https://www.census.gov/quickfacts/fact/table/US/PST045217

Wang, C. C. (1999). Photovoice: A participatory action research strategy applied to women's health. *Journal of Women's Health, 8*(2), 185–192.

Weidman, J. C. (1989). Undergraduate socialization: A conceptual approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5, pp. 289–322). New York: Agathon Press.

Weidman, J. C. (2006). Socialization of students in higher education: Organizational perspectives. In C. C. Conrad & R. C. Serlin (Eds.), *The Sage handbook for research in education: Engaging ideas and enriching inquiry* (pp. 253–262). Thousand Oaks, CA: Sage.

Weidman, J. C. (2010). Doctoral student socialization for research. In S. K. Gardner & P. Mendoza (Eds.), *On becoming a scholar: Socialization and development in doctoral education* (pp. 45–55). Sterling, VA: Stylus.

Weidman, J. C., & Stein, E. L. (2003). Socialization of doctoral students to academic norms. *Research in Higher Education, 44*, 641–656.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Yosso, T. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race, Ethnicity, and Education, 8*(1), 69–91.

Chapter 15
Interdisciplinarity and Doctoral Education: Socialization, Process, and Outcomes

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In twenty-first century American higher education, interdisciplinarity is an intellectual paradigm heralded as a necessary endeavor for colleges and universities to address complex issues that cross disciplinary boundaries (Holley, 2009). Interdisciplinary work can be found at multiple institutional types as well as through the efforts of students, faculty, and researchers at different educational levels. Despite its prevalence, interdisciplinary teaching and research remains a challenge for higher education, in part because such work goes against the disciplinary-centric foundation of the academy. Disciplines have now been at the core of higher education for over a century, raising questions about how to best facilitate interdisciplinary opportunities. These questions include how to fund interdisciplinary engagement, how to sustain this engagement over an extended period of time, how to devise organizational strategies to support interdisciplinary work, and how to train faculty and students in interdisciplinary programs.

Due to the integration of different disciplinary bodies of knowledge, the potential of interdisciplinarity to produce original and innovative knowledge is assumed to be high (Holley, 2009). The persistence of wicked global problems, such as climate change, poverty, and sustainability, illustrate the limitations of relying on knowledge produced from traditional disciplinary confines. Barnett (2000) emphasized the potential of higher education to respond to the challenge of supercomplexity, by enabling new frames of understanding. One result of this emphasis can be seen within the nation's research universities as well as in curricula that train future scholars (NRC, 2012). Innovation requires components that may not previously have been brought together, or that are brought together in unique ways (Carlson & Wilmot, 2006). These components include knowledge, technology, culture, and people. Doctoral education produces the skilled workforce necessary to produce

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this sort of innovative outcome, which is why the question of interdisciplinary doctoral education is significant.

"Socialization in graduate school refers to the processes through which individuals gain the knowledge, skills, and values necessary for successful entry into a professional career requiring an advanced level of specialized knowledge and skills," summarized Weidman, Twale, and Stein (2001, p. iii). Through investment, involvement, and the acquisition of knowledge, students acquire community membership. These communities of practice provide examples of linguistic, cognitive, and behavior norms. For example, doctoral students might participate in the annual conference of the discipline's primary organization, or publish in discipline-specific journals. Doctoral students in traditional programs learn to be an academic professional as well as a member of a specific field of study (Johnson, Ward, & Gardner, 2017). For doctoral students in interdisciplinary programs, the challenge of defining and participating in these communities of practice can be significant due to the breadth of interdisciplinary curricula. These challenges can have a long-term impact on a scholar's individual and professional trajectory. Developing effective socialization practices for interdisciplinary doctoral students requires sustained conversation and commitment from faculty across disciplinary boundaries. Students should learn how to integrate different bodies of knowledge, define an interdisciplinary epistemology, and work as part of an interdisciplinary team (Holley, 2015).

In this chapter, I consider the issue of doctoral student socialization, specifically in STEM-related fields. While the interest in interdisciplinary work spreads across bodies of knowledge, a strong interest in interdisciplinary doctoral education can clearly be seen in STEM-related fields; nearly 300 STEM-related interdisciplinary doctoral programs exist across American higher education (Holley, 2018). This chapter is structured in three sections: the growth of interdisciplinary PhD programs; the challenges of interdisciplinary doctoral education; and the outcomes of interdisciplinary doctoral education. Each section relies on concepts related to socialization to emphasize how students, faculty, and institutions experience these programs. I also outline ways in which conceptualizing the interdisciplinary PhD curriculum can broaden models of socialization and provide new insight into the doctoral experience.

Growth of Interdisciplinary PhD Programs

Boix Mansilla and Duraising defined interdisciplinarity as "the integration of knowledge or modes of thinking in two or more disciplines or established areas of expertise to produce a cognitive advancement…in ways that would have been impossible or unlikely through single disciplinary means" (2007, p. 219). Key characteristics of interdisciplinary programs include the involvement of faculty from multiple academic departments; a curriculum that draws knowledge from multiple academic disciplines; and often a physical location separate from other academic units on campus.

Related to interdisciplinarity and often defined under the same conceptual umbrella are transdisciplinarity and translational research. Transdisciplinarity is motivated "by a belief that natural and social systems, such as those studied in economics, biology, and physics, have common underlying structures or relationships" (Lattuca, 2001, p. 93). Transdisciplinary efforts are manifested not only by engagement across disciplinary boundaries, but also by engagement across institutional boundaries. Similarly, translational research spans the divide between basic and clinical/applied research, transferring research findings into community settings (Rubio et al., 2010). For the definitions of transdisciplinarity and translational research, knowledge generation works as part of a continuing cycle.

Interdisciplinary efforts are not new to American higher education. As a way to engage students across disciplinary boundaries as well as engage in knowledge outside of the university, interdisciplinary programs have long been popular in postsecondary institutions. Historically the enthusiasm for interdisciplinary curricula has primarily been at the undergraduate level. These programs have seen a marked growth in recent decades. Brint, Turk-Bicakci, Proctor, and Murphy (2009) noted that undergraduate interdisciplinary degree programs across American colleges and universities grew by 250% from 1975 to 2000, with high growth areas in international relations, global studies, women's studies, brain/biomedical science, and environmental studies.

The doctorate largely remains a disciplinary-based endeavor, although a range of policy groups, federal agencies, and private foundations in the United States have called for increasing opportunities available for doctoral students to pursue interdisciplinary degrees. Academic institutions have responded by developing interdisciplinary learning opportunities for graduate students at both the master's and doctoral degree level. For example, the National Science Foundation established the Integrative Graduate Education and Research Traineeship Program (IGERT) in 1997, followed by the Research Traineeship Program (NRT) in 2014. Both programs were designed to encourage interdisciplinary collaboration, research, and training for doctoral students, especially those in those disciplines related to STEM (science, technology, engineering, and mathematics).

The National Endowment for the Humanities developed its Next Generation PhD program in 2016 to alter the graduate education culture in American higher education. Although not specifically focused on interdisciplinary initiatives, grant recipients commonly identify interdisciplinary collaborations and seminars as transformative tools while offering options to explore scholarship and career development outside of traditional academic pathways.

Interdisciplinary doctoral programs in STEM-related fields emphasize the need for training students to work across disciplinary boundaries and cultural barriers. These curricula also commonly emphasize cutting-edge research techniques and innovative forms of knowledge production. "A reformed graduate training model that produces a workforce capable of meeting the demands of the twenty-first century—working across disciplines, with both breadth and depth of knowledge, and the ability to participate in and lead integrative teams in a variety of professional settings," summarized Carney and Neishi (2010, p. 5) in regards to changes needed

to the structure of the doctoral curriculum in STEM-related fields. The idea of collaborative, team-based research is a signature of STEM-related interdisciplinary doctoral programs as well as transdisciplinary efforts (Rubio et al., 2010). Teams work on different yet complementary strands of an interdisciplinary topic or problem which provide a shared foundation for the program's direction. As a consequence, doctoral students are not expected to master multiple bodies of knowledge, but rather be able to understand where different bodies of knowledge might fit together.

Interdisciplinary doctoral programs in STEM-related fields vary widely in structure and format (Holley, 2018). Consider as an example the field of materials science. The applied physics PhD at Alabama A&M University is offered through an academic department (the department of Physics, Chemistry, and Mathematics), but the curriculum includes an emphasis in materials science and space science. The materials science PhD at Pennsylvania State University is offered through an intercollege graduate degree program, including faculty from multiple academic departments. In North Carolina State University's NSF-funded NRT program, doctoral students can be admitted to any number of PhD programs (such as materials science, mathematics, or physics), but study issues of data-enabled science and atomic structure data in an interdisciplinary environment. Each of these examples offers a unique way to engage in the interdisciplinary field of study.

STEM-related doctorates comprised 40% of PhDs awarded in 2016 (NCES, 2016). Doctorates in engineering, biological and biomedical sciences, psychology, and physical science remain among the most popular. Existing data does not easily differentiate between traditional disciplinary doctorates and those with an interdisciplinary curriculum. Using Survey of Earned Doctorates data where respondents report the disciplinary affiliation of their dissertation research suggests between 25–30% involve two or more academic disciplines (Falkenheim, 2010). Respondents typically indicated that these multiple disciplines were within the same knowledge domain (such as science or engineering), signifying that interdisciplinary doctoral research commonly occurs within closely related disciplines. Respondents in STEM-related fields, particularly agricultural sciences, biological sciences, and earth/atmospheric/ocean sciences, were most likely to indicate interdisciplinary research as part of their doctoral dissertation.

Despite the rhetoric promoting the virtues of interdisciplinary education and the growth in interdisciplinary STEM-related doctoral programs, such programs typically follow similar structures and norms associated with disciplinary-based learning. Holley (2009) illustrated how students in an interdisciplinary doctoral program undergo 2 years of structured coursework from the range of constituent disciplines; the timeline is a feature common to the American model of doctoral education. Boden, Borrego, and Newswander (2011) demonstrated how faculty play similar roles in interdisciplinary doctoral programs compared to traditional programs, such as mentor, research advisor, or dissertation chair. Without clear learning outcomes that distinguish interdisciplinary programs from other kinds of learning environments, differences in student experiences can be difficult to decipher.

While the relentless attention paid to interdisciplinary graduate programs in STEM-related fields may be new, the practice of interdisciplinary engagement among disciplines in STEM fields is fairly commonplace. Burggren, Chapman, Keller, Monticino, and Torday (2017) offer the example of biology and medicine, which they note "have coexisted as intertwined disciplines for many millennia" (p. 102). Biologists use medical knowledge about disease, for instance, to further understanding of health. This reciprocal relationship has only deepened with the development of genetics, molecular biology, biomedical engineering, and genomics. The closely knit nature of the disciplines has been increasingly acknowledged by institutional programming and external agencies.

The U.S. National Institute of Biomedical Imaging and Bioengineering (NIBIB), a National Institutes of Health agency, was founded in 2000 to, in part, bridge the divide between academic and health care institutions by translating research into practice. NIBIB's most recent strategic plan emphasized its efforts to "train the next generation of diverse and interdisciplinary scientists, bioengineers, and health care providers and promote the value of research that synergizes these disciplines" (NIBIB, 2012), noting the significance of collaboration and sustained engagement. In the biomedical engineering PhD program at Johns Hopkins University, students not only study advanced engineering and mathematics, but they also study alongside medical students for core biological coursework, a common approach in the field.

The overlap between institutions suggested by transdisciplinary efforts reveals how wicked global problems engages a variety of actors. Working across the areas of academia and policy shapes professional outcomes for PhD recipients. Students may have supervised research experiences at non-academic institutions, and extend their professional networks and mentors beyond those within academia. As one example, graduate students in the NSF-funded NRT Climate Adaptation Science program at Utah State University complete internships at the National Ocean and Atmospheric Administration (NOAA); the National Weather Service; and the US Geological Survey. These connections enhance student socialization and ensure a cascading mentorship approach that builds upon multiple networks of knowledge.

These examples of engagement across disciplinary boundaries reveal the nature of the academic disciplines as socially constructed and mediated through organizational structure. Knowledge itself, or the work of human beings that gives rise to knowledge, is not the inherent property of one field of study or another. Yet the consequences of this social construction are evident in the common model of doctoral education: an emergent scholar immersed in the discipline, and whose research is expected to become increasingly narrow and specialized. Despite the increased prevalence of interdisciplinary doctoral programs, practices and policies such as faculty hiring and tenure; grant funding; and peer review remain reflections of the disciplinary norm. Bromham, Dinnage, and Hua (2016) documented that interdisciplinary research proposals are much less likely to secure funding compared to traditional disciplinary proposals; and Leahey, Beckman, and Stanko (2017) summarized interdisciplinary research as a "high risk, high rewards" endeavor (p. 105), noting that researchers in interdisciplinary areas experience a

production penalty related to output due to the time demanded for collaboration and team-based efforts.

Challenges Associated with Interdisciplinary Doctoral Education

For doctoral students in interdisciplinary programs, the question of how knowledge acquisition might cross disciplinary boundaries, and to what extent students should be exposed to (and expected to master) knowledge from multiple disciplines complicates the socialization experience. Investment in multiple disciplinary associations can be expensive in terms of financial resources as well as time, while involvement requires negotiating multiple communities of practice. An interdisciplinary doctoral curriculum should anticipate student needs across the different learning environments, such as the classroom and research laboratory, to help students master the key skills of integration and collaboration. While interdisciplinary doctoral programs might appear similar to their disciplinary counterparts in form, distinct influences of such programs on the student experience are noteworthy.

Academic disciplines typically appear as departments or programs; as a consequence, the disciplinary curriculum is embedded within the structural confines of the academic institution. Interdisciplinary programs, on the other hand, require innovative approaches to curriculum development—putting organizational resources, people, and ideas to use in novel ways. Developing effective interdisciplinary curricula for doctoral students requires balancing these institutional elements with desired learning outcomes.

Gamse, Espinosa, and Roy (2013) identified essential competencies necessary for doctoral students engaged in interdisciplinary work. These competencies include (1) a depth of knowledge in a single discipline; (2) the recognition of the strengths and weaknesses across multiple disciplines; (3) the ability to recognize and apply methodological and conceptual tools from multiple disciplines; and (4) the ability to communicate across disciplines as well as to non-academic audiences. Borrego and Newswander (2010) further identified key learning outcomes associated with such curricula, including disciplinary grounding, integration, teamwork, communication, and critical awareness.

Given that most faculty were trained in disciplinary programs, and the academic institution itself is one based within the disciplines, the development of an interdisciplinary graduate curriculum requires special attention. “Scientists are most comfortable within the confines of their narrow academic disciplines, but much less so when venturing into unfamiliar territory,” concluded Burggren et al. (2017, p. 111). While faculty might be enthusiastic about interdisciplinary work, they may not be comfortable engaging in such work, much less advising or directing doctoral students in an interdisciplinary program. The academic institution might not provide sustained support for faculty to engage with interdisciplinary programs, or faculty

might feel tension between obligations to their home academic department and an interdisciplinary endeavor.

Realizing interdisciplinary learning outcomes requires active engagement with curriculum development. For example, the question of what knowledge should be included in an interdisciplinary curriculum and what should be excluded does not have an easy answer. The answer likely depends on the expertise and background of the participating faculty, the motivation for the program, and the organizational context for the program.

Answering questions about what knowledge should be included in the curriculum does not always address the sequence of knowledge, or ways in which students should engage in the curriculum. If an interdisciplinary program consists of faculty drawn from different disciplines, and these disciplines are considered the core of the interdisciplinary program, how and in what ways should students engage with various forms of knowledge? Consider the examples offered in the previous section related to materials science. Some programs draw students from other academic departments on campus; students take the required coursework as their disciplinary peers in addition to participating in the interdisciplinary environment. At what point in such a program should interdisciplinary content be introduced?

Interdisciplinary coursework promotes structural knowledge, especially related to how knowledge is organized and related (Holley, 2017). The ways that knowledge is structured can promote memory and information recall. For example, experts accrue knowledge not through a superior memory, but rather by organizing knowledge in ways that are meaningful. By drawing on a depth of knowledge, expertise is enhanced through stronger and more elaborate structures (De Jong & Ferguson-Hessler, 1996). Developing a critical assessment of the relationship between different knowledge domains allows students to deeply analyze the interdisciplinary problem or topic.

In interdisciplinary curricula, a thoughtful sequence that introduces disciplinary and interdisciplinary content in a way that promotes student mastery is crucial. For doctoral students in interdisciplinary STEM related programs, the prior knowledge brought in from undergraduate studies (and potentially master's level studies) as well as the ways in which they acquire new information will shape their ability to develop deep, complex structural knowledge (Boden et al., 2011).

A related question involves which faculty should be involved in the program, and what the extent of their involvement should be. Answers to this question depend on institutional context, including if faculty are appointed to a home academic department and if they are able to teach outside of this department. What factors motivate their involvement in the interdisciplinary program, and by extension, with the doctoral students in the program? How can this involvement be sustained over an extended period of time? While issues of knowledge, sequence, staffing, and expertise all influence interdisciplinary programming, these issues are framed by questions of institutional context. How and in what ways the academic institution supports interdisciplinary graduate education shapes the development, delivery, and effectiveness of the curriculum.

In regards to the supervision of doctoral candidates, interdisciplinary programs commonly feature team supervision to reflect the integrated nature of the curriculum. These supervisor teams ideally reflect different disciplines; might span across institutional boundaries (including faculty from other universities as well as practitioners); and provide unique insight into the problem of practice that enable the student to complete a dissertation spanning multiple fields of knowledge. However, this team-oriented approach also presents challenges, including how faculty are compensated; what is done when team supervisors disagree; and who leads or chairs the dissertation committee. Faculty might not agree on what knowledge should be prioritized as part of the interdisciplinary curriculum. Intellectual debates could be constructive for students to understand the competing factors inherent in interdisciplinary work, but only if they are conducted and resolved in healthy and appropriate ways.

Some approaches to interdisciplinary work require doctoral students to engage in forms of knowledge which fall outside traditional institutional boundaries. These programs, commonly labeled as transdisciplinary, require "the deepest level of collaboration achieved by a team of different experts, who may be joined by stakeholders with local knowledge of the system" (Ciannelli et al., 2014, p. 1048). For example, graduate programs in interprofessional health sciences commonly require students to engage with health providers that cross disciplinary boundaries. These students learn team-based approaches to health science, with the assumption that only through engagement with different fields of study can a holistic picture of the problem be drawn. Doctoral programs in social work frequently exhibit transdisciplinary characteristics, such as community-engaged research and leadership.

The question of specialization is complicated by interdisciplinary socialization. Inherent to the American doctoral education curriculum, students amass broad, foundational knowledge in the discipline (typically through the first 2 years of coursework) before narrowing an area of study through supervised research with the advisor and/or dissertation research. Doctoral students in STEM-related fields usually develop areas of expertise within a research laboratory, or working as a faculty-led team with other doctoral students, postdoctoral scholars, and research scientists. The development of knowledge expertise within a team offers unique insight into collaborative knowledge activity and production, but also requires skill development in doctoral students not always seen in traditional programs. Table 15.1 illustrates potential differences between traditional disciplinary doctoral programs and inter/trans-disciplinary doctoral programs which shape the student socialization experience.

Interpersonal skills, including communication, conflict management/resolution, group facilitation, problem solving, and team building enable the effective work of interdisciplinary teams. These skills are in addition to disciplinary depth of knowledge and an understanding of the strengths and weaknesses across multiple disciplines. The acquisition of effective interpersonal skills broadens the definition of knowledge acquisition commonly applied to doctoral education as a product of socialization. How might these skills be best achieved in both the informal and formal doctoral curriculum? Knowledge is gained not only through working with

Table 15.1 Student socialization in disciplinary and inter/trans-disciplinary doctoral programs

	Traditional disciplinary-based doctoral programs	Inter/trans-disciplinary doctoral programs
Formal curriculum	Limited coursework typically based on disciplinary foundation	Limited coursework that includes content from constituent fields
Faculty	Apprentice model; relationship with individual faculty advisor	Community model; relationships with faculty and scholars from multiple disciplines and institutions
Peers	In same degree program with limited connections across campus and possible connections in professional associations	In interdisciplinary program while also from representative disciplinary programs
Professional associations	Typically those associated with primary faculty advisor	Potentially wide-ranging, including those associated with interdisciplinary topic and constituent fields

program-affiliated faculty, but also with other students in the interdisciplinary program; students and faculty from disciplinary-based programs; and individuals working in professional practice. The potential network for interdisciplinary doctoral students is vast. As a result, these students might require additional support to define and engage in a knowledge network.

Outcomes of Interdisciplinary Doctoral Education

While the growth in interdisciplinary doctoral programs has been documented, and extant literature has considered the challenges inherent to such programs, research on the outcomes of interdisciplinary doctoral education is sparse. However, an increasing number of researchers have focused on the experience of interdisciplinary PhD students as well as the outcomes associated with the degree. The research is conflicting and does not provide a clear picture on the totality of the interdisciplinary PhD experience, from the time of student enrollment through degree completion and into the job market. What research does exist largely focuses on STEM-related disciplines or programs supported by federal funding, such as IGERT. This research provides a starting point for understanding the interdisciplinary PhD experience, but leaves many questions unanswered.

Regardless of whether or not doctoral students graduate from an interdisciplinary program, the majority of new degree recipients in the U.S. in STEM-related fields do not work in academe. More than 50% pursue careers in industry, policy, government, or non-profit areas (Feig, Robinson, Yan, Byrd, & Mathur, 2016) in jobs related to research and development, management, and consulting. This statistic suggests that desirable academic jobs are few in number, but might also speak to student interest to pursue professional opportunities that offer an immediate impact on policy and practice. Across degree programs, an increased consideration of how to prepare students from non-academic careers can be seen. This preparation

includes traditional academic skills such as grant preparation and teaching, but also skills such as business ethics and regulatory compliance (NRC, 2012). However, these changes have not been widespread, which means that many doctoral graduates in STEM-related fields regardless of their disciplinary or interdisciplinary emphasis do not receive training in skills needed in their future workplace.

Limited research has considered if an interdisciplinary curriculum lengthens time to degree or restricts employment opportunities. For example, Carney, Martinez, Dreier, Neishi, and Parsad (2011) conducted a survey of doctoral students enrolled in IGERT-funded programs as well as individuals who had recently graduated. The authors found no evidence that the additional experiences associated with an IGERT-funded interdisciplinary PhD program increased the chances of attrition or lengthened the time to degree. Program graduates noted the positive influence of the interdisciplinary learning environment as well as the freedom to pursue their own cognitive interests. These graduates also perceived their interdisciplinary education to be beneficial in securing employment, including exposure to interdisciplinary ideas and methodological training in interdisciplinary research areas. IGERT graduates most commonly assumed positions at academic institutions, either in teaching or research roles. Carney et al. (2011) concluded that the interdisciplinary doctoral experience had no negative influences on retention, degree completion, or the graduates' ability to obtain choice employment opportunities.

However, other research has demonstrated that interdisciplinary PhD recipients in STEM-related fields experience unique challenges related to employment. Holley (2018) conducted longitudinal qualitative interviews with interdisciplinary neuroscience PhD scholars when they were enrolled as students and after degree completion. While students were pleased with their doctoral curriculum and felt the program was a worthwhile educational experience, they also expressed frustration over their employment opportunities and the marketability of an interdisciplinary doctoral degree.

This finding demonstrates a perceived disconnect between how students are trained and the job market into which they enter. Students might graduate from their program satisfied by the experience, but struggle to find employment that corresponds to their training. Some of this frustration is mirrored by PhD graduates from traditional disciplinary-based programs who express uncertainty over career opportunities other than faculty (Wright, Ellis, & Townley, 2017). However, other elements seem unique to the interdisciplinary doctorate; students shared the challenge of being hired with an interdisciplinary PhD over those individuals who hold a PhD in one of the constituent disciplines. These challenges might include not holding a PhD in the name of the academic department; not having the same members of a professional network as department faculty; not having publications or grants in a field that department faculty prioritize; or being expected to assume a split position across two or more departments (Holley, 2018).

Further, the rapid rate of knowledge development and output causes academic disciplines to often be unstable entities, and interdisciplinary fields perhaps even more so. Changing knowledge might be manifested through new departmental structures, hiring initiatives, or faculty composition. Academic fields may fall out of

favor over time. Others may develop more identifiable disciplinary characteristics, while others may continue as recognizable interdisciplinary fields. Interdisciplinary doctoral degree recipients might face the challenge of mapping their degree onto the job market. A mismatch not just in the name of the field, but also in the perception of skillsets and abilities, could occur (Holley, 2018).

Conflicting research exists on the employment outcomes associated with completing an interdisciplinary doctoral program. Beyond the question of outcomes, even less research examines the work that interdisciplinary PhD recipients do when they engage in their employment. For example, Kniffin and Hanks (2017) documented that PhD graduates who finish interdisciplinary programs earn salaries that are on average 2% lower than those graduates from traditional programs, at least in the initial years after degree completion. Postdoctoral positions have a mediating effect on these salary differences; interdisciplinary PhD graduates are more likely than their traditional disciplinary peers to pursue a postdoctoral position, which offers lower salaries compared to industry employment. Millar (2013) illustrated how completion of an interdisciplinary dissertation increased the likelihood of gaining employment in an academic institution. However, some interdisciplinary PhD graduates are more likely to hold non tenure-earning positions compared to tenure-eligible positions, raising questions as to job security as well as professional trajectories as these scholars move through their careers.

Examining these two studies suggests that interdisciplinary PhD recipients in STEM-related fields largely move into academia after degree completion through postdoctoral roles with an interest in a faculty career as opposed to those in industry or other areas. The majority of participants in Holley's (2018) research held postdoctoral positions, but several noted the challenge of (1) defining a professional identity, (2) moving out of the postdoctoral role into a more secure faculty role, and (3) establishing a professional network across a broad interdisciplinary field. These issues can be exacerbated by the unique nature of interdisciplinary training, which might enable graduates to work in different work environments, but does not necessarily indicate a specific professional trajectory.

Related to career development for interdisciplinary scholars within a traditional academic setting, a career path aligned with the home department or the academic institution is necessary (Dooling, Graybill, & Shandas, 2017). This career path within a traditional academic setting must be responsive to the realities of tenure and promotion policies. For faculty working in interdisciplinary settings, potentially having fewer publications or those in journals not valued by disciplinary-based faculty (Leahey et al., 2017); fewer funded research proposals (Bromham et al., 2016); and a large number of collaborative or team-based outputs (Klein & Falk-Krzesinski, 2017) might be problematic. Not only can ambiguity about tenure exist for interdisciplinary scholars, but upper-level administrators may not be aware of the complexities inherent to interdisciplinary work. Reflexivity about how interdisciplinary work is rewarded within the institutional culture is necessary. Dooling et al. (2017, p. 580) suggest that early career interdisciplinary scholars may be "particularly vulnerable because of their formative training in problem-based, innovative research approaches and educational curricula."

Joint appointments are a common mechanism for hiring faculty who work in interdisciplinary fields. In such cases, scholars split their time between different academic departments. This structure creates question related to workload, evaluation, and institutional support. For example, in what department or departments should the faculty teach courses? How is service allocated across multiple departments? How do different department chairs and/or deans assess the work of interdisciplinary scholars, especially when such work may fall outside of their disciplinary domain?

Efforts to understand the career trajectories of interdisciplinary scholars mirror those used to understand the experiences of scholars in more traditional disciplinary-based careers. For example, a report from the National Institutes of Health (Pellmar & Eisenberg, 2000) emphasizes the importance of grants, publications, time to tenure, and time to promotion as hallmarks of a successful interdisciplinary career. A 2008 National Science Foundation recommended potential indicators to understand the impact of interdisciplinary graduate programs, such as the graduates' success in securing interdisciplinary positions, the career trajectories of graduates (especially compared to those from traditional disciplinary programs), and the growth of research topics between the academic disciplines (NSF, 2008).

Questions of how doctoral students in interdisciplinary STEM-related programs experience the socialization process are especially relevant as these scholars move into a professional career. What little research exists on these students suggests a high degree of motivation and self-efficacy. Gardner, Jansujwicz, Hutchins, Cline, and Levesque (2014) argued that doctoral students in interdisciplinary programs, particularly those that are student-designed, require a greater sense of self-direction and self-motivation when compared to peers in disciplinary programs. The students' ability to navigate an institutional structure that is not designed for interdisciplinary endeavors, and to do so without the support of an academic department, is crucial to degree completion. Interdisciplinary doctoral students are also required to translate knowledge between the different disciplines that comprise a program of study. This ability is inherent to a successful interdisciplinary research experience, but also to peer and faculty engagement as well as the construction of a professional network that spans the interdisciplinary field.

Outcomes from interdisciplinary endeavors may take some time to become evident. While research on interdisciplinary outcomes for faculty engagement exists, little if any research considers the outcomes of work that is conducted by individuals trained in an interdisciplinary program. Also, the evaluation of interdisciplinary outcomes can be problematic, especially when lead by scholars trained within traditional disciplinary programs or socialized to disciplinary norms. Where interdisciplinary scholarship is published, for example, can influence who has access to the work and the perceived quality of the work. The audience for interdisciplinary scholarship may not be easily defined; the audience may also exclude those indicators associated with success (i.e., high impact journals such as *Science* or *Nature*). Again, socialization as a doctoral student can be highly influential in terms of how students perceive of and engage in published scholarship.

Implication for Future Research

This chapter suggests new avenues for studying doctoral student socialization in interdisciplinary programs. Key socialization elements that help develop knowledge acquisition, investment, and involvement include the academic department or program, the faculty, the curriculum, and peer groups. Other elements focus on student autonomy and professionalization. In an interdisciplinary program, these elements play an expanded role, or in some cases, a different role. First, in traditional disciplinary programs, the academic department or program offers an understanding of the academic role as well as research competence. Doctoral students in interdisciplinary programs experience these elements in similar ways, but collaborative efforts across academic departments or programs play an expanded role—specifically, helping students understand the breadth of the field, gain mastery of the field as appropriate, and understand the relationship between the field and neighboring disciplines.

Second, faculty play a significant socialization role in traditional disciplinary doctoral programs. They sort and select students through program-specific standards. Their role may be less formal and more advisory as the student progresses through the program, but the relationships vary greatly among students and faculty. For interdisciplinary doctoral students, faculty also serve as important role models. They represent a specific field of study in addition to modeling how students might engage in interdisciplinary work. In addition to providing various professional templates for how students might shape their career, they also demonstrate the potential options for interdisciplinary scholarship. Role models exist beyond those in traditional faculty roles. For students who pursue research trajectories outside institutional boundaries, researchers in industry, policy, or government shape expectations.

Third, the curriculum allows for student immersion into the discipline as well as to academe more broadly. The curriculum provides guideposts as to what knowledge is valuable to the field as well as what research is prioritized. Doctoral students in interdisciplinary programs might experience a highly individualized curriculum tailored to their specific interests, or engage in a "patchwork" curriculum that reflects the multiple constituent disciplines under the interdisciplinary umbrella. Fourth, peer groups perform an important support role in the doctoral student experience. Interdisciplinary doctoral programs might span across multiple academic departments or programs, expanding the possible peer group for doctoral students. While students might be challenged to navigate these different groups, they might also find rewarding knowledge networks and potential collaborators.

Doctoral student autonomy in traditional disciplinary programs is largely mediated through assistantships. Interdisciplinary doctoral programs, especially those in STEM-related fields, will likely prioritize the experience of doctoral students in a collaborative research environment, such as a research laboratory or system of laboratories. These students acquire expertise not only in their specific area of work, but also in ways that their work might compliment others. As noted earlier in this chapter, interpersonal skills that emphasize teamwork, communication, and leadership

are valued in this environment. These skills also contribute to research productivity and a healthy professional trajectory.

Ultimately, traditional disciplinary doctoral programs emphasize professionalization through academic rigor, faculty standards, and an apprenticeship structure where faculty serve as role models for students. While doctoral students in an interdisciplinary program experience the same approach to academic rigor, they might struggle to find faculty role models. These faculty might be outside of their specific program, or have a different regard for interdisciplinary work compared with the student. Faculty might be poorly supported by the academic institution or balancing demands between the interdisciplinary program and the academic department, lessening their potential to serve as models of professionalization.

These dimensions inherent to interdisciplinary programs illustrate how doctoral student socialization might operate in unique ways when compared to disciplinary programs. They also illustrate factors that academic institutions and faculty should address when developing interdisciplinary programs. The ability to provide the sort of innovative programming necessary to successfully structure and deliver an interdisciplinary program requires bringing existing institutional components such as knowledge, people, and technology together in new ways (Carlson & Wilmot, 2006). The ways in which doctoral students experience the various components shapes their socialization experience as well as their future professional trajectories.

References

Barnett, R. (2000). University knowledge in the age of supercomplexity. *Higher Education, 40*(4), 409–422.

Boden, D., Borrego, M., & Newswander, L. K. (2011). Student socialization in interdisciplinary doctoral education. *Higher Education, 62*(6), 741–755.

Borrego, M., & Newswander, L. K. (2010). Definitions of interdisciplinary research: Toward graduate-level interdisciplinary learning outcomes. *The Review of Higher Education, 34*(1), 61–84.

Brint, S. G., Turk-Bicakci, L., Proctor, K., & Murphy, S. P. (2009). Expanding the social frame of knowledge: Interdisciplinary, degree-granting fields in American colleges and universities, 1975–2000. *The Review of Higher Education, 32*(2), 155–183.

Bromham, L., Dinnage, R., & Hua, X. (2016). Interdisciplinary research has consistently lower funding success. *Nature, 534*, 684–687.

Burggren, W., Chapman, K., Keller, B. B., Monticino, M., & Torday, J. S. (2017). Interdisciplinarity in the biological sciences. In R. Frodeman, J. T. Klein, & R. Pacheco (Eds.), *The Oxford handbook of interdisciplinarity* (2nd ed., pp. 101–113). New York: Oxford University Press.

Carlson, C., & Wilmot, W. (2006). *Innovation: The five disciplines for creating what customers want*. New York: Crown Business.

Carney, J., Martinez, A., Dreier, J., Neishi, K., & Parsad, A. (2011). *Evaluation of the national science foundation's integrative graduate education and research traineeship program (IGERT): Follow-up study of IGERT graduates*. Arlington, VA: National Science Foundation.

Carney, J., & Neishi, K. (2010). *Bridging disciplinary divides: Developing an interdisciplinary STEM workforce*. Washington, DC: Abt Associates.

Ciannelli, L., Hunsicker, M., Beaudreau, A., Bailey, K., Crowder, L. B., Finley, C., et al. (2014). Transdisciplinary graduate education in marine resource science and management. *ICES Journal of Marine Science, 71*(5), 1047–1051.

De Jong, T., & Ferguson-Hessler, M. (1996). Types and qualities of knowledge. *Educational Psychologist, 31*(2), 105–113.

Dooling, S., Graybill, J. K., & Shandas, V. (2017). Doctoral student and early career academic perspectives on interdisciplinarity. In R. Frodeman, J. T. Klein, & R. Pacheco (Eds.), *The Oxford handbook of interdisciplinarity* (2nd ed., pp. 573–585). New York: Oxford University Press.

Falkenheim, J. (2010). *Interdisciplinary dissertation research* (Infobrief SRS, NSF10-316). Washington, DC: National Science Foundation.

Feig, A. L., Robinson, L., Yan, S., Byrd, M., & Mathur, A. (2016). Using longitudinal data on career outcomes to promote improvements and diversity in graduate education. *Change: The Magazine of Higher Learning, 48*(6), 42–49.

Gamse, B. C., Espinosa, L. L., & Roy, R. (2013). *Essential competencies for interdisciplinary graduate training in IGERT: Final report*. Washington, DC: Abt Associates.

Gardner, S. K., Jansujwicz, J. S., Hutchins, K., Cline, B., & Levesque, V. (2014). Socialization to interdisciplinarity: Faculty and student perspectives. *Higher Education, 67*(3), 255–271.

Holley, K. A. (2009). The challenge of an interdisciplinary curriculum: A cultural analysis of a doctoral-degree program in neuroscience. *Higher Education, 58*(2), 241–255.

Holley, K. A. (2015). Doctoral education and the development of an interdisciplinary identity. *Innovations in Education and Teaching International, 52*(6), 642–652.

Holley, K. A. (2017). Interdisciplinary curriculum in higher education. In G. Noblit (Ed.), *Oxford research encyclopedia of education*. Retrieved from https://goo.gl/yvs5N0

Holley, K. A. (2018). The longitudinal career experiences of interdisciplinary neuroscience PhD recipients. *The Journal of Higher Education, 89*(1), 106–127.

Johnson, C. M., Ward, K. A., & Gardner, S. K. (2017). Doctoral student socialization. In J. Shin & P. Teixeira (Eds.), *Encyclopedia of international higher education systems and institutions*. Dordrecht, The Netherlands: Springer.

Klein, J. T., & Falk-Krzesinski, H. J. (2017). Interdisciplinary and collaborative work: Framing promotion and tenure practices and policies. *Research Policy, 46*(6), 1055–1061.

Kniffin, K., & Hanks, A. (2017). Antecedents and near-term consequences for interdisciplinary dissertators. *Scientometrics, 111*, 1225.

Lattuca, L. (2001). *Creating interdisciplinarity: Interdisciplinary research and teaching among college and university faculty*. Nashville, TN: Vanderbilt University Press.

Leahey, E., Beckman, C., & Stanko, T. (2017). Prominent but less productive: The impact of interdisciplinarity on scientists' research. *Administrative Science Quarterly, 62*(1), 105–139.

Mansilla, V. B., & Duraising, E. D. (2007). Targeted assessment of students' interdisciplinary work: An empirically grounded framework proposed. *The Journal of Higher Education, 78*(2), 215–237.

Millar, M. (2013). Interdisciplinary research and the early career: The effect of interdisciplinary dissertation research on career placement and publication productivity on doctoral graduates in the sciences. *Research Policy, 42*, 1152–1164.

National Center for Education Statistics. (2016). *Digest of education statistics, 2015 (NCES 2016–014)*. Washington, DC: National Center for Education Statistics.

National Institute of Biomedical Imaging and Bioengineering. (2012). *Strategic plan: Today's vision, tomorrow's health care.* Retrieved January 7, 2018 from https://www.nibib.nih.gov/about-nibib/strategic-plan/html

National Research Council. (2012). *Research universities and the future of America: Ten breakthrough actions vital to our nation's prosperity and security*. Washington, DC: The National Academies Press.

National Science Foundation (NSF). (2008). *Impact of transformative interdisciplinary research and graduate education on academic institutions*. Washington, DC: Author.

Pellmar, T., & Eisenberg, L. (Eds.). (2000). *Bridging disciplines in the brain, behavioral, and clinical sciences*. Washington, DC: National Institutes of Health and the National Academies Press.

Rubio, D. M., Schoenbaum, E. E., Lee, L. S., Schteingart, D. E., Marantz, P. R., Anderson, K. E., et al. (2010). Defining translational research: Implications for training. *Academic Medicine: Journal of the Association of American Medical Colleges, 85*(3), 470.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Wright, R., Ellis, M., & Townley, M. (2017). The matching of STEM degree holders with STEM occupations in large metropolitan labor markets in the United States. *Economic Geography, 93*(2), 185–201.

Part VI
Epilog

Chapter 16
Implications of Measurement Issues for Advancing the Socialization Framework

David F. Feldon

In broad terms, socialization theory is the dominant theoretical framework for understanding graduate education in the United States (Gardner, 2010). Although differing versions exist (e.g., Austin, 2002; Bragg, 1976; Gardner & Mendoza, 2010; Tierney & Rhoads, 1994; Van Maanen & Schein, 1979; Weidman, Twale, & Stein, 2001), there is a broad agreement that graduate students progress through stages to actualize their identities as legitimate members of an academic discipline with "individual and social roles, personalities and social structures becom[ing] fused" (Thornton & Nardi, 1975, p. 880). Further, the process of socializing into one's discipline as a professional entails core elements developed through engagement with the social and programmatic structures at each stage: knowledge acquisition, investment, and involvement (Weidman, Twale, & Stein, 2001). Thus, graduate students develop through these mechanisms to a point where, if socialization is successful, they are both "motivated and able to perform [a professional role] in a[n]… acceptable fashion" (Merton, Reader, & Kendall, 1957, p. 41), having learned "the relevant skills, knowledge, habits, attitudes and values of the group" (Austin & McDaniels, 2006, p. 400).

In current literature, indicators of such motivation often include persistence in degree programs or intent to pursue a faculty or research position (Austin, 2002; Lovitts, 2001). Indicators of performance are typically scholarly productivity (e.g., publications) and awards (Paglis, Green, & Bauer, 2006), but they may also be conceptualized as the reproduction of normative day-to-day scholarly practices in professional contexts (Reybold, 2003). In short, these are the outcomes of the socialization process. The purpose of this chapter is to examine existing strategies for the quantitative measurement of socialization's outcomes and processes, exist-

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ing challenges for appropriate measurement, and their implications for the further development of socialization as an explanatory theory of graduate education.

Although readers of this book are likely to be familiar with socialization's major constructs, it merits reiterating that socialization has the foundational properties of a theory. It specifies a set of functions and constructs (i.e., mechanisms; Rojas, 2017) that interact to shape the evolving identity and subsequent identity-linked choices of graduate students. This inherent linking of process and outcome suggests that knowing something about the socialization experiences of a student or group of students should enable us to predict something about whether and how students choose to participate in the broader community of scholars during and subsequent to their graduate training.

Despite this widely held supposition, there have been very few longitudinal studies linking socialization experiences to outcomes. Those that have been published typically use quantitative methods to assess the predictability of outcomes based on data regarding students' graduate school experiences (but see Holley [2018] and Wulff, Austin, Nyquist, and Sprague [2004]). For example, Paglis et al. (2006) administered surveys to 130 participants three times over 5.5 years, with a focus on mentorship experiences as predictors of subsequent scholarly productivity, self-efficacy, and commitment to a research career. While the strength of mentoring positively predicted productivity and self-efficacy, it did not predict research career commitment. This is noteworthy, because the development of values and identity consistent with the culture of the academic discipline is a central emphasis of the mechanisms of socialization, among which mentoring figures prominently (Austin & McDaniels, 2006; Weidman et al., 2001).

Similarly, an ongoing longitudinal study of 336 Ph.D. students in the biological sciences in the United States (Feldon, Jeong, et al., 2017) has identified unexpected trends in the relationships between socialization factors and outcomes. For instance, when comparing the experiences and outcomes of domestic Asian students, domestic White students, and international Asian students, Roksa, Jeong, Feldon, and Maher (2018) found that, after the first two years of doctoral study, rates of scholarly productivity did not parallel reported levels of socialization experiences. Specifically, domestic Asian students reported access to and participation in scholarly activities and interactions with faculty and peers at the same levels as their domestic White peers, with international Asian students reporting significantly less. However, the scholarly productivity of international Asian students was on par with that of domestic White students, with both groups publishing significantly more than domestic Asian students.

Thus, contrary to the predictions of socialization theory and the findings of Paglis and colleagues (2006), favorable socialization did not predict stronger outcomes. Likewise, Roksa, Feldon, and Maher (2018) found that, across all participants, socialization experiences were not predictive of students' commitment to completing their doctoral degree programs. In another study examining the socialization experiences of graduate students in STEM disciplines, Feldon, Maher, Roksa, and Peugh (2016) reported that the widening research skills gap between two groups of students over time could not be explained by access to mentorship, opportunities to

collaborate on publications, or other socialization factors typically associated with faculty or academic departments.

Collectively, these findings raise questions about the ability of the mechanisms specified by socialization theory to predict outcomes. However, as quantitative studies, their data depend on the ways in which core constructs are operationalized and measured. This consideration is critical in light of the strong traditions of qualitative inquiry and thick description that have fueled much of the scholarship on socialization (Austin, 2002; Gardner, 2008a). If the instruments used to measure the socializing features of a doctoral program are insufficiently nuanced, they would be unable to detect substantive differences that might account for differences in outcomes. Similarly, if the strategies used to validate the instruments or analyze the data they provide do not represent best practices, the resulting findings and inferences may be spurious. To examine these issues, the following sections of this chapter discuss the properties of existing measures used within the socialization framework and discuss their implications relevant to future research.

Underlying Methodological Assumptions

Weidman, Twale, and Stein (2001) characterize socialization theory in higher education as "a structural-functional approach to describe the relationships among the stages of socialization, core socialization elements, and fundamental outcomes of professional socialization" (p. 21). As such, its ontological and epistemological assumptions are aligned with a postpositivist or realist framework (Burrell & Morgan, 2016; Schwandt, 1997), which asserts an underlying reality external to the perceptions of participants, while recognizing the fundamentally subjective or constructed nature of individuals' experiences of that material reality. Most current studies of socialization in graduate education typically engage qualitative methods to more deeply explore the constructed perspectives of participants as a window into the lived experience of socialization, using inductive and descriptive strategies of constant comparison to identify emergent themes through the analysis of interviews and observations (e.g., Austin, 2002; Gardner, 2010; Holley, 2009). Thus, it is typically the case that such research does not position itself to test hypotheses.

However, this trend does not mean that the corpus of qualitative inquiry around socialization exists at odds with postpositivist or realist approaches to testing theories (e.g., Glaser & Strauss, 1967; Maxwell, 2004; Shadish, Cook, & Campbell, 2002).

The role of a theory within a postpositivist or realist worldview is to articulate a set of mechanisms that give rise to predictable outcomes (Shadish et al., 2002). In order to test the tenets of a theory, we can assess the extent to which postulated mechanisms work as anticipated by providing opportunities for them to fail. Should outcomes repeatedly arise that diverge from those predicted by a theory under appropriate circumstances, a likely explanation must be crafted that identifies the role of the research method, the context within which the study was executed, a revision to the causal assertions of the theory, or some combination of these in produc-

ing the unanticipated results. Such theory testing is ideally suited for quantitative approaches that lend themselves to deductive modes of reasoning (Kelly, 2017). Appropriate research strategies in the study of graduate socialization may include hypothesis testing through quasi-experimental studies or predicting the relative strengths of relationships between independent variables (i.e., sociological structures or functions) and dependent variables (i.e., participant outcomes, such as those identified in the previous section). As Rojas (2017, p. xxiii) explains, "the translation of theoretical ideas into research agendas requires a link between the concepts that motivate theory…and the specific things that can be measured."

Contrary to the stereotype of quantitative research paradigms, these modes of inquiry do not necessitate the disregard of local meaning and context. Indeed, Miles and Huberman's (1984) notion of "local causality" makes clear that the meaning given to social phenomena by participants is essential to understanding the ways in which mechanisms lead to outcomes. However, relevant local meanings and sociocultural features can be represented effectively through either qualitative or quantitative symbols, as long as the nuances of meaning and experience are adequately considered in constructing categories (Feldon & Tofel-Grehl, 2018; Maxwell & Mittapalli, 2010). When the construction of quantitative measures does not reflect these nuances sufficiently, the products cannot serve as valid instruments. In such cases, inferences derived from them through statistical analyses are flawed, introducing systematic measurement error from the perspective of traditional quantitative research and a misrepresentation of causal mechanism from the perspective of traditional qualitative research (Maxwell, 2004). Thus, even if an instrument is statistically reliable in terms of the internal consistency in its pattern of responses, the resulting data may not accurately or adequately reflect the underlying structures or functions (Pedhazur & Schmelkin, 1991). However, if an instrument is valid, it will inherently be reliable, because it will reflect the phenomena of interest in a manner compatible with the underlying mechanisms.

The concepts of validity and reliability are traditionally associated with quantitative research. However, analogous concepts extend to qualitative inquiry as well (Patton, 2002). Lincoln and Guba (1985, p. 300) discuss "dependability" as an important aspect of qualitative research, in which it is possible to document the analytic process for the purpose of allowing others to trace the path of analysis from raw data through to the researchers' conclusions to verify that they are well-grounded in the data. Similarly, two forms of validity discussed in reference to qualitative research are essential to understanding data collected for any study of socialization: Interpretive validity engages the question of whether or not the inferences drawn from the collected data adequately reflect the perspectives of the participants, and theoretical validity represents the extent to which a theoretical construct is applied appropriately in the interpretation of qualitative data (Maxwell, 1992).

Measurement Characteristics

In research focused specifically on socialization within graduate education, there are several well-known survey instruments developed to elicit information from enrolled students. I briefly describe three of these in the following section. Thereafter, aspects of their design and validation are discussed in relation to socialization theory and common measurement practices.

Examples

Graduate and Professional Education Socialization Scales (Weidman & Stein, 2003)

Weidman and Stein (2003) developed a survey instrument to elicit socialization information from Ph.D. students in six areas: participation in scholarly activities, student-faculty interactions, student-peer interactions, supportive faculty environment, department collegiality, and student scholarly encouragement. Participation in scholarly activities was assessed through a list of 11 items to which participants provided a binary response (yes/no) indicating if they had engaged in each of the listed activities (e.g., peer critique of writing, grant writing, manuscript writing, journal article submission, etc.). Likewise, student-faculty and student-peer interactions were assessed using 4 binary items each to gauge these types of engagement (i.e., sometimes engage in social conversation, often discuss topics in the field, often discuss other topics of intellectual interest, ever talk about personal matters). Items assessing supportive faculty environment and department collegiality were based on a 5-point Likert scale, ranging from 1 (lowest level of agreement with the presented statement) to 5 (highest level of agreement) for items such as "I feel free to call on the faculty for academic help" and "the faculty sees me as a serious scholar." The student scholarly encouragement subscale prompted participants to respond using a 3-point Likert (not at all true, somewhat true, completely true) to items stating that their department "promotes scholarly interchange between students and faculty," "fosters and develops self-confidence in students," and "encourages the scholarly aspirations of all students."

Survey of Doctoral Student Finances, Experiences, and Achievements (SDSFEA; Nettles & Millett, 2006)

The SDSFEA (Nettles & Millett, 2006) consists of 88 items across seven sections: application and enrollment process, current doctoral program experience, attendance patterns, financing your doctoral education, future plans, undergraduate

experiences, and background. Of these, the section focusing on current doctoral program experiences specifically elicits data on socialization while in the doctoral program. Other related aspects, such as whether students were provided with teaching or research assistantships were assessed under the financing section. This instrument also collected information about outcomes, such as scholarly productivity and degree completion.

Response formats across items varied. However, those focusing on socialization experiences utilized 5-point Likert responses ranging from "strongly disagree (1)" to "strongly agree (5)" in response to nine items like "At least one faculty member in my program has had a strong impact on my intellectual development" and "I am satisfied with the level and types of student organizations and committees in my program." Participants' perceptions of their experiences were captured using a different 5-point Likert scale (i.e., "very dissatisfied (1)" to "very satisfied (5)") in response to twelve prompts targeting quality of instruction, collegial atmosphere, quality of academic advising, and faculty interest in participants' research.

The survey also elicited information about the frequency of participants' discrete scholarly activities, asking that participants indicate the number of times they did things like participate in an independent study, publish a research article in a refereed journal, and apply for an external research grant with a faculty member. Response options for each consisted of 0, 1, 2, 3, 4, or "5 or more" for 22 activities. Ongoing activities like participating in informal study groups or receiving feedback about academic progress (10 items) provided a Likert response format ranging from "never (1)" to "very often (5)." Factor analysis identified aggregated scores for peer interaction, student/faculty social interaction, academic interactions with faculty, and interactions with advisors. Additionally, participants were asked to select the professional position they anticipated they would hold immediately after completing their doctoral degrees. Fifteen options were provided, including "faculty at a college or university," "researcher in the private sector," "homemaker," and "other (specify)".

Survey of Mentoring and Doctoral Student Outcomes (Paglis et al., 2006)

The survey developed by Paglis et al. (2006) consists of four subscales that each use Likert responses. The first subscale, Career Commitment, presents five items (e.g., "I am committed to a research career") to which participants respond on a 5-point scale from "strongly disagree (1)" to "strongly agree (5)." The second subscale, Self-Efficacy, includes ten items to which participants rate each stated academic skill (e.g., "be an effective co-author on a paper," "design and conduct effective research") on an 11-point scale, ranging from "not at all confident (0)" to "very confident (10)." The third subscale examines psychosocial mentoring experiences, presenting 14 items (e.g., "My adviser shares history of his/her career with me," "I

try to imitate the work of my advisor.") to which participants respond on a 5-point scale ("to a very slight extent (1)" to "to a very great extent (5)"). The final subscale, Career-Related Mentoring, consists of six items (e.g., "My adviser helps me to meet new colleagues," "My adviser gives me assignments or tasks that prepare me for a research position after I graduate.") to which participants respond using the same response options as the psychosocial mentoring subscale.

Implications of Response Format

Broadly speaking, response format is an important consideration for issues of validity, because the structure of possible responses that an instrument affords participants makes certain assumptions about the nature of their experiences and constrains their ability to communicate it. For example, face validity is usually assessed by recruiting experts in the area to review survey items and verify that they represent the target constructs. However, one of the potential shortcomings of this approach is that the experts typically recruited for such activities hold firm theoretical stances on the subject matter. As such, the items are considered in light of a priori conceptions of the relevant constructs and may be inappropriately worded or conceptualized for the student perspectives they are designed to capture. Therefore, the following sections discuss item format with respect to ecological validity, defined by Bronfenbrenner (1977) as "the extent to which the environment experienced (i.e., survey response options in this case) by the subjects in a scientific investigation has the properties it is supposed or assumed to have by the experimenter" (p. 516).

Likert Items

It is noteworthy that all three surveys discussed make extensive use of Likert scale items and frequency counts as a strategy for capturing participants' graduate education experiences. This is an intuitive strategy, as it is both common in the social sciences and does not impose as much burden on respondents as would an interview or focus group. However, Likert items must be carefully assessed in terms of their ability to effectively represent the full range of meaningful responses that participants might wish to provide for a given prompt (Cummins & Gullone, 2000). If the response range is too restricted, it will force the responses of people with experiences that differ in important ways into the same response value. By default, this can enhance the internal consistency of the scale (i.e., Cronbach's alpha) by homogenizing responses, but do so at the expense of the instrument's underlying validity. Further, compressing the response scale in such a way limits the ability to detect meaningful variation, and in turn, the ability of statistical analyses to detect trends that may exist (Cohen, 1983). Conversely, if the response range is too broad, it risks

diffusing fundamentally similar meanings from respondents into differing response values that are arbitrarily selected, obscuring otherwise informative trends.

A related issue is one of the semantic distances between response labels (i.e., anchors). When responses to Likert items are analyzed using parametric statistics, the underlying assumption is that the conceptual distance between each response option and the next is the same, such that the data will function like an interval scale (Fraenkel & Wallen, 1996). While there is extensive empirical evidence in the social sciences that Likert items frequently behave like interval data, such trends are arguably the result of the extensive efforts typically invested in the development of valid survey response items (Carifio & Perla, 2008). If the assumption of equal conceptual distance does not hold, however, then interpretations of the results will be skewed (Jamieson, 2004). For example, Weidman and Stein (2003) use 3-point Likert response scales to elicit participants' experiences of scholarly encouragement within their home academic departments, with response options consisting of "not at all true," "somewhat true," and "completely true." The first and third response options provide clear meanings. However, the middle option arguably presents a much larger range of possible impressions than the other two options. "Somewhat true" may likely confound multiple differentiated meanings that are more representative of participant experiences and reflect more even semantic spacing, such as "mostly true," "moderately true," and "slightly true."

Several empirical studies have attempted to determine the optimal number of Likert response options. While there is some variation in findings, in general, Likert scales offering between 5 and 10 response items appear to produce equivalent distributions (Dawes, 2008). However, for more nuanced judgments, there may be advantages to using the 10-point response scale (e.g., quality of life; Cummins & Gullone, 2000).

Another challenge in constructing Likert items is to ensure that the stem encompasses only a finite range of a phenomenon. For example, Nettles and Millett (2006) ask respondents to score the statement "at least one faculty member in my program has had a strong impact on my intellectual development" on a scale from "strongly disagree" to "strongly agree." However, this item necessarily equates the same level of agreement with the statement if a student's intellectual development was (a) strongly impacted by only one faculty member during the entire scope of her degree program or (b) strongly impacted by many on a regular basis. These two scenarios would likely have substantially different impacts on a student's socialization and subsequent outcomes, yet they yield the same score in the context of the survey. It therefore seems worthwhile to investigate the frequency of these types of events, along with the typical number of different people involved in them prior to constructing fixed response items if the specifics are of theoretical interest. If they are not, then constructing items to elicit the extent of impact of faculty interactions generally may effectively avoid unnecessary threats to item validity.

A third factor to consider is whether or not the respondent is in a good position to knowledgeably answer the question asked. For example, Paglis and colleagues (2006) assess mentoring in part by directing students to rate the extent to which their advisers "give assignments or tasks that prepare [them] for a research position

after [they] graduate." However, any response is inherently speculative, as the respondents will not have had firsthand experience to know the extent to which a given task may or may not prepare them for a position as an independent scholar. Indeed, previous research clearly indicates that doctoral students often lack familiarity with what preparation is necessary to take on that role—both in general and in terms of specific post-degree employment options (Austin, 2002; Holley, 2018; Lovitts, 2008; Pole, 2000). Even when respondents are asked questions that they do not feel knowledgeable enough to answer or do not hold an opinion, research in survey methods indicates that they will respond to the item. Further, providing a "don't know/no opinion" option fails to mitigate this tendency even when respondents are highly educated, as is the case with any study of graduate education (Bishop, Tuchfarber, & Oldendick, 1986; Krosnick et al., 2002; Schwarz, 1999).

Binary and Count Items

Both Weidman and Stein (2003) and Nettles and Millett (2006) ask respondents to indicate if they have participated in various socializing activities, such as writing a grant. In the first case, participants indicated either "yes" or "no," which captures neither the frequency of the activity, the nature of involvement, nor the perceived quality of the experience. It essentially equates engaging in a specific activity once with engaging many times. In the latter case, respondents report the frequency of events on a truncated scale (i.e. "5 or more"), in which participating in the activity 5 times and 20 times are scored identically. Depending on the joint socialization contexts of discipline and research intensity of the institution, it may be that "5 or more" is an atypically high occurrence for an activity, which would have a low frequency of response and serve as an appropriate category. However, it is also possible that 5 occurrences is relatively low, and that the majority of respondents from a given context might have upwards of 10 occurrences.

For example, Feldon, Peugh, Maher, Roksa, and Tofel-Grehl (2017) found that while only 20% of first-year doctoral students in cellular and molecular biology programs reported authorship on a published journal article, the number of authored publications ranged from 1 to 3. Given that the average duration of a Ph.D. program in this field is 5.5 years, it is readily apparent that a different scale would be necessary to capture the full variance in scholarly productivity over the course of a degree program. Indeed, after 3 years in their programs, the participants in that study who have published in journals report a mean of 2.9 articles (SD = 1.5), with 15% having published 5 or more articles (maximum reported is 10 articles) about the time they are halfway to degree completion (unpublished data). In another field, with different publishing norms, the publication rates would likely be very different. Thus, it may be advisable to permit respondents to directly report numeric values, rather than provide preset options that may be inappropriate to their circumstances.

It is also the case that the experiences entailed in activity participation will vary, not just by individual, but by group. Feldon, Peugh, et al. (2017) found that the

number of research hours invested to yield a publication was significantly greater for women than for men, with the likelihood of receiving authorship credit increasing by 15% for men over women for every 100 h of laboratory time invested. Additionally, women were significantly more likely than men to serve as first author, which typically requires substantially more investment of time and effort than a lower authorship position. In this sense, even a count of published articles without considering authorship order does not represent the same underlying experiences for men and women. When viewed as an outcome, such group-based differences would be readily observed. However, if the experience of writing and bringing a manuscript to publication were considered as an aspect of the socialization process (i.e., independent variable), it could readily lead to invalid conclusions based on inappropriately aggregated response items.

Implications of Data Type

The surveys described above constitute self-report instruments, in which respondents are asked to describe their experiences and judgments from their perspectives through the range of response options provided. While the constraints of closed-ended items formats are evident in terms of restricting nuance, personal meaning, and experience, there are additional characteristics that are also vital to consider in understanding self-report data. Despite an understandable tendency to treat subscale scores at face value, there are well-established sources of bias that must be considered.

Acquiescence and Social Desirability Effects

When asking respondents to assess their traits or experiences, there is a well-established tendency to skew responses toward answers that protect the respondent from possible negative judgments by those who read their responses. One way in which this manifests is acquiescence, in which respondents tend to agree with the statements offered in item stems far more often than they tend to disagree (Couch & Keniston, 1960). Consequently, there is a tendency for items with agree-disagree response scales to correlate positively with one another, which can inflate reliability estimates at the expense of valid measurement (Messick, 1967). This trend toward acquiescence can be amplified when respondents do not find items to be clear or meaningful (Schuman & Presser, 1981). One way to guard against this phenomenon is to employ a mix of positively and negatively framed items, rather than presenting all items positively (Cronbach, 1946).

Another strategy is to ensure that response items are directly meaningful to participants. As graduate students progress through various stages of socialization (Gardner, 2009; Weidman et al., 2001), certain experiences or the meanings

constructed from them may not hold the same salience at all points in time. Thus, our understanding of the socialization process can be leveraged to enhance response validity by tailoring items to avoid acquiescence due to mismatch with participants' individual stages of socialization. For example, respondents who have entered the Informal or Personal stages of socialization, in which graduate students are conceptualizing themselves more as independent researchers, may be more likely to acquiesce to items asking about their assessments of coursework, because such activities are typically more salient during the Formal stage (Gardner, 2008b).

The related effect of social desirability occurs when respondents skew their answers to reflect the anticipated preference of the anticipated reader or researcher (Edwards, 1957). For example, if participants blame themselves for a negative graduate school experience or feel that some aspect of that experience reflected badly on them, they would be more likely to offer a mitigated estimate of their experience to protect against an anticipated negative judgment. This phenomenon can be attributed to either "impression management," which focuses on the judgments of a third party, or "self-deceptive enhancement," which focuses on self-judgments (Paulhus, 1991).

Research on social desirability suggests several strategies that may be useful in guarding against its biasing impact on survey items. First, during item development and validation, respondents can be asked to estimate the desirability of the item itself on a Likert scale, which can inform modification decisions for extreme ratings of high or low desirability (Nederhoff, 1985). Second, items likely to invoke socially undesirable responses may have biasing effects mitigated through the use of projective language, which asks the respondent to evaluate in relation to a hypothetical third party (e.g., "Students in my program are treated as colleagues by the faculty" rather than "I am treated as a colleague by the faculty" [Weidman & Stein, 2003, p. 650]) (Fisher, 1993). Items targeting the intent to pursue or desirability of research-related or faculty careers after earning the Ph.D. may also be appropriate items to use this strategy, as many students report social discomfort in disclosing an aversion to those positions (Nerad, 2015).

Weighing Against Expectation and Experience

When respondents are asked to evaluate their experiences through assessments of sufficiency (e.g., the extent to which something occurs, satisfaction with an event), they necessarily call upon their own frame of reference to respond. For example, Paglis et al. (2006) asked participants to respond to the item "My adviser helps me to meet new colleagues" on a 1–5 Likert scale with anchors of "to a slight extent" and "to a great extent." However, the response to this item inherently requires the participant to weigh his/her experiences against an expectation of the extent to which the event should happen. If the participant expects that such help ought occur monthly, but the advisor engages in the behavior every 6 months, then the participant's response would likely be a low score (e.g., 1 or 2).

In contrast, another participant might expect that an advisor would only help with meeting new colleagues annually, in which case the likely response to the event occurring every 6 months would likely be positive (e.g., 4 or 5). Similarly, assessing the frequency of receiving feedback about academic progress (Nettles & Millett, 2006) on a scale from "never (1)" to "very often (5)" will depend on how often the respondent feels feedback should be provided. While "never" is directly observable, differentiating between "somewhat often" and "very often" depends upon the ideal frequency in the mind of the individual. Thus, identical responses cannot be assumed to represent the same underlying events. Given that different demographic groups may hold divergent expectations of their mentors (e.g., by gender; Rose, 2005), it is possible that such measurement strategies may systematically conflate differences in expectation with differences in socialization opportunity.

Self-Efficacy vs. Performance

Both Nettles and Millett (2006) and Paglis and colleagues (2006) elicit self-efficacy information from participants, asking them to estimate the extent to which they are capable of performing various research tasks. While such perspectives may be valuable in their own right for inferring the extent to which respondents feel capable of success, accepting such estimates as proxy responses for actual skill levels as outcome variables is fundamentally flawed. Extensive research indicates that the correspondence between individuals' beliefs about their skills and their demonstrated skill levels is poor (e.g., Dunning, Johnson, Ehrlinger, & Kruger, 2003; Ehrlinger & Dunning, 2003; Falchikov & Boud, 1989). Further, a meta-analysis by Stajkovic and Luthans (1998) estimated that self-efficacy beliefs predict no more than 25% of the variance in participants' actual performance during low-complexity, artificial tasks.

For complex, authentic tasks such as those involved in scholarly research, self-efficacy account for only 4% of variation in performance. Indeed, Feldon, Maher, Hurst, and Timmerman (2015) found that graduate students in STEM disciplines were unable to estimate their own strengths and weaknesses in research skill at levels better than chance, when compared to both their advisors' assessments of their skills and their rubric-based scores on research proposals they had written. Advisors' assessments likewise failed to predict performance as evaluated by the rubric.

Although skill development is not frequently studied in graduate education (Feldon, Maher, & Timmerman, 2010), it is consistently identified as a fundamental aspect of the socialization process (Austin & McDaniels, 2006; Merton, Reader, & Kendall, 1957). As such, understanding its trajectories and effective strategies for enhancing them is an important aspect of understanding the socialization process. Although this strategy is resource-intensive, employing performance-based assessment strategies can provide direct insight into skill development using authentic disciplinary activities in context. Evaluating written products (e.g., reports of empirical findings, literature reviews, or research proposals) does not require physical

proximity, and a number of validated instruments exist that establish consistent metrics for assessing scholarly rigor and quality (e.g., Boote & Beile, 2005; Feldon et al., 2011; Hackett & Rhoten, 2009; Lovitts, 2007; Timmerman, Strickland, Johnson, & Payne, 2011). Other important skills that may require direct observation or recording, such as effective communication of research to lay audiences, likewise can be assessed reliably using performance-based rubrics (e.g., Sevian & Gonsalves, 2008).

Validation Strategies

Recognizing the importance of local meaning in measurement presents a challenge in validating instruments. It cannot be taken for granted that an instrument valid in one context maintains its validity in another. While there are many aspects of doctoral education that are consistent over time and from institution to institution, several basic influences on socialization processes are not. Both the nature of academic work and the composition of the student population engaged in it has changed dramatically over the past 20 years. For example, the expected pace of productivity has increased substantially over time (Anderson et al., 2011; Austin & McDaniels, 2006). Whereas it was once exceptional for a student to publish more than one journal article prior to commencing his or her dissertation work (Nettles & Millett, 2006), in many fields, several publications is now the norm expected for gaining access to desirable academic positions after completing the Ph.D. (Ehrenberg, Zuckerman, Groen, & Brucker, 2009). Likewise, in scientific fields, team-based endeavors are increasingly common (Cumming, 2009; Wuchty, Jones, & Uzzi, 2007), resulting in more complex collaboration and mentoring structures for graduate students. The importance of this shift is reflected in the assertion that "cascading mentorship" (Golde, Conklin Bueschel, Jones, & Walker, 2009) has become a signature pedagogy in many science disciplines. In this context, mentorship now occurs between more varied roles than just between faculty advisor and student: "post-doctoral fellows mentor senior graduate students, senior graduate students mentor junior graduate students, and junior graduate students mentor undergraduates" (p. 57).

Further, the demographic distribution of doctoral students itself is fundamentally different. Over the past 20 years, the proportion of female U.S. citizens and permanent residents earning doctorates has increased from 44% to 51%. Similarly, the number of doctorates awarded to black/African American students over the past 10 years has increased 31%, and the number awarded to Hispanic/Latino students has increased 71% (NCSES, 2017). While the rates of increase have not yet translated to equitable representation across race and ethnicity, it is nonetheless reflective of changing demographics that may be salient to understanding the dimensions of socialization. Thus, it may not be appropriate to assume that the items and response scales developed to examine socialization decades ago would be wholly appropriate to use in the investigation of socialization now without empirical validation, because socialization processes now take place amongst students and faculty of less homog-

enous backgrounds. As such, constructs previously conceptualized as unitary may now reflect greater nuance in the underlying constructs.

Sampling

One of the ways in which the validity of instruments might be enhanced is to make efforts to test them across a substantial number of doctoral students in a variety of institutions and disciplines. Some studies have used this approach, such as Nettles and Millett (2006), in which over 6000 doctoral students across 14 disciplines from 19 institutions provided responses. Analyses of the responses both reflected appropriate reliability metrics and clearly defined factor structures, which delineated the relative strengths of specific items in reflecting underlying factors. Similarly, the instruments used by Paglis and colleagues (2006) were validated with a sample of $n = 357$ incoming doctoral students across 24 departments within a single university and reflected adequate internal consistency ($\alpha > 0.70$) and robust factor structures (i.e., one factor per subscale) (Green & Bauer, 1995).

In contrast, Weidman and Stein (2003) validated their instrument using data from only 50 respondents across two departments within the same institution. Given that correlation coefficients—even when statistically significant—are typically unstable until the sample size exceeds 250 (Schönbrot & Perugini, 2013), reliability estimates (based on intercorrelations amongst items) from small samples are likely to be equally unstable. Because instruments with low reliability are by definition lacking in validity, the consequence of such instability is a low ability to be confident in the instrument's validity. It should be noted, however, that when Weidman and Stein's subscales were used in a study with a larger sample ($n = 336$; within a single discipline across 53 institutions), internal consistency for each subscale (i.e., Cronbach's alpha) was exceptionally high, ranging between 0.883 and 0.976, with most above 0.93 (Feldon, Jeong, et al., 2017). Thus, the primary concern regarding the validation of Weidman and Stein's instrument based on their sampling strategy is a lack of confidence in the stability of the reliability estimates rather than an inherently problematic measure.

Given the strong performance across measures in terms of reliability, it might be argued that validity concerns are exclusively hypothetical in nature. However, several facets of the situation warrant further consideration. First, the psychometric strengths of the instruments do not negate the initial concern that studies performed using them have not been consistent in supporting the expectations of socialization theory. Second, reliability/internal consistency is a necessary but not sufficient criterion for validity, as stability in measurement can be high while the instrument's conception of the underlying construct may be inadequate. Indeed, the strongest estimate of validity stems from an instrument's ability to predict outcomes for another variable in a manner consistent with the predictions of theory.

Differential Item Functioning (DIF)

Newer trends in measurement under the assumptions of item-response theory (IRT; Wright & Stone, 2004) have heightened focus on the ways in which measurement items may systematically assess different underlying traits or behaviors for different groups within a sample. Issues of DIF have received almost no attention in the scales commonly used with research in socialization, in part as an issue of historical timing and in part as a reflection of the relatively small role that quantitative research has played in socialization research to data within graduate education. However, given the changing demographics of the doctoral student population, it is an idea that warrants substantial attention. Importantly, DIF does not assess the probability of members of different groups responding differently to items where their experiences or beliefs differ (e.g., members of underrepresented groups reporting less access to research opportunities). Instead, it estimates the probability that groups with the same underlying experience or belief (as might be represented by a total score on an instrument) are differentially likely to select a specific response to a survey item (Holland & Thayer, 1986). Thus, if undetected, the item would introduce bias into the measure by increasing the likelihood of a specific answer that was based on group membership, rather than the facet of socialization targeted. DIF may occur both in terms of the likelihood of eliciting a given response and in terms of the likelihood to choose not to respond to a given item (Dorans, Schmitt, & Bleistein, 1992).

The one exception to this pattern (to the best of the author's knowledge) is a measure of graduate advising experiences developed by Barnes, Chard, Wolfe, Stassen, and Williams (2011). During the validation of this instrument, DIF was assessed as a function of degree level (masters vs. Ph.D.), discipline (using Biglan's [1973] framework for academic disciplines), and gender. Most items with significant DIF reflected disciplinary differences, and a lesser number reflected differences in degree level. Gender was not associated with DIF for any item in the survey, which is noteworthy given the broader concerns about gender inequity in advising experiences (e.g., Noy & Ray, 2012; Rose, 2005; Zhao, Golde, & McCormick, 2007). In their study, Noy and Ray identified women of color as a notably divergent group in their study, but Barnes and colleagues did not assess DIF for race/ethnicity or race/ethnicity by gender interactions—possibly due to low representation of minority groups within their sample. As instrument development and validation efforts move forward in graduate socialization, examining DIF presents itself as a major priority as a way to understand differentiated experiences and perspectives by group, for its own sake and as a way to ensure that quantitative data do not ossify misunderstandings of socialization mechanisms due to undetected influences on item responses.

Future Directions

Although this chapter highlights a number of quantitative measurement challenges facing the study of graduate socialization and, by extension, the further development of the theory, these challenges are not insurmountable. Broadly, they fall into three categories: (1) presenting an appropriately nuanced set of meanings within instruments that correspond to the ways in which students within disciplinary and institutional contexts understand their experiences, (2) avoiding validity challenges introduced through item format, and (3) increasing the frequency of best practices in measurement development, such as checking for DIF. Addressing the latter two is fairly straightforward through increasing awareness within the field and encouraging collaboration with colleagues who specialize in psychometrics and measurement. The first issue, however, requires more fundamental consideration.

Finding the optimal balance between situativity and generalizability is an ongoing challenge across many social science fields. One possible strategy to resolve this tension would be to move socialization research toward a fully descriptive stance consistent with the exclusive use of qualitative inquiry methods. An argument could be made that the complex nature of the interactions between institution, discipline, and individual give rise to a local causality too nuanced to be adequately investigated using standardized quantitative instruments. However, curtailing the range of inquiry strategies would inherently constrain the potential to expand and refine socialization theory more broadly. It would also limit our ability to make generalizable claims about the mechanisms of socialization, which would limit both the ability to observe system-level patterns linking graduate education experiences to outcomes and the opportunities to make robust recommendations for practice and policy across contexts.

An alternative approach would be to shift our approach to the development of survey instruments to orient more specifically around the constructed meanings of respondents. Deliberate efforts to leverage the strengths of qualitative inquiry in the framing and construction of items may enhance not only the validity of instruments in eliciting underlying constructs, but also advance socialization theory through a stronger integration of quantitative and qualitative scholarship in the field. While a full discussion of mixed methods research approaches is beyond the scope of this chapter, readers are encouraged to examine literature that deliberately engages strategies to retain the richness of qualitative data during instrument development and subsequent quantitative analyses (e.g., Creamer, 2018; Hesse-Biber, 2010).

A potentially productive example of this sort of integration in higher education research lies in the phenomenographic tradition (Åkerlind, 2005; Feldon & Tofel-Grehl, 2018; Marton & Pong, 2005). Initially developed as a qualitative paradigm compatible with critical realism, phenomenography assumes that individuals' conceptions of their experiences can be understood both within personal and collective frames. Thus, constructed meanings are considered within the contexts of the individual interview from which they came, the structural nature of the relevant social relationships, and the broader pool of meanings. Further, phenomenography posits

that while there may be a very wide range of personal conceptions held across individuals, the range is not infinite (Marton, 1994). The relationships that exist between individuals' conceptions and socializing structural influences drive predictable variation in individuals' conceptions based on systematic physical and social experiences (Entwistle, 1997).

Thus, as qualitative inquiry yields saturation (i.e., no new categories emerging from new data collection), the number of distinct conceptions identified can serve as the foundation of the range of responses offered for closed-ended survey items. The resulting instrument is then conducive to identifying trends generalizable to the natural population under the presumption that the distribution of conceptions encapsulating local meanings identified through qualitative analyses represents the natural range of responses generalizable to the whole population.

In their review of instruments developed using phenomenographic approaches, Micari, Light, Calkins, and Streitweiser (2007) suggest that their value is enhanced by the emphasis on measuring changes in how respondents conceptualize or approach their experiences, beyond behavioral or performance-based metrics. Some of these instruments include the Approaches to Studying Inventory (Entwistle & Ramsden, 1983; Enwistle & Tait, 1994), the Approaches to Teaching Inventory (Prosser & Trigwell, 1999; Trigwell & Prosser, 2004), the Approaches and Study Skills Inventory for Students (Tait, Entwistle, & McCune, 1997), the Reflections on Learning Inventory (Meyer, 2000), and the Conceptions of Learning Inventory (Purdie & Hattie, 2002).

In addition to providing indicators of frequency and magnitude for specific conceptions held by respondents, these instruments are also valuable in their ability to inform understanding of constellations and predictors of conceptions through statistical relationships. For example, examining the relationships amongst conceptions within their instrument's constructs, Trigwell & Prosser (1996) identified a significant and unexpected correlation between conceptions that they had initially grouped differently based on their inductive qualitative analyses. As a result, they restructured the items to reflect a different factor structure and enhance the ability of the survey to capture respondents' underlying conceptions, further improving the instrument's validity. Similarly, Crawford, Gordon, Nicholas, and Prosser (1998a, 1998b) correlated data from a phenomenographic instrument assessing students' conceptions of mathematics with scores on an approach-to-learning questionnaire to identify underlying structural relationships that may not have been immediately evident through exclusively qualitative inquiry.

Another promising approach entails an interactive mixed methods embedded design (Tashakkori & Newman, 2010), in which item development begins with a rigorous sequence of qualitative research strategies to elicit not only individual meanings regarding target constructs, but also iterative member checking strategies and intentional focus on contextual influences on interpretation (David, Hitchcock, Ragan, Brooks, & Starkey, 2018). Cole, Kitchen, and Kezar (2018) engaged this approach using an 8-step process primarily through focus groups conducted with participants in the comprehensive college transition program during site visits at participating campuses. During the iterative process of exchange between

researchers with respective quantitative and qualitative expertise over the course of the project, Cole and colleagues sought opportunities to formulate new survey items for validation that emerged unexpectedly during focus group discussions. They also closely examined underlying meanings expressed during those conversations to understand unexpected or surprising variance or limited response ranges from piloted survey items using an IRT framework.

Using a similar approach with more varied modes of qualitative data collection, David and colleagues (2018) describe in depth their process as they developed and validated a new instrument to measure athlete-trainer trust via Rasch modeling (Bond & Fox, 2015). In the initial phase of development, the authors conducted semi-structured interviews with a number of participants, which is a common practice. However, they went on to engage multiple trustworthiness strategies, including member checking, engaging an external auditor, and reflexive journaling to identify potential interpretational bias on the part of the research team. Identified themes were discussed with a subset of interviewees subsequent to their development during member checking, and raw transcripts were provided to the auditor for an independent coding scheme to be developed and compared with the original findings of the team.

In the next phase, items were developed and piloted with 75 participants for validity and reliability analysis using both Rasch modeling and classical test theory techniques. Items with suboptimal statistical characteristics were then interrogated with participants using highly focused "rapid reconnaissance" cognitive interviews to determine potential nuances in meaning that limited the ability of problematic items to optimally measure target constructs. Thus, David and colleagues (2018, p. 86) engaged a mixed methods approach that extended beyond a conventional "QUAL→QUAN" approach to one they describe as "QUAL→QUAN↔QUAL↔QUAN," yielding highly robust and nuanced items grounded in the situated understanding of their participants.

Conclusion

Theory and measurement have an intrinsic reciprocal relationship: Theory asserts the structure and function of mechanisms that give rise to specific outcomes, and measures reflect the nature of those mechanisms and capture the range of possible outcomes using metrics that are meaningful within the interpretive context of the theory. Conversely, analysis of the data collected through measurement further informs the development of the theory by making evident the ways in which outcomes were or were not consistent with the predictions of the theory. In this way, these two components of scholarly inquiry shape each other.

In the case of graduate student socialization, the causal explanations offered through extensive qualitative research have outpaced the capacity for causal description offered by quantitative inquiry. As a natural consequence, various well-known instruments developed to facilitate such description do not fully reflect the insights

that have refined our understanding of the mechanisms impacting graduate education outcomes. Thus, the ability of these instruments to support tests of the theory and new contributions to its development is constrained.

As graduate education contexts and populations continue to evolve, understanding its mechanisms and products becomes ever more important to ensure more effective and more equitable outcomes. To aid students in pursuing graduate degrees as a means to enhance their upward economic mobility (Posselt & Grodsky, 2017) and address societal challenges (Cherwitz & Sullivan, 2002), socialization theory has a vital role to play through its ability to inform the shaping of both structures and functions. Enhancing and refining its contributions requires both further understanding of socialization mechanisms and sustained development of tools that can contribute to it.

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References

Åkerlind, G. S. (2005). Variation and commonality in phenomenographic research methods. *Higher Education Research and Development, 24*, 321–334.

Anderson, W. A., Banerjee, U., Drennan, C. L., Elgin, S. C. R., Epstein, I. R., et al. (2011). Education at research universities. *Science, 331*, 153–153.

Austin, A. E. (2002). Preparing the next generation of faculty: Graduate school as socialization to the academic career. *The Journal of Higher Education, 73*, 94–122.

Austin, A. E., & McDaniels, M. (2006). Preparing the professoriate of the future: Graduate student socialization for faculty roles. *Higher Education: Handbook of Theory and Research, 21*, 397–456.

Barnes, B. J., Chard, L. A., Wolfe, E. W., Stassen, M., & Williams, E. A. (2011). An evaluation of the psychometric properties of the Graduate Advising Survey for Doctoral Students. *International Journal of Doctoral Studies, 6*, 1–17.

Biglan, A. (1973). Relationships between subject matter characteristics and the structure and outputs of university departments. *Journal of Applied Psychology, 57*, 204–213.

Bishop, G. F., Tuchfarber, A. J., & Oldendick, R. W. (1986). Opinions on fictitious issues: The pressure to answer survey questions. *Public Opinion Quarterly, 50*, 240–250.

Bond, T. G., & Fox, C. M. (2015). *Applying the Rasch model: Fundamental measurement in the human sciences* (3rd ed.). New York: Routledge.

Boote, D. N., & Beile, P. (2005). Scholars before researchers: On the centrality of the dissertation literature review in research preparation. *Educational Researcher, 34*, 3–15.

Bragg, A. K. (1976). *The socialization process in higher education* (ERIC/AAHE Research Report, no. 7). Washington, DC: American Association for Higher Education.

Bronfenbrenner, U. (1977). Toward an experimental ecology of human development. *American Psychologist, 32*, 513–531.

Burrell, M., & Morgan, G. (2016). *Sociological paradigms and organizational analysis: Elements of the sociology of corporate life*. New York: Routledge.

Carifio, J., & Perla, R. (2008). Resolving the 50-year debate around using and misusing Likert scales. *Medical Education, 42*, 1150–1152.

Cherwitz, R. A., & Sullivan, C. A. (2002). Intellectual entrepreneurship: A vision for graduate education. *Change, 34*(6), 23–27.
Cohen, J. (1983). The cost of dichotomization. *Applied Psychological Measurement, 7*, 249–253.
Cole, D., Kitchen, J. A., & Kezar, A. (2018). Examining a comprehensive college transition program: An account of iterative mixed methods longitudinal survey design. *Research in Higher Education*. https://doi.org/10.1007/s11162-018-9515-1
Couch, A., & Keniston, K. (1960). Yeasayers and naysayers: Agreeing response set as a personality variable. *Journal of Abnormal and Social Psychology, 60*, 151–174.
Crawford, K., Gordon, S., Nicholas, J., & Prosser, M. (1998a). University mathematics students' conceptions of mathematics. *Studies in Higher Education, 23*, 87–94.
Crawford, K., Gordon, S., Nicholas, J., & Prosser, M. (1998b). Qualitatively different experiences of learning mathematics at university. *Learning & Instruction, 8*, 455–468.
Creamer, E. G. (2018). Enlarging the conceptualization of mixed method approaches to grounded theory with intervention research. *American Behavioral Scientist, 62*, 919–934.
Cronbach, L. J. (1946). Response sets and test validity. *Educational and Psychological Measurement, 6*, 475–494.
Cumming, J. (2009). The doctoral experience in science: Challenging the current orthodoxy. *British Educational Research Journal, 35*, 877–890.
Cummins, R. A., & Gullone, E. (2000). *Why we should not use 5-point Likert scales: The case for subjective quality of life measurement*. Paper presented at the Second International Conference on Quality of Life in Cities, Singapore: National University of Singapore.
David, S. L., Hitchcock, J. H., Ragan, B., Brooks, G., & Starkey, C. (2018). Mixing interviews and Rasch modeling: Demonstrating a procedure to develop an instrument that measures trust. *Journal of Mixed Methods Research, 12*, 75–94.
Dawes, J. (2008). Do data characteristics change according to the number of scale points used? An experiment using 5-point, 7-point and 10-point scales. *International Journal of Market Research, 50*, 61–77.
Dorans, N. J., Schmitt, A. P., & Bleistein, C. A. (1992). The standardization approach to assessing comprehensive differential item functioning. *Journal of Educational Measurement, 29*, 309–319.
Dunning, D., Johnson, K., Ehrlinger, J., & Kruger, J. (2003). Why people fail to recognize their own incompetence. *Current Directions in Psychological Science, 12*, 83–87.
Edwards, A. (1957). *The social desirability variable in personality assessment and research*. New York: The Dryden Press.
Ehrenberg, R., Zuckerman, H., Groen, J., & Brucker, S. (2009). *Educating scholars: Doctoral education in the humanities*. Princeton University Press.
Ehrlinger, J., & Dunning, D. (2003). How chronic self-views influence (and potentially mislead) estimates of performance. *Journal of Personality and Social Psychology, 84*, 5–17.
Entwistle, N. (1997). Introduction: Phenomenography in higher education. *Higher Education Research & Development, 16*, 127–134.
Entwistle, N. J., & Ramsden, P. (1983). *Understanding student learning*. New York: Nichols.
Enwistle, N. J., & Tait, H. (1994). *The revised approaches to studying inventory*. Edinburgh, Scotland: University of Edinburgh, Centre for Research into Learning and Instruction.
Falchikov, N., & Boud, D. (1989). Student self-assessment in higher education: A meta-analysis. *Review of Educational Research, 59*, 395–430.
Feldon, D. F., Jeong, S., Peugh, J., Roksa, J., Maahs-Fladung, C., Shenoy, A., & Oliva, M. (2017). Null effects of boot camps and short-format training for Ph.D. students in life sciences. *Proceedings of the National Academy of Sciences, 114*(37), 9854–9858.
Feldon, D. F., Maher, M., Roksa, J., & Peugh, J. (2016). Cumulative advantage in the skill development of STEM graduate students: A mixed methods study. *American Educational Research Journal, 53*, 132–161.
Feldon, D. F., Maher, M., & Timmerman, B. (2010). Performance-based data in the study of STEM graduate education. *Science, 329*, 282–283.

Feldon, D. F., Maher, M. A., Hurst, M., & Timmerman, B. (2015). Faculty mentors', graduate students', and performance-based assessments of students' research skill development. *American Educational Research Journal, 52*, 334–370.

Feldon, D. F., Peugh, J., Maher, M. A., Roksa, J., & Tofel-Grehl, C. (2017). Effort-to-credit gender inequities of first-year PhD students in the biological sciences. *CBE-Life Sciences Education, 16*(1), ar4.

Feldon, D. F., Peugh, J., Timmerman, B. E., Maher, M. A., Hurst, M., Strickland, D., et al. (2011). Graduate students' teaching experiences improve their methodological research skills. *Science, 333*(6045), 1037–1039.

Feldon, D. F., & Tofel-Grehl, C. (2018). Phenomenography as a foundation for mixed models research. *American Behavioral Scientist, 62*, 887–899.

Fisher, R. J. (1993). Social desirability bias and the validity of indirect questioning. *Journal of Consumer Research, 20*, 303–315.

Fraenkel, J. R., & Wallen, N. E. (1996). *How to design and evaluate research in education*. New York: McGraw Hill.

Gardner, S. K. (2008a). What's too much and what's too little?: The process of becoming an independent researcher in doctoral education. *The Journal of Higher Education, 79*, 326–350.

Gardner, S. K. (2008b). Fitting the mold of graduate school: A qualitative study of socialization in doctoral education. *Innovative Higher Education, 33*, 125–138.

Gardner, S. K. (2009). *The development of doctoral students: Phases of challenge and support. ASHE Higher Education Report 34, no. 6*. Washington, DC: Association of the Study of Higher Education.

Gardner, S. K. (2010). Contrasting the socialization experiences of doctoral students in high- and low-completing departments: A qualitative analysis of disciplinary contexts at one institution. *The Journal of Higher Education, 81*, 61–81.

Gardner, S. K., & Mendoza, P. (2010). *On becoming a scholar: Socialization and development in doctoral education*. Sterling, VA: Stylus Publishing.

Glaser, R., & Strauss, R. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago: Aldine.

Golde, C. M., Conklin Bueschel, A., Jones, L., & Walker, G. E. (2009). Advocating apprenticeship and intellectual community: Lessons from the Carnegie Initiative on the Doctorate. In R. G. Ehrenberg & C. V. Kuh (Eds.), *Doctoral education and faculty of the future* (pp. 53–64). Ithaca, NY: Cornell University Press.

Green, S. G., & Bauer, T. N. (1995). Supervisory mentoring by advisers: Relationships with doctoral student potential, productivity, and commitment. *Personnel Psychology, 48*, 537–562.

Hackett, E. J., & Rhoten, D. R. (2009). The Snowbird charrette: Integrative interdisciplinary collaboration in environmental research design. *Minerva, 47*, 407–440.

Hesse-Biber, S. N. (2010). *Mixed methods research: Merging theory with practice*. New York: Guilford Press.

Holland, P. W., & Thayer, D. T. (1986). *Differential item performance and the Mantel-Haenszel procedure* (Technical Report No. 86-69). Princeton, NJ: Educational Testing Service.

Holley, K. A. (2009). The challenge of an interdisciplinary curriculum: A cultural analysis of a doctoral-degree program in neuroscience. *Higher Education, 58*, 241–255.

Holley, K. A. (2018). The longitudinal career experiences of interdisciplinary neuroscience PhD recipients. *The Journal of Higher Education, 89*, 106–127.

Jamieson, S. (2004). Likert scales: How to (ab)use them. *Medical Education, 38*, 1217–1218.

Kelly, S. (2017). Shared principles of causal inference in qualitative and quantitative research. In D. Wyse, N. Selwyn, E. Smith, & L. Suter (Eds.), *The BERA/SAGE Handbook of Educational Research* (pp. 90–115). Los Angeles, CA: Sage.

Krosnick, J. A., Holbrook, A. L., Berent, M. K., Carson, R. T., et al. (2002). The impact of "no opinion" response options on data quality: Non-attitude reduction or an invitation to satisfice? *Public Opinion Quarterly, 66*, 371–403.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage.

Lovitts, B. E. (2001). *Leaving the ivory tower: The causes and consequences of departure from doctoral study*. Lanham, MD: Rowman & Littlefield.
Lovitts, B. E. (2007). *Making the implicit explicit: Creating performance expectations for the dissertation*. Sterling, VA: Stylus Publishing.
Lovitts, B. E. (2008). The transition to independent research: Who makes it, who doesn't, and why. *The Journal of Higher Education, 79*, 296–325.
Marton, F. (1994). Phenomenography. In T. Husén & T. N. Postlethwaite (Eds.), *The international encyclopedia of education* (Vol. 8, 2nd ed.). Oxford, UK: Pergamon.
Marton, F., & Pong, W. Y. (2005). On the unit of description in phenomenography. *Higher Education Research & Development, 24*(4), 335–348.
Maxwell, J. (2004). Causal explanation, qualitative research, and scientific inquiry in education. *Educational Researcher, 33*, 3–11.
Maxwell, J. A. (1992). Understanding and validity in qualitative research. *Harvard Educational Review, 62*, 279–299.
Maxwell, J. A., & Mittapalli, K. (2010). Realism as a stance for mixed method research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research* (2nd ed., pp. 145–168). Thousand Oaks, CA: Sage.
Merton, R. K., Reader, G., & Kendall, P. L. (1957). *The student physician*. Cambridge, MA: Harvard University Press.
Messick, S. (1967). The psychology of acquiescence: An interpretation of research evidence. In I. A. Berg (Ed.), *Response set in personality assessment* (pp. 115–145). Chicago: Aldine.
Meyer, J. H. F. (2000, September). *An overview of the development and application of the Reflections on Learning Inventory (RoLI)*. Paper presented at the 1st RoLI Symposium, Imperial College, University of London.
Micari, M., Light, G., Calkins, S., & Streitwesier, B. (2007). Assessment beyond performance: Phenomenography in educational evaluation. *American Journal of Evaluation, 28*, 458–476.
Miles, M. B., & Huberman, A. M. (1984). *Qualitative data analysis: A sourcebook of new methods*. Newbury Park, CA: Sage.
National Center for Science and Engineering Statistics. (2017). *2015 doctorate recipients from U.S. universities*. Washington, DC: National Science Foundation. https://www.nsf.gov/statistics/2017/nsf17306/static/report/nsf17306.pdf
Nederhoff, A. J. (1985). Methods of coping with social desirability bias: A review. *European Journal of Social Psychology, 15*, 263–280.
Nerad, M. (2015). Searching for taboos in doctoral education: An exploratory journey. *Die Hochschule [German Journal for Science and Education], 24*, 10–25.
Nettles, M. T., & Millet, C. M. (2006). *Three magic letters: Getting to the Ph.D*. Baltimore, MD: Johns Hopkins University Press.
Noy, S., & Ray, R. (2012). Graduate students' perceptions of their advisors: Is there systematic disadvantage in mentorship? *The Journal of Higher Education, 83*, 876–914.
Paglis, L. L., Green, S. G., & Bauer, T. N. (2006). Does adviser mentoring add value? A longitudinal study of mentoring and doctoral student outcomes. *Research in Higher Education, 47*, 451–476.
Patton, M. Q. (2002). *Qualitative research and evaluation* (3rd ed.). Thousand Oaks, CA: Sage.
Paulhus, D. L. (1991). Measurement and control of response biases. In J. P. Robinson et al. (Eds.), *Measures of personality and social psychological attitudes*. San Diego, CA: Academic.
Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement design and analysis: an integrated approach*. Hillsdale, NJ: Lawrence Erlbaum Associates.
Pole, C. (2000). Technicians and scholars in pursuit of the PhD: Some reflections on doctoral study. *Research Papers in Education, 15*, 95–111.
Posselt, J. R., & Grodsky, E. (2017). Graduate education and social stratification. *Annual Review of Sociology, 43*, 353–378.

Prosser, M., & Trigwell, K. (1999). *Understanding learning and teaching: The experience in higher education*. Buckingham, UK: Society for Research into Higher Education and Open University Press.

Purdie, N., & Hattie, J. (2002). Assessing students' conceptions of learning. *Australian Journal of Educational & Developmental Psychology, 2*, 17–32.

Reybold, L. E. (2003). Pathways to the professoriate: The development of faculty identity in education. *Innovative Higher Education, 27*, 235–252.

Rojas, F. (2017). *Theory for the working sociologist*. New York: Columbia University Press.

Roksa, J., Feldon, D. F., & Maher, M. (2018). First-generation students in pursuit of the Ph.D.: Comparing socialization experiences and outcomes to continuing-generation peers. *The Journal of Higher Education, 89*, 728–752.

Roksa, J., Jeong, S., Feldon, D., & Maher, M. (2018). Revisiting the "Model Minority" stereotype: API students' socialization experiences and research productivity. *Research in Sociology of Education, 20*, 155–179.

Rose, G. L. (2005). Group differences in graduate students' concepts of the ideal mentor. *Research in Higher Education, 46*, 53–80.

Schönbrot, F. D., & Perugini, M. (2013). At what sample size do correlations stabilize? *Journal of Research in Personality, 47*, 609–612.

Schuman, H., & Presser, S. (1981). *Questions and answers: Experiments on question form, wording, and context in attitude surveys*. New York: Academic.

Schwandt, T. A. (1997). *Qualitative inquiry: A dictionary of terms*. Thousand Oaks, CA: Sage.

Schwarz, N. (1999). Self-reports: How the questions shape the answers. *American Psychologist, 54*, 95–105.

Sevian, H., & Gonsalves, L. (2008). Analysing how scientists explain their research: A rubric for measuring the effectiveness of scientific explanations. *International Journal of Science Education, 30*, 1441–1467.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. New York: Houghton Mifflin Company.

Stajkovic, A. D., & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin, 124*, 240–261.

Tait, H., Entwistle, N. J., & McCune, V. (1997). ASSIST: A reconceptualisation of the Approaches to Studying Inventory. In C. Rust (Ed.), *Improving student learning: Improving students as learners* (pp. 262–271). Oxford, UK: Oxford Brookes University, Oxford Centre for Staff and Learning Development.

Tashakkori, A., & Newman, I. (2010). Mixed methods: Integrating quantitative and qualitative approaches to research. In B. McGaw, E. Baker, & P. P. Peterson (Eds.), *International encyclopedia of education* (3rd ed., pp. 514–520). Oxford, UK: Elsevier.

Thornton, R., & Nardi, P. M. (1975). The dynamics of role acquisition. *American Journal of Sociology, 80*, 870–885.

Tierney, W. G., & Rhoads, R. A. (1994). *Faculty socialization as cultural process: A mirror of institutional commitment* (ASHE-ERIC Higher Education Report, no. 93-6). Washington, DC: The George Washington University.

Timmerman, B. E. C., Strickland, D. C., Johnson, R. L., & Payne, J. R. (2011). Development of a 'universal's rubric for assessing undergraduates' scientific reasoning skills using scientific writing. *Assessment & Evaluation in Higher Education, 36*, 509–547.

Trigwell, K., & Prosser, M. (1996). Changing approaches to teaching: A relational perspective. *Studies in Higher Education, 21*, 275–284.

Trigwell, K., & Prosser, M. (2004). Development and use of the approaches to teaching inventory. *Educational Psychology Review, 16*, 409–424.

Van Maanen, J., & Schein, E. (1979). Toward a theory of organizational socialization. In B. M. Straw (Ed.), *Research in organizational behavior* (pp. 209–264). Greenwich, CT: JAI Press.

Weidman, J. C., & Stein, E. L. (2003). Socialization of doctoral students to academic norms. *Research in Higher Education, 44*, 641–656.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Wright, B. D., & Stone, M. H. (2004). *Making measures*. Chicago: The Phaneron Press.

Wuchty, S., Jones, B. F., & Uzzi, B. (2007). The increasing dominance of teams in production of knowledge. *Science, 316*(5827), 1036–1039.

Wulff, D. H., Austin, A. E., Nyquist, J. D., & Sprague, J. (2004). The development of graduate students as teaching scholars: a four-year longitudinal study. In D. Wulff & A. Austin (Eds.), *Paths to the professoriate: strategies for enriching the preparation of future faculty*. San Francisco: Jossey-Bass.

Zhao, C. M., Golde, C. M., & McCormick, A. C. (2007). More than a signature: How advisor choice and advisor behaviour affect doctoral student satisfaction. *Journal of Further and Higher Education, 31*, 263–281.

Chapter 17
Toward a 21st Century Socialization Model of Higher Education's Impact on Students

John C. Weidman and Linda DeAngelo

In the present chapter, we reflect on (a) selected applications of three major frameworks (Weidman, 1989, 2006; Weidman, Twale, & Stein, 2001), (b) more recent iterations (Twale, Weidman, & Bethea, 2016; Weidman, 2015; Weidman, DeAngelo, & Bethea, 2014), and (c) chapters in the present book to build a more comprehensive and inclusive model of student socialization in higher education for future application in research and institutional policy. In doing so we move away from the predominantly structural-functional foundation of the original models, incorporating perspectives that acknowledge human agency (Archer, 2007; Giddens, 1979, 1984; Sewell, Jr. 1992), namely, the capacity of individuals to modify influences by reshaping social structures within normative contexts. We conclude with discussing the importance of using conceptually rich and methodologically appropriate approaches to understanding of the complex passage through higher education and into early career.

Social Structure and Human Agency

The Weidman et al. (2001) and Weidman (2006) frameworks represented rudimentary departures from a strictly-structural functional approach to the study of student socialization in higher education. Each explored, in a limited way, other paradigmatic ways of framing socialization beyond structural-functionalism that accorded individual motives and behavior more central importance. This has led us to the theory of structuration in the work of Anthony Giddens (1979, 1984):

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> …The basic domain of study of the social sciences, according to the theory of structuration, is neither the experience of the individual actor, nor the existence of any form of societal totality, but social practices ordered across space and time. Human social activities, like some self-reproducing items in nature, are recursive. That is to say, they are not brought into being by social actors but continually recreated by them via the very means whereby they express themselves as actors. In and through their activities, agents reproduce the conditions that make these activities possible (Giddens, 1984, p. 2).

Structuration theory thus identifies the importance of human agency in social processes as well as its potential for mediating the influences of social structures (e.g., normative contexts) on college students. From the perspective of structuration theory, students have the capacity to modify the very higher education contexts in which they participate. In an insightful analysis of agency and social change that critiques Giddens (1979, 1984), William H. Sewell, Jr. (1992),[1] develops a theory of social structure that attempts "to recognize the agency of social actors" and "to build the possibility of change into the concept of structure" (p. 3). Similarly, Margaret Archer (2007) argues that Giddens (1979) does not go far enough in explicating the importance of relationships among human agency, social influence, and social change:

> …Because the response of the agent to a constraint (or enablement) is a matter of reflexive deliberation, it can take very different forms: from compliance through evasion and strategic action to subversion. The one thing that is rarely, if ever, found is a complete uniformity of response on behalf of every agent who encounters the same constraint or the same enablement.
>
> Therefore, it is essential to distinguish between the objective existence of structural (and cultural) emergent properties and the exercise of their causal powers, since the realisation of their causal powers requires them to be activated by agents (Archer, 2007, p. 155).

It is not our intention to go into detail in this chapter about the underlying ontological and epistemological foundations of these theoretical advancements. Rather, we find the work of Giddens (1979, 1984), Sewell, Jr. (1992) and Archer (2007) as compelling conceptual arguments for our departure from structural-functionalism and inclusion of human agency as advanced by these theorists as an essential element for understanding the impact of college on students. In the next sections of this chapter, we describe how this shift is reflected in a reformulated model.

[1] To clarify the intellectual history of this critique, it must be noted that W. H. Sewell, Jr., is the son of W. H. Sewell whose classic work on status attainment is cited elsewhere in this chapter. W. H. Sewell, Jr., is an intellectual historian whose work crosses the disciplines of political science, history and sociology.

Building a More Comprehensive Framework for Student Socialization in Higher Education

The general model of student socialization presented in Weidman (2006) was the basis for more recent conceptual work (Twale et al., 2016; Weidman, 2015; Weidman et al., 2014) aimed at extending the model to enhance inquiry about and understanding of higher education's impact on students from more broadly-based perspectives. In moving forward, we have constructed a modified framework that not only embraces the role of agency in the impact of college on students, but also responds to criticisms that earlier versions of the model did not explicitly include consideration of students beyond the white male norm (See the discussion in Chap. 2 by Weidman.). The reformulation also adds recognition of underlying human resource development dimensions for understanding the impacts of higher education institutions on students.

In the following discussion, we describe dimensions of the model shown in Fig. 17.1, incorporating into the discussion ways that the chapters in the present volume have assisted us to conceptualize a socialization model for higher education research and institutional policy development for the Twenty-first Century. We are not intending to be exhaustive in our analysis but rather to identify more enduring aspects of the models as well as the developments that have been incorporated based on the substantive critiques offered by chapters in the present volume. An especially important contribution of these socialization models to research, according to Feldon (Chap. 16), is that several of the measures and indicators of specific dimensions of the model have been shown to be consistently robust. This implies that empirical research using the Weidman models is not only possible but can be cumulative if common variable measures are used, including those constructed for large survey datasets (Garibay, 2018).

Constructs in Fig. 17.1 that have different names from the Weidman (2006) version of the framework are highlighted. As carried forward from both Weidman et al. (2001) and Weidman (2006), intersecting ellipses with dotted lines are used to suggest that both boundaries across dimensions and passages through stages are permeable and iterative rather than fixed, which was among the first moves the model made away from structural-functionalism. Socialization processes are assumed to have a general, but not invariant, temporal sequence.

Core Context for Socialization: Higher Education Institutions

Higher ed institutions are shown in the center of the intersecting ellipses because they provide the setting for student socialization through which other dimensions interact and are influenced. The terms *history and culture* are used instead of "normative contexts" that appeared in both the original undergraduate socialization framework (Weidman, 1989) and the more general organizational socialization in

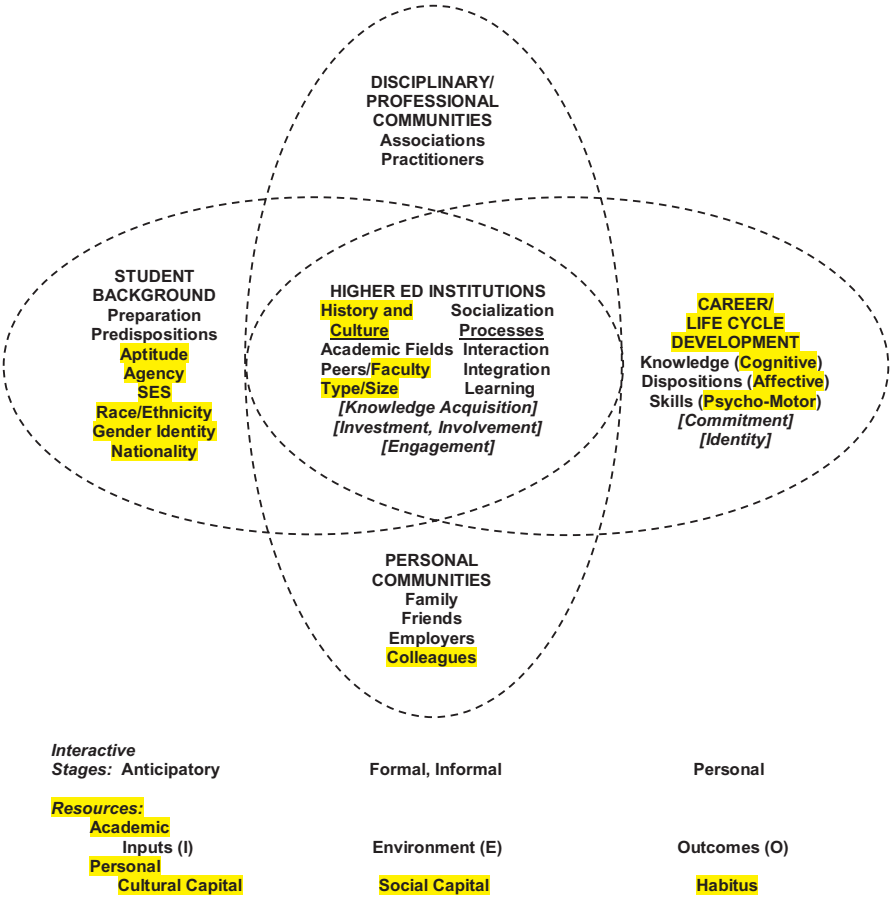

Fig. 17.1 Conceptualizing Socialization of Students in Higher Education. (Adapted from Weidman, 2006, 2015; Weidman, et al., 2001; Twale, et al., 2016)

higher education framework (Weidman, 2006). We returned to the term, "culture," as used in Weidman et al. (2001) because it also connotates strong normative underpinnings (Tierney, 1988) that are reflected in the multiplicity of *history and culture* comprising *higher ed institutions.*

History was added because we want to recognize the importance of institutional history and diversity as it relates to institutional type and size as well as student and faculty compositions (*type/size*). These revisions recognize the critiques in this volume of offered by Garcia, Ramirez, & Patrón (Chap. 4); Winkle-Wagner, McCoy, & Lee-Johnson (Chap. 5); and Phelps-Ward (Chap. 14) as they relate to more fully modeling the *socialization processes* of institutions, including historical legacies of exclusion that still reverberate and act today. Another element as it relates to *history and culture* that must be considered in socialization research is national context as the work on China by Guo, Zhang, & Hong (Chap. 11); and on Germany by Hottenrott & Menter (Chap. 12) in this book demonstrates.

Inclusion of *faculty* is a return to Weidman (1974) in which *faculty* and *peers* were originally construed as being the primary constituents of the normative contexts of *academic fields* of study. Along with college *peers*, *faculty* have proven to be primary agents of socialization in work using the Weidman model (See, for example, Fuentes, Ruiz, Berdan, & DeAngelo, 2014), and remain so in many of chapters presented in this volume. For instance, Winkle-Wagner, McCoy, & Lee-Johnson (Chap. 5); Griffin, Baker, & O'Meara (Chap. 13); and Phelps-Ward (Chap. 14) discuss how the potential resources ("wealth") that faculty offer to students is not always equitably distributed, leaving minoritized students, in particular, without faculty as a positive resource. This echoes earlier work on access to mentoring in DeAngelo (2009, 2010, 2016). Additionally, the Gardner & Doore (Chap. 7) and Perry & Abruzzo (Chap. 8) contributions discuss how the role of faculty in socialization shifts in doctoral study as students seek non-faculty positions. Holley (Chap. 15) reminds us that the fixed nature of *academic fields* is contested by interdisciplinarity and that socialization processes as well as outcomes can be more challenging for faculty and students working at the fringes of traditional academic disciplines and departments.

Figure 17.1 maintains continuity with previous versions of the framework by designating the primary *socialization processes* as interpersonal *interaction*, *integration*, and *learning,* though acknowledging critiques especially of *integration* as it relates to *socialization processes* for minoritized students (See Rendón, Jalomo, & Nora, 2001; as well as Garcia, Ramirez, & Patrón, Chapter 4; Winkle-Wagner, McCoy, & Lee-Johnson, Chapter 5; Griffin, Baker, & O'Meara, Chapter 13; and Phelps-Ward, Chapter 14). In traditional notions of *integration,* socialization processes are not assumed to be bi-directional, largely because student agency is not considered.

Socialization processes related to *interaction* and *integration* include both *involvement* and *engagement* (Astin, 1984; Kuh, Schuh, Whitt, & Associates, 1991; Pike, Kuh, & Gonyea, 2003) in the formal and informal *culture* of higher education institutions. *Integration* occurs as students develop attachments to persons and environments, both within and external to higher education institutions. *Integration* into the social and academic spheres as well as personal *investment* into what each sphere represents lead to a set of personal and professional outcomes of higher education for students. These *socialization processes* are linked to and influence students as students reciprocally influence them through salient aspects of institutional *history and culture* in higher education.

This general approach is supported by Berger and Milem (2000), who provide a particularly insightful discussion of organizational approaches to the study of college student outcomes that is relevant for understanding socialization in higher education. These authors drew from the Tinto (1975) and Weidman (1989) models, among others, as well as from literature on organizational sociology (e.g., Van Maanen & Schein, 1979) to develop a conceptual model of organizational impact on students that includes structural-demographic features of organizations (e.g., size, control, selectivity, Carnegie type, location, etc.).

Socialization Processes from Enrollment to Graduation Through Early Career

The horizontal axis in Fig. 17.1 reflects the temporal, though not invariant, passage through *higher education institutions* shaped by the characteristics of students entering college as reflected in their attributes at enrollment (*student background*: *preparation, predispositions, aptitude, agency, socioeconomic status (SES), race/ethnicity, gender identity)* as well as their socialization experiences during degree and certificate programs that lead to personal *career/life cycle development* outcomes. *SES, race/ethnicity,* and *gender identity* are indicators of student characteristics and backgrounds that were added explicitly to recognize their importance for understanding college impact research as well as policy development (Carter, Locks, & Winkle-Wagner, 2013; Johnson, 2012; Nicolazzo, 2016, 2017; Twale et al., 2016).

The importance of modeling and understanding socialization processes by race/ethnicity differentially for minoritized students is underscored in this volume by Garcia, Ramirez & Patrón (Chap. 4); Winkle-Wagner, McCoy, & Lee-Johnson (Chap. 5); Griffin, Baker, & O'Meara (Chap. 13); and Phelps-Ward (Chap. 14). Socialization of students in higher education with disabilities (Kimball, Wells, Ostiguy, Manly, & Lauterbach, 2016) and those who are veterans (Vacchi & Berger, 2014) have also been studied using the Weidman frameworks.

We also add *nationality,* the importance of which is explored explicitly as it relates to socialization challenges of international students in this volume by Véliz (Chap. 9). A specific focus on experiences of Chinese international students appears in Sonnenschein (Chap. 10) for Australia as well as in Tan and Weidman (2013) for the USA and in Zheng (2019) for Finland. Constructs in the framework are not mutually exclusive, rather they tend to appear in various combinations, depending on the characteristics of students, faculty, and staff and the institutional settings as demonstrated in many of the chapters contained in the present volume.

Career/Life Cycle Development

The general outcomes of student socialization in higher education are designated in Fig. 17.1 as *career/life cycle development*. This dimension results from the acquisition of *knowledge, dispositions,* and *skills (*commonly labeled in the psychological literature as *cognitive*, *affective* and *psychomotor* capacities and orientations) that shape life passages after college. These outcomes are reflected in careers and other personal orientations that also shape student *identity* (Weidman et al., 2014) and *commitments* along a variety of dimensions.

Communities External to Higher Education Institutions

Socialization processes that occur largely outside higher education institutions but during the periods in which students are enrolled remain one of the most understudied and least understood areas of college impact scholarship. The considerations of these environments have endured in Weidman's socialization models across time. As noted by Weintraub (Chap. 3), Weidman (1984, 1989) was the first to directly consider and model the continuing role of parents and families as agents of socialization during college; a particular strength of the model for unpacking socialization processes for Latinx (Garcia, Ramirez, & Patrón, Chapter 4) and other minoritized students. The vertical axis in Fig. 17.1 depicts two sets of ongoing influences related to, but primarily external to (and generally outside the purview of) *higher education institutions*. Modeling clarifies these as extra-institutional influences by designating them as communities, one set reflecting personal communities and the other acknowledging the importance of professional communities.

Disciplinary/professional communities (*associations,* career *practitioners*), especially those representing careers requiring higher education to which students aspire, have important influence on the curriculum through the promulgation of standards for professional practice and licensure (Austin & McDaniels, 2006). Accreditation agencies may play a similar role at both the institutional and academic program levels. The role of these communities in socialization processes are especially important to consider in examinations of graduate student and early career faculty outcomes, the latter an extension of the applicability of Weidman models made by Baker (Chap. 6).

Personal communities (*family, friends*) represent significant others with whom students continue to be in contact throughout the time they are enrolled in higher education. *Family* and *friends* socializing influences begin prior to entry into higher education and continue not only throughout college but impends directly on college outcomes and ways in which students respond to both the *history and culture* and *socialization processes* of institutions. See Weintraub (Chap. 3); Garcia, Ramirez, & Patrón (Chap. 4); and Winkle-Wagner, McCoy, & Lee-Johnson (Chap. 5) for rich discussions of these socialization influences and how minoritized students in particular draw upon them during college. Also included in this category are job-related influences (*employers, colleagues*). Reference groups, both within and external to higher education institutions, can also influence change and stability in students and can influence one another. The importance of employer-related communities for preparation and passage into early career for students in professional degree programs is demonstrated in this volume by Sonnenschein (Chap. 10) who focuses her work on international Chinese hotel management students studying abroad in Australia.

Overarching Contexts of Socialization Processes

In Fig. 17.1, two sets of constructs appear under the intersecting ellipses to suggest that all socialization processes are embedded within overarching contexts. *Interactive stages* (Thornton & Nardi, 1975) encompass the sets of activities that occur during students' passages through higher education institutions. These stages imply a temporal order from beginning to end of a degree program and into the early career, but these stages are not invariable in completion. Stages can overlap and begin anew depending on individual developmental processes and experiences.

The modified framework presented in this chapter connects socialization processes to human capital development as a way of understanding the impact of higher education on students. To contextualize the processes of student socialization in a more comprehensive way that links it to other dimensions in the framework, an economic dimension (*resources*) is added. *Resources* are the "raw materials" (physical and human) of which higher education institutions are constructed. The underlying notions are based generally on human capital theory as represented in the classic work of Gary Becker (1975/1964) and include recognition that students may act in their own interests quite independent of normative pressures they experience while enrolled. It represents another reason for shifting the conceptualization away from a purely structural-functional approach to one in which student *agency* is explicitly recognized, though still within the constraints of a powerful normative environment. This incorporates recognition that individuals can be important "processors of reality" (e.g., Hurrelmann, 1988) who manage normative pressures in various ways that may or may not reflect conformity to them.

Resources are divided into two general types, *academic* and *personal.* With respect to *academic resources,* the *inputs(I)-environment(E)-outcomes(O)* structure is analogous to what was described by Astin (1970a, 1970b). The I-E-O structure is also shared with human capital theory in economics (e.g., Becker, 1975/1964) and status attainment theory in sociology (Sewell, Haller, & Portes, 1969). The *inputs (I)* to higher education encompass all the constructs under *student background* (*preparation, predispositions, aptitude, agency, SES, race/ethnicity, gender identity*). *Environment (E)* represents the organizational structures, normative contexts, and institutional climate comprising institutional *history and culture* and *socialization processes* experienced by students. College charter or mission can be a particularly important, but difficult to measure, source of influence (Pike et al., 2003). *Outcomes (O)* include, but need not be limited to, those related to *career/life cycle development.*

The *personal resources* dimension of the model draws substantially from the French sociologist, Pierre Bourdieu (1977/1972, 1986/1983), whose work was applied to higher education insightfully by Winkle-Wagner (2010). Bourdieu's (1986/1983) work cuts across the disciplines of sociology, anthropology, and economics as he analyzes the ways in which education can be converted into tangible economic outcomes through the accumulation and expenditure of what he calls *cultural capital* and *social capital*. He defines *cultural capital* as follows:

> Cultural capital can exist in three forms: in the *embodied* state, i.e., in the form of long-lasting dispositions of the mind and body; in the *objectified* state, in the form of cultural goods (pictures, books, dictionaries, instruments, machines, etc.), which are the trace or realization of theories or critiques of the theories, problematics, etc.; and in the *institutionalized* state, … educational qualifications (Bourdieu, 1986/1983, p. 243).

In terms of the socialization framework, *cultural capital* is reflected in the *resources* that students carry with them into higher education institutions, including those accumulated via family socialization and educational preparation/credentials. For instance, *predispositions* driving the *anticipatory* socialization stage are largely a reflection of *personal cultural capital.*

Social capital is defined as follows:

> Social capital is the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition - or in other words, to membership in a group – which provides each of its members with the backing of the collectivity-owned capital, a "credential" which entitles them to credit, in the various senses of the work. These relationships may exist only in the practical state, in material and/or symbolic exchanges which help to maintain them. They may also be socially instituted and guaranteed by the application of a common name (the name of a family, class, or a tribe or of a school, a party, etc.) and by a whole set of instituting acts designed simultaneously to form and inform the who undergo them; in this case, they are more or less really enacted and so maintained and reinforced, in exchanges (Bourdieu, 1986/1983, pp. 248–249).

In terms of the socialization framework, *social capital* is generated through interpersonal *interaction* with other individuals, both within (institutional *history and culture*) and external to (*disciplinary/professional communities* and *personal communities*) the higher education institution. It reflects the social relationships among people that can serve as important linkages to a variety of personal and career opportunities, not only during the time a student is enrolled in a higher education institution but also throughout the life course. *Habitus* is defined as:

> …the product of the work of inculcation and appropriation necessary in order for those products of collective history, the objective structures (e.g. of language, economy, etc.) to succeed in reproducing themselves more or less completely, in the form of durable dispositions, in the organisms (which one can, if one wishes, call individuals) lastingly subjected to the same conditionings, and hence placed in the same material conditions of existence (Bourdieu, 1977/1972, p. 85).
>
> … the habitus acquired in the family underlies the structuring of school experiences (in particular the reception and assimilation of the specifically pedagogic message), and the habitus transformed by schooling, itself diversified, in turn underlies the structuring of all subsequent experiences (e.g. the reception and assimilation of the messages of the culture industry or work experiences), and so on, from restructuring to restructuring (Bourdieu, 1977/1972, p. 87).

In terms of the framework, *habitus* is reflected in the constellation of *dispositions* graduates bring to their overall *career/life cycle development*. As can be seen from the foregoing definition, *habitus* evolves over time as individuals convert *cultural capital* and *social capital* into credentials and accompanying career and personal orientations during their lifetimes. Our designation of the "Inputs-Environment-Outcomes" dimensions shown at the bottom of Fig. 17.1 as "Resources" is sup-

ported by Sewell, Jr. (1992). He further suggests that Giddens (1979, p. 2) claims "resources are anything that can serve as a source of power in social interactions," leading Sewell, Jr., to conclude that "part of what is means to conceive of human beings as *agents is to conceive of them* as *empowered* by access to resources of one kind or another" (1992, pp. 9–10).

Rather than accepting habitus, as conceived by Bourdieu (1977), to be a static construct determined by social structures and resistant to modification, Sewell, Jr. (1992, p. 15) argues that it is subject to modification through reciprocal human agency between individuals and institutional contexts. We bring this understanding of the *resources* to the model, noting that this inclusion is implicitly supported across most chapters in this volume, particularly in those whose critiques engage critical theory and have moved away from socialization as a uni-directional process in which the student or faculty member (as in the case of early career faculty) is acted upon. Also supporting the importance of *resources* for understanding socialization in higher education is the work of Gopaul (2019) on cumulative advantage that provides evidence of the potential for human *agency* to modify oppressive social relations and structures on campus.

Reflections

Socialization processes are complex, can be complementary, and vary according to both individual characteristics and the variety of students' experiences both within and external to higher education institutions. As suggested by several of the chapters in the present book, the Weidman socialization models have remained appropriate and useful for research and policy development despite the passage of time. These models also provide foundational support to the expanded socialization model we present in this chapter. While Fig. 17.1 maintains the basic conceptual foundations of the original Weidman (1989) model, and later modeling (Weidman, 2006; Weidman et al., 2001), it extends and codifies main dimensions in ways that enhance its potential for future use in research and institutional policy development, notably by incorporating perspectives on the ways in which human agency responds to and can transform normative pressures and contexts.

Moving forward, it is reasonable to expect that scholars will continue to employ both broadly based conceptual grounding and rigorous methodological approaches to elaborate, extend, and expand our knowledge of socialization in higher education. Far too often studies merely pay lip service to conceptual models and theoretical underpinnings, an approach that is very limited in expanding our understanding of socialization and the complexity of its processes in higher education. It is also important that scholars be attentive to stakeholders in research, whether academic or not, for intelligence about the types of conceptual frameworks (and their disciplinary foundations) as well as the types and targets of resulting recommendations that might be most fruitful in advancing both knowledge and practical understanding.

References

Archer, M. (2007). The ontological status of subjectivity: The missing link between structure and agency. In T. Brock, M. Carrigan, & G. Scambler (Eds.), *Structure, culture and agency: Selected papers of Margaret Archer* (pp. 151–164). London: Taylor & Francis, 2016; originally published in C. Lawson, J. Latsis & N. Martins (Eds.), *Contributions to social ontology*, pp. 17–31. Abington, UK: Routledge, 2007.

Astin, A. W. (1970a). The methodology of research on college impact, part one. *Sociology of Education, 43*(Summer), 223–254.

Astin, A. W. (1970b). The methodology of research on college impact, part two. *Sociology of Education, 43*(Fall), 437–450.

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*, 297–308.

Austin, A. E., & McDaniels, M. (2006). Preparing the professoriate of the future: Graduate student socialization for faculty roles. *Higher education: Handbook of theory and research, 21*, 397–456.

Becker, G. S. (1975/1964). *Human capital: A theoretical and empirical analysis, with special reference to education* (Reissue of 1964 publication). Chicago: University of Chicago Press.

Berger, J. B., & Milem, J. F. (2000). Organizational behavior in higher education and student outcomes. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. XV, pp. 268–338). New York: Agathon Press.

Bourdieu, P. (1977/1972). *Outline of a theory of practice*. R. Nice (Translation of 1972 publication). Cambridge, UK: Cambridge University Press.

Bourdieu, P. (1986/1983). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241–258). R. Nice (Translation of 1983 publication.). New York: Greenwood.

Carter, D. F., Locks, A. M., & Winkle-Wagner, R. (2013). From when and where I enter: Theoretical and empirical considerations of minority students' transition to college. In M. B. Paulsen (Ed.), *Higher Education: Handbook of Theory and Research, 28* (pp. 93–149). Dordrecht, The Netherlands: Springer.

DeAngelo, L. (2009). Can I go? An exploration of the influences of attending a less selective institution on students' aspirations and preparation for the PhD. In M. F. Howard-Hamilton, C. L. Morelon-Quinanoo, S. D. Johnson, R. Winkle-Wagner, & L. Sintiaque (Eds.), *Standing on the Outside Looking In: Multiple Causes, Implications, and Potential Remedies to Address Underrepresentation among Minorities in Graduate Programs* (pp. 25–44). Sterling, VA: Stylus Publishing, LLC.

DeAngelo, L. (2010). Preparing for the PhD at a comprehensive institution: Perceptions of the "barriers". *Journal of the Professoriate, 3*(2), 17–49.

DeAngelo, L. (2016). *Supporting students of color on the pathway to graduate education* (CGS Data Sources PLUS 16-02). Washington, DC: Council of Graduate Schools. http://cgsnet.org/sites/default/files/2016.12_Data_Sources_PLUS_%28DeAngelo%29.pdf

Fuentes, M., Ruiz, A., Berdan, J., & DeAngelo, L. (2014). Mentorship matters: Does early faculty contact lead to quality faculty interaction? *Research in Higher Education, 55*, 288–307.

Garibay, J. C. (2018). Beyond traditional measures of stem success: long-term predictors of social agency and conducting research for social change. *Research in Higher Education, 59*, 349–381.

Giddens, A. (1979). *Central problems in social theory: Action, structure and contradiction in social analysis*. London: Macmillan.

Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. Cambridge, UK: Polity Press.

Gopaul, B. (2019). "Nothing succeeds like success": Doctoral education and cumulative advantage. *Review of Higher Education, 42*(4), 1431–1457.

Hurrelmann, K. (1988). *Social structure and personality development: The individual as a productive processor of reality*. Cambridge, UK: Cambridge University Press.

Johnson, D. R. (2012). Campus racial climate perceptions and overall sense of belonging among racially diverse women in STEM majors. *Journal of College Student Development, 53*(2), 336–346.

Kimball, E. W., Wells, R. S., Ostiguy, B. J., Manly, C. A., & Lauterbach, A. A. (2016). Students with disabilities in higher education: a review of the literature and an agenda for future research. In M. B. Paulsen (Ed.), *Higher Education: Handbook of Theory and Research* (Vol. 31, pp. 91–156). Dordrecht, The Netherlands: Springer.

Kuh, G. D., Schuh, J. S., Whitt, E. J., & Associates. (1991). *Involving colleges: Successful approaches to fostering student learning and personal development outside the classroom*. San Francisco: Jossey-Bass.

Nicolazzo, Z. (2016). "Just go in looking good:" The resilience, resistance, and kinship-building of trans∗ college students. *Journal of College Student Development, 57*(5), 538–556.

Nicolazzo, Z. (2017). *Trans* in college: Transgender students' strategies for navigating campus life and the institutional politics of inclusion*. Sterling, VA: Stylus.

Pike, G. R., Kuh, G. D., & Gonyea, R. M. (2003, April). The relationship between institutional mission and students' involvement and educational outcomes. *Research in Higher Education, 44*(2), 241–261.

Rendón, L., Jalomo, R., & Nora, A. (2001). Theoretical considerations in the study of minority student retention in higher education. In J. Braxton (Ed.), *Rethinking the Student Departure Puzzle: New Theory and Research on College Student Retention*. Nashville, TN: Vanderbilt University Press.

Sewell Jr., W. H. (1992). A theory of structure, duality, agency, and transformation. *American Journal of Sociology, 98*(1), 1–29.

Sewell, W. H., Haller, A. O., & Portes, A. (1969). The educational and early occupational attainment process. *American Sociological Review, 34*, 82–92.

Tan, T., & Weidman, J. C. (2013). Chinese graduate students' adjustment to academic demands in American universities. In T. Coverdale-Jones (Ed.), *Transnational higher education in the Asian context* (pp. 118–131). London: Palgrave Macmillan.

Thornton, R., & Nardi, P. M. (1975). The dynamics of role acquisition. *American Journal of Sociology, 80*(4), 870–885.

Tierney, W. G. (1988). Organizational culture in higher education: Defining the essentials. *Journal of Higher Education, 59*(1), 2–21.

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), 89–125.

Twale, D. J., Weidman, J. C., & Bethea, K. (2016, Summer). Conceptualizing socialization of graduate students of color: Revisiting the Weidman-Twale-Stein framework. *Western Journal of Black Studies, 40*(2), 80–94.

Vacchi, D. T., & Berger, J. B. (2014). Student veterans in higher education. In M. B. Paulsen (Ed.), *Higher Education: Handbook of Theory and Research, 29* (pp. 93–151). Dordrecht, The Netherlands: Springer.

Van Maanen, J. V., & Schein, E. H. (1979). Toward a theory of organizational socialization. *Research in Organizational Behavior, 1*, 209–264.

Weidman, J. C. (1974). *The effects of academic departments on changes in undergraduates' occupational values*. Unpublished PhD dissertation, University of Chicago. Published as final report, project no. 1-E-111, Grant No. OEG-5-72-0010 (509), U.S. Department of Health, Education, and Welfare, Office of Education, National Center for Educational Research and Development (Regional Research Program). https://files.eric.ed.gov/fulltext/ED087364.pdf

Weidman, J. C. (1984). Impacts of campus experiences and parental socialization on undergraduates' career choices. *Research in Higher Education, 20*(4), 445–476.

Weidman, J. C. (1989). Undergraduate socialization: A conceptual approach. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 5, pp. 289–322). New York: Agathon Press.

Weidman, J. C. (2006). Socialization of students in higher education: Organizational perspectives. In C. C. Conrad & R. C. Serlin (Eds.), *The Sage handbook for research in education: Engaging ideas and enriching inquiry* (pp. 253–262). Thousand Oaks, CA: Sage.

Weidman, J. C. (2015). *Graduate student socialization: Re-visiting the Weidman-Twale-Stein model*. Presentation at the 16th International Conference on Educational Research (ICER), Seoul National University, Korea, October. https://www.researchgate.net/publication/305397166_Graduate_Student_Socialization_Re-visiting_the_Weidman-Twale-Stein_Model

Weidman, J. C., DeAngelo, L., & Bethea, K. A. (2014). Understanding student identity from a socialization perspective. In C. Hanson (Ed.), *In search of self: Exploring student identity development*. San Francisco: Jossey-Bass. *New Directions for Higher Education*, *166*(Summer), 43–51.

Weidman, J. C., Twale, D. J., & Stein, E. L. (2001). *Socialization of graduate and professional students in higher education: A perilous passage?* (ASHE-ERIC Higher Education Report, Vol. 28, No. 3). San Francisco: Jossey-Bass. https://files.eric.ed.gov/fulltext/ED457710.pdf

Winkle-Wagner, R. (2010). *Cultural capital: The promises and pitfalls in educational research* (ASHE Higher Education Report, Vol. 36 (No. 1)). San Francisco/Hoboken, NJ: Jossey-Bass/Wiley Interscience.

Zheng, G. (2019). Deconstructing doctoral students' socialization from an institutional logics perspective: A qualitative study of the socialization of Chinese doctoral students in Finland. *Frontiers of Education in China, 14*(2), 206–233.