Research Methodology Selection of Women Faculty in the Social Sciences

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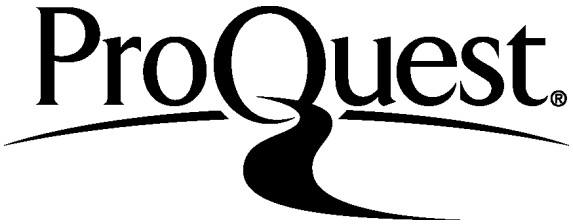

University of Washington

Abstract

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The purpose of this study was to understand and reconstruct the research methodology selection process of women faculty in the social sciences. An explanatory sequential design was used in which the quantitative survey data was collected first, followed by in-depth qualitative interviews to further understand the phenomenon of research methodology selection (Creswell & Plano-Clark, 2011; Creswell, Plano-Clark, Gutmann, & Hanson, 2003). The participants for both phases of the study were women faculty in the social sciences at a systematic random sample of 25 research universities with very high research activity according to the *Carnegie Classification of Institutions of Higher Education*. The women held appointments in education, sociology, psychology, and women's studies. During the initial phase, quantitative survey data were collected using the Survey of Research Methodology Selection of Women Faculty in the Social Sciences (SRMS) which was designed by the researcher. This survey was used to (1) identify variables predictive of research methodology selection; and (2) identify relationships and experiences that differed by race and ethnicity. Multinomial logistic regression was used to analyze the survey data of the 198 participants. In the second phase, in-depth phenomenological interviews with a purposeful sub-sample of six women were selected to represent a variety of

experiences including different research methodological approaches, the disciplines and fields of interest, and unique identity characteristics. The in-depth interviews were used to further explore the process, experience, and the impact of research methodology selection on the careers of women faculty in the social sciences. The key educational experiences that were found to influence research methodology selection were undergraduate major and doctoral degree in psychology compared to other undergraduate majors and a doctoral degree in sociology, education, or other social science areas, the quantity of methods courses taken during their graduate programs, and the doctoral advisor's primary research methodology. The socialization process into a particular methodological approach began during undergraduate study through early research experiences and was solidified during graduate study through the practice of research. This socialization process continued after the completion of the doctoral program into the women's faculty careers influenced by their work with students, their disciplinary communities, and coming into their own faculty research identity.

Dedication

I dedicate this work to the elders that have poured into my life and made me the woman I am today. They are not able to share in this moment in the physical realm but their spirits live on through me.

Ronald, Martha, Roosevelt, Leola, Martha H., Melvin, Betty, Opal, John, Elgenia, Wanda Lee, R.A., Mary Ann, Wilmer, Helen, Geraldine, Lessie Jewel, Earl Lee, Jewel Stripling

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Chapter I: Introduction and Statement of the Problem

The purpose of this study was to understand and reconstruct the research methodology selection process of women faculty in the social sciences. Prior research explores how to conduct research and how to become a researcher (Akerlind, 2008; Flores, 2011; Gardner, 2008; Tashakkori & Teddlie, 1998), however, prior to this study there has not been an in-depth exploration of the educational and socialization experiences that influence the methods researchers choose to implement in their research. The prevailing idea is that the research question is of utmost importance above both methodology and paradigm, as "most good researchers prefer addressing their research questions with any methodological tool available," (Tashakkori & Teddlie, 1998, p.21). However, it may not be a question of preference so much as a matter of exposure to a variety of methodological tools and opportunities to develop proficiency in using methodological tools that is most important when choosing how to approach a research question. This may be particularly true for students with statistics anxiety that delay methodological coursework (Onwuegbizie & Wilson, 2003). Furthermore, these exposures and opportunities are likely to arise in disciplinary communities that tend to favor certain methodological traditions over others. Researchers that are not exposed to a variety of methodological tools or methods and do not feel confident in their ability to use certain methods will likely not choose to use those methods when developing and approaching their own research questions. The problem with this typical pattern of constrained choice of methodological approaches is that it limits the dialogue within and across disciplinary communities. Disciplinary

communities, along with the preferred or favored methods that distinguish them, can become silos without the benefit of shared ideas and perspectives across traditions.

Doctoral students are the future stewards of the academy, prepared to be "scholar(s) first and foremost, in the fullest sense of the term—someone who will creatively generate new knowledge, critically conserve valuable and useful ideas, and responsibly transform those understandings through writing, teaching, and application" (Golde & Walker, 2006, p.5). However, there is a paucity of research examining how doctoral students become scholars and are socialized into particular methodological traditions in the social sciences. Graduate students are trained and socialized into research traditions via coursework, interactions with faculty and peers, and through the practice of conducting independent research (Weidman, 2010). Future faculty become increasingly confident in their abilities as researchers over time with experience and practice outside of the classroom (Phillips & Russell, 1994; Major & Dolly, 2003; Weidman, 2010). As faculty, they continue to hone and refine their methodological capacities throughout their careers, increasing the sophistication of their thinking, increasing their breadth of knowledge, and depth of understanding (Akerlind, 2008). With the generation of new knowledge being such a pivotal purpose of doctoral education, we know very little about the acquisition of research skills (Gelso, 1993; Golde & Walker, 2006; Flores, 2011).

Methodology is generally thought of as the broad theoretical and technical guidelines for the research process. There are two primary research methodology traditions in the social and behavioral sciences, quantitative methodology and qualitative methodology, each with identifiable sub-traditions (Tashakkori & Teddlie, 1998). There are many differences within and across the different sub-traditions but for the purpose of the present study I focus on the broad

qualitative and quantitative methodological traditions. The research training environment and discipline shape and instill values regarding appropriate research questions and methods (Austin, 2002; Austin & McDaniels, 2006) creating methodological boundaries that dictate what is central and mainstream and what is marginalized and on the periphery. What is valued and what is not differ by scholarly discourse community and discipline. Given their disciplinary context and preferred discourse communities, students have to decide where they would like to be situated within those boundaries and be willing to accept the professional consequences of their choices. Many students do not have an unlimited amount of time and resources to spread their training across methodology training sequences and thus, must make a choice.

The experiences of women faculty in the social sciences provide an interesting case to understand research methodology selection in the social and behavioral sciences. Millman and Kanter (1987) credit historical and societal shifts with influencing the ability of social scientists to "produce empirically more accurate pictures of social reality" (p. 29) by including more diverse perspectives in social research. As the numbers of women scholars increased in the latter half of the 20th century, many charged the dominant, largely quantitative social science research paradigms and methodological traditions as being exclusive, biased, and guilty of ignoring the experiences of women in society (Code, 1991). This critique has been especially prominent among women scholars of color, who see dominant paradigms of quantitative research as inattentive and exclusionary to their interests and location in a sexist and racist social order (Collins, 2000; Berger & Guidroz, 2010; Huber 2009). As such, many women subscribed to qualitative methodologies as a way to create a space for their scholarship (Harding, 1987; Code, 1991). At the same time, some feminist scholars have raised the possibility that the epistemological issues could be overcome, allowing quantitative methodologies to be a useful,

necessary component of research by and on women (Maynard, 1994). The tensions inherent in the methodological choices of women and feminist scholars made it necessary to further interrogate the choice of women faculty to become qualitative or quantitative methodologists.

Beyond the individual matters of choice and prior educational experiences, there are structural, institutional barriers to diversifying one's methodological tools across methodological traditions such as alignment with disciplinary norms and training feasibility. These, too, may be operative in the methodological choices that women make, and deserve to be more fully understood. In short, it appears, to date, that women's opportunities for developing a diversified methodological repertoire, and selecting one or more methodological traditions that enable them to pursue their scholarly interests optimally are unnecessarily limited. In addition, there seems to be a complicated, and poorly understood interaction between women's scholarly interests and aspirations, on the one hand, and their opportunities to acquire and select methodological competencies, on the other, in the gendered world of academia. The net effect is a needless limitation on the diversity of thought and scholarly contribution in various social and behavioral research communities.

To pursue these matters, this study was guided by the following research questions.

- What educational and professional experiences in the early careers of women faculty influence the selection of a particular methodological tradition? To what extent does the selection of a particular methodological tradition influence later career experiences and opportunities?

- How do women faculty in the social and behavioral sciences come to select a particular methodological tradition—quantitative, qualitative, or mixed? At what point(s) in their training and careers do they make such a selection?
- For each of the above questions, to what extent and in what ways are the experiences of women of color similar or different from the experiences of White women? How can these differences and similarities be better understood?

Chapter II: Review of the Literature and Guiding Theoretical Framework

"The original rationale for the doctorate was to teach graduate students who had an academic vocation how to conduct pure and applied research" (Goodchild & Miller, 1997). The "how" of this quote, not only how graduate students and those with an academic vocation (faculty) conduct research, but rather how they come to select a particular methodological research tradition, is the paramount interest of the proposed study. There are several theoretical substructures involved in the selection of research methodology. In this chapter, I first discuss the larger context of epistemology, methodology, and knowledge construction in light of the "paradigm debate" in the social and behavioral sciences; this is followed by an exploration of why studying the socialization of women faculty presents an interesting case for inquiry. Next, I provide an overview of doctoral student socialization models. Finally, I integrate the prior literature into the graduate socialization framework of Weidman, Twale, and Stein (2001) that guided this study of research methodology selection of women faculty in the social sciences.

Epistemology, Methodology, and Knowledge Construction

Before we can understand methodology, it is important to recognize the umbrella paradigms and epistemologies, respectively. Gloria Ladson-Billings (2001) defines epistemology as more than a way of knowing but rather a system of knowing, the system influences the ways in which people "internalize the dominant worldview and (sic) knowledge production and acquisition processes" (p. 258). If we are then to think of epistemology as a system, it is necessary then to reflect on the composition of the system. Banks (2006) in reflecting on his scholarship stated, "life experiences and values- as well as the historical and cultural context- influence the questions, findings, and interpretations of social scientists and educators. My

research and scholarship is a case study of the influence of life story, socialization, and context on research and scholarship" (p. 1). The system in which we come to acquire and create knowledge is greatly influenced by our historical time, personal experiences, and socialization context. Indeed, when examining how faculty and aspiring faculty conduct research it is essential to be mindful of how the epistemology of the individual and prevailing epistemology in the academic community, and parts of it, influence methodology selection.

Paradigms develop from individual and disciplinary systems of knowing, epistemologies, and guide the way knowledge is created, studied, and interpreted (Mackenzie & Knipe, 2006). In other words, paradigms both direct adherents on the appropriate steps of the research process but also serve as an intellectual community into which researchers are socialized (Oakley, 1999). During the latter half of the last century, there was great debate and discussion regarding appropriate paradigms for describing the social world (Tashakkori & Teddlie, 1998). These debates situated positivist/ empiricists against constructivists/interpretivist researchers and created a culture in graduate programs that socialized students to make a mutually exclusive choice (Guba & Lincoln, 1994; Tashakkori & Teddlie, 1998; Onwuegbuzie & Leech, 2005). There are many paradigms that guide research but a few of the more common paradigms are positivist/ postpositivist which focus on objectivity and empiricism, interpretivist/ constructivist focus on subjectivity and social construction of knowledge, transformative incorporates socio-political context into research with orientation towards social change, and pragmatic rejects qualitative-quantitative dichotomy and integrates methodological approaches to balance strengths and weaknesses (Guba & Lincoln, 1994; Mackenzie & Knipe, 2006; Tashakkori & Teddlie, 1998).

Paradigms give rise to both the methodology and methods used to conduct research. Maynard (1994) provides a useful summary of the definitions and relationships between epistemology, methodology, and methods:

> Whereas method refers to the techniques for gathering research material, methodology provides both theory and analysis of the research process. Epistemology is concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate. (p.10)

The distinction between methodology and method is important in understanding the selection of a particular research methodology- the broad theoretical guidelines for the research process. Within the social and behavioral sciences there are two primary research methodologies; quantitative and qualitative, with mixed methodology combining the two at various stages of the research process (Tashakkori & Teddlie, 1998). For the purpose of this examination methodology will refer specifically to qualitative, quantitative, or mixed methodology. Each of these methodological traditions has a specific culture, or set of values, norms, beliefs that are shared within and across disciplines in the social and behavioral sciences (Onwuegbuzie & Leech, 2005). Part of the graduate student socialization process is for students to learn the methodological assumptions and practices dictated by the paradigms of their discipline and become a part of a particular methodological sub-culture (Austin, 2002; Oakley, 1999; Onwuegbuzie & Leech, 2005).

Extending Ladson-Billings' (2001) concept of epistemology as a system of knowing, I suggest methodology as a means of knowing, with quantitative and qualitative research becoming the means or mechanism of producing knowledge on the social world that is legitimized by a particular group. In order to create an accurate representation of phenomena, both methodologies are necessary (Onwuegbuzie & Leech, 2005; Oakley 1999, 1998). Qualitative and quantitative

methodologies and theoretical conceptualizations should ideally each reciprocally inform each other (Huber, 2009). In other words, the results of qualitative and quantitative analyses should be evaluated against each other to generate and refine theory.

Quantitative and qualitative methodologies are not equally prevalent across the social sciences, according to Alise and Teddlie (2010). They examined the proportion of articles in four social and behavioral science disciplines (pure- sociology, psychology; applied- education, and nursing) that utilized quantitative, qualitative, or mixed approaches. Selecting five of the elite[1] journals in each of the four disciplines they found that the majority of articles used quantitative methods, 85% in the pure disciplines and 54% in the applied, followed by qualitative methods with 30% in applied disciplines and 9% in the pure disciplines. Mixed methods represented 16% in applied disciplines, and only 6% in the pure disciplines.

Of course there are limitations to this study in that by selecting the most elite journals Alise and Teddlie (2010) may have also selected the most traditional, slow to adjust to methodological innovations, journals in the disciplines. However, I think it does pose important implications for my analysis. Women faculty that utilize qualitative methods may have a lesser likelihood of their work being published in one of the top, elite journals in their field just by virtue that the journals appear to publish qualitative analyses less frequently. Indeed, it is possible her scholarly work would get published in another journal but the perceived status of the journals a faculty member publishes in can influence her career experiences - a source of cumulative disadvantage as described by Corcoran and Clark (1984). Additionally, for the most cited journals, it is reasonable to surmise a larger audience and greater reach. Thus, those predominantly quantitative analyses

[1] Elite status was measured by a combination of impact factor and total citations from the Journal of Citation Reports: Social Science Education (2005)

have a greater presence in the academic discourse, which constructs knowledge about the social world. Lastly, differentiation by discipline and classification (pure, applied) could be important in understanding the methodological socialization of different fields.

Doctoral Student Socialization

Understanding the process of doctoral student socialization is important for illuminating the selection of research methodology because it is during graduate school that training and choice primarily occur. For this analysis, graduate student socialization theories provided the best possible framework to understand the specific events and processes that socialize students into the academy as opposed to faculty socialization theories which focus more on elements of faculty adjustment, tenure, and promotion. Thus, though examining a process that occurs during graduate school, I chose to study women faculty not graduate students. I chose to focus on faculty because, first, this line of research is new in that there is no prior research examining this topic in this way. As such it is imperative for me to find the richest cases possible. By focusing on graduate students their research methodology selection would still be in process and possibly not yet fully evidenced by scholarly publication, the main currency of academe. Additionally, not all graduate students have an interest in pursuing an academic career and those that do may not obtain a faculty position with research as the primary focus. Conversely, by focusing on faculty at research institutions, I was presumably better able to understand the phenomenon of interest, research methodology selection, because they are in the process of actively producing research. While also being able to capture the evolution of their methodological research practice from student to scholar.

The Weidman, Twale, Stein (2001) graduate and professional student socialization model is a modification of early models by these authors and expands to include the socialization stages of Thornton and Nardi (1975). The Weidman et al., 2001 model conceptualizes socialization as

a dynamic, non-linear process and suggests "identification with and commitment to the professional roles are complex, continuous, and developmental" (p. 37). There are four stages to the model: anticipatory stage of role acquisition, formal stage of role acquisition, informal stage role acquisition, and the personal stage, which signifies the fusion and internalization of roles

The model is visually represented by a series of three overlapping ellipses (Weidman et al, 2001, p.37). The central connection of the three ellipses represents the graduate program with the central socialization elements; knowledge acquisition, investment, and involvement. Faculty make many of the decisions in this realm e.g., curriculum, research norms, admission decisions. Graduate students experience the culture and are socialized into their professions by engaging with peers and faculty (Weidman et al., 2001). The surrounding segments represent the nonlinear and interactive relationships between prospective students, professional communities, personal communities, and transition into the status of novice professional practitioner. The research training environment is the most central element of the graduate socialization framework of (Weidman et al., 2001) and the site of researcher development and where I propose methodology choice. Integrating extant literature, I demonstrate how three components contribute to students' research methodology selection: prospective students' backgrounds and dispositions, the core socialization process of the graduate program and professional communities, and the transition from student to novice professional practitioners as faculty.

Prospective Students: Backgrounds and Dispositions.

The left portion of the figure is composed of the background experiences (race, gender, and undergraduate education) and dispositions (values, learning styles, and career aspirations) of aspiring graduate students (Weidman et al., 2001, pg. 37). The incoming experiences and dispositions of students have an influence on their doctoral socialization and their research

methodology selection as well. The following sections focus on the unique experiences of women, undergraduate research participation, and statistics and writing anxiety.

Socialization of women graduate students for faculty roles.

Shirley Clark and Mary Corcoran (1986), in a journal article, wrote one of the seminal works on the socialization of women faculty, "Perspectives on the Professional Socialization of Women Faculty: A Case of Accumulative Disadvantage?" They examined the social stratification of the academy as it relates to the socialization of women in academic careers. Clark and Corcoran (1986) hypothesized differential socialization results due to the accumulation of advantages and disadvantages experienced by women faculty that influenced their career trajectories. They defined socialization as:

> …a two-fold process; from the perspective of the group, socialization is a mechanism through which new members learn the values, norms, knowledge, beliefs, and interpersonal and other skills that facilitate role performance and further group goals. From the perspective of the individual, socialization is a process of learning to participate in social life. (Mortimer & Simmons, 1978, p.422 as cited in Clark & Corcoran, 1984)

They identified a three-stage model of professional socialization: stage one- anticipatory socialization- recruitment and choice; stage two- entry- methods, strategies, and factors; and stage three- role continuance, outcomes, and problems (Corcoran & Clark, 1984).

Using this professional socialization model (Corcoran & Clark, 1984), Clark and Corcoran (1986) found there are some advantages and disadvantages that accumulate from graduate training through the academic careers of women. Explicating how disadvantage may grow over time:

> if women do not enroll in the best graduate programs… do not become protégés of productive, established academicians, do not have the resources to carry out their research and scholarly work, do not penetrate the collegial networks where useful advice, advocacy, and patronage are dispersed… (Clark & Corcoran, 1986, p.24)

The integration of women with the above-described experiences into the larger academic community is greatly limited by those limitations being carried throughout the early career. Clark and Corcoran (1986) found that some women were able to overcome these disadvantages by the middle of their careers.

The second stage of the professional socialization model of Corcoran and Clark (1984) occurs when, "the department inducts graduate students into the discipline, transmitting skills and knowledge and shaping their values and attitudes regarding the pursuit of knowledge and the faculty role" (p.141). The shaping of values and attitudes by the discipline provides an opportunity to understand how women are socialized into particular methodological traditions. In other words, what messages are women receiving regarding appropriate methods within their disciplines and how do those messages influence their selection of research methodology? Disciplines become a sanctioning force shaping through the department, both explicitly and implicitly, how women academicians conduct scholarly work. However, some women may choose to use research methods outside of those traditionally used in their discipline or field. The women may believe that the traditional methodological approaches are irreparably flawed or otherwise unable to capture the phenomena of interest. It is possible that the advantages and/ or disadvantages of using or not using the dominant or mainstream methodology in the discipline accumulate over time. Women scholars that utilize non-traditional methodologies may

experience marginalization, devaluation of their scholarly work, and negative experiences in the academic workplace (Huber, 2009).

Austin (2002) and Austin and McDaniels (2006) continue the discussion on preparation of faculty for scholarly work. Part of the preparation process is learning what it means to be a scholar and developing a professional identity as a scholar. The complex interactions of individual factors (age, educational background, marital-familial status (academic parent(s) or partner), and previous employment) and discipline/ institutional contexts socialize the student into the academic profession and influence scholarly identity development (Austin, 2002). Graduate students are socialized into academe through both participation and observation. They are being drawn into the field; shaped by its norms, values, beliefs while simultaneously finding position and establishing themselves in the field.

The doctoral experience serves as the first stage of the academic career (Austin, 2002). Part and parcel of preparation for an academic career is the research apprenticeship. Research apprenticeships and assistantships with more than one faculty member are increasingly common and are essential in scholarly identity development because through these opportunities students are able to "learn about the questions and issues that drive their disciplines [and] the methods favored" (Austin & McDaniels, 2006, p. 54) and the rationale for these decisions. Also, during the doctoral experience, students learn what to do and what not to do by observing, listening and interacting with faculty as detailed by Austin (2002), "aspiring faculty are keen observers and listeners. They listen carefully to formal as well as informal conversations with advisors and supervisors. They pay attention to casual, off-hand remarks by professors and by more advanced students (p.104)." The development of the student's scholarly identity is influenced by these experiences; as the student internalizes the valuations of what methods are favored and what

questions are appropriate to ask, her research plans and methodological choices are further developed.

Turner and Thompson (1993) explored the socialization experiences of women doctoral students with special attention to the experiences of women of color. The majority of their participants were students in the humanities and social sciences: 73% of the women of color, and 80% of the White women. They also utilized Clark and Corcoran's (1984) stages of professional socialization and found four indices of social opportunity in the experiences of women: recruitment by department, participation in mentoring and apprenticeship experiences, perception of department environment and networks, experience of discrimination. Turner and Thompson (1993) found women of color had fewer apprenticeship and mentoring experiences e.g., research assistantships, teaching assistantships, presenting at professional conferences, co-authoring, and introductions into academic networks by faculty. Turner and Thompson's (1993) investigation demonstrates differential socialization experiences for women of color compared to White women.

The scholarly work of the above researchers provide context to understand the socialization of graduate students as a whole, and women in particular, to assume faculty roles. The doctoral experience is the initiation site where students learn what is valued and appropriate in their discipline with specific regard to research questions, methods, and dissemination of results (Austin, 2002; Austin & McDaniels, 2006). Clark and Corcoran (1986) demonstrated how the socialization experiences and opportunities afforded to women graduate students can accumulate over time manifesting as advantages and/ or disadvantages early in faculty careers. From this platform the following sections will delve more deeply into the socialization processes of women graduate students.

Intersection of race and gender in research methodology selection

The literature suggests the preponderant subscription of women and people of color to qualitative methods stems from perceiving quantitative methodology as exclusionary, biased, andro-centric, and Eurocentric (Stanfield, 1993; Banks 2007; Padilla, 1994). One particular concern in trying to understand the research methodology selection process and socialization experiences of women of color is that there is a paucity of research examining the intersection of race, gender, and research methodology. There is a body of research which examines methodology in relation to gender, feminist research methodological perspectives in particular (Harding, 1987, 1991; Millman & Kanter, 1987; Maynard, 1994; Kelly, Regan, & Burton, 1992; Oakley, 1998, 1999; Code, 1991) and a separate body of research which examines methodology in relation to race and ethnicity (Banks, 2007; Padilla, 1994; Ladson- Billings, 2001; Stanfield, 1993; Zuberi & Bonilla-Silva, 2008). Explorations of the experiences of women of color and research methodology tend to be narrative accounts outlining the experience or perceived need to validate their research methodology usage to colleagues within the academy (Huber, 2009; White 2008; Hull, Scott, &Smith, 1993), or theoretical/ conceptual research essays (Collins, 2000; Berger & Guidroz, 2010). However, we know very little about the scholarly identity development of women of color. Furthermore, is it fair to assume the subscription to qualitative methodology by women of color is primarily due to epistemological perspectives? Or, could prior educational experiences, statistics anxiety, and socialization during graduate school play a role in the research methodology selection of women of color? The present gap in the literature exposes the need for further empirical research to understand the process and experiences that lead to the selection of a particular research methodology for women of color faculty in the social sciences.

Undergraduate research experiences.

Hunter, Laursen, and Seymour (2007) explored the role of undergraduate research experiences in the intellectual, personal, and professional development of student researchers. They conducted a longitudinal, comparative study of the faculty- and student-perceived costs and benefits of undergraduate research opportunities. Students described the following benefits of participating in undergraduate research programs: beginning to think and work like a scientist, clarification or confirmation of career plans—including graduate school, enhanced graduate school and/ or career preparation, and attitude shifts to toward learning and working as a scientist. Faculty observed similar gains by the student participants; specifically they saw the students become less fearful of being wrong, take ownership in their research projects, and learn the habits of the profession. Faculty supervisors also took an active role in the students' socialization by taking them to professional meetings to encourage students to visualize themselves as part of the scholarly community as well as encouraged students to have a publication at the close of the summer program, thereby, helping students to become producers and disseminators of knowledge. Hunter et al., (2007) situated the student experience of becoming a scientist as part of the "identity development and professional socialization [that] are framed as a process of negotiated meaning-making within a community of practice" (p.67). The faculty supervisors served as guides molding the students and helping them to navigate the process. The Hunter et al., (2007) study was conducted with students primarily in the STEM disciplines with psychology being the only represented social or behavioral science. The present study extends this work to undergraduate research programs in the social and behavioral sciences to understand if the identity development as a researcher is similarly developed. Corcoran and Clark (1984) found many of their participants made the decision to become a faculty member

during their undergraduate years, thus, undergraduate research experiences provide an opportunity to expose and recruit students to the academe and more importantly begin their exposure to the research process and methods early on, creating an experiential foundation for graduate level training to build upon.

Curricular antecedents to methodological capacity.

According to Onwuegbuzie and Leech (2005), one of the outcomes of the "paradigm wars" and great debate on the appropriateness and value of quantitative and qualitative methodology is that many doctoral students in the social and behavioral sciences are under the impression that to be successful one must make a choice and ascribe to one methodological tradition or the other. Onwuegbuzie and Wilson (2003) found that between 2/3 and 4/5 of graduate students appear to experience uncomfortable levels of statistics anxiety, and thus delay enrolling in a statistics course as long as possible and may only take the requisite introductory statistics course. The delay in methodological course-taking, and the pressure to make the "right" methodological choice demonstrate some of influence of statistics anxiety on methodological capacity of graduate students. Some students even change their majors and or career choices as a direct result of their experiences in a statistics course (Feinberg and Halperin, 1978 as cited in Onwuegbuzie, Ros, & Ryan, 1997). In other words, in the midst of the contentious climate surrounding methodological approaches, a doctoral student that delays or foregoes taking a statistics or quantitative methods course has made a clear methodological choice, and perhaps career choice, that limits the methodological tools at their disposal for scholarly work and ability to understand quantitative work in the larger scholarly community (Onwuegbuzie & Leech, 2005). The remainder of this section will provide an overview of the components of statistics anxiety as well as research on women graduate students and statistics anxiety.

Lalonde and Gardner (1993) describe learning statistics as similar to learning a second language because both statistics and a second language are indicative of a particular group of individuals that utilize them, have detailed new-to-the-learner vocabularies and symbols, and have the ability to create anxiety when spoken to the new learner. Extending the simile that learning statistics is like learning a second language, one cannot expect to learn all one needs to know in one course. It is necessary to be exposed and engaged with the material over time to develop the facility needed by a research professional. The new learner needs opportunities to engage in utilizing their newfound knowledge in a non-threatening environment as well as understanding that making mistakes is part of science and becoming less fearful of being wrong is essential to one's growth as a researcher (Gelso, 1993; Hunter et al., 2007; Rhodarte-Luna & Sherry, 2008). Lalonde and Gardner's (1993) conceptualization of learning statistics as similar to learning a language is a helpful tool to understand the experience of learning statistics as well as socialization into particular methodological traditions that relay on learning statistics.

In 2003, Onwuegbuzie and Wilson conducted a comprehensive review of the literature regarding statistics anxiety. They identified both the antecedents and effects of statistics anxiety. They categorized the antecedents of statistics anxiety into three categories: situational, dispositional, and environmental (Onwuegbuzie & Wilson, 2003). Situational factors included those things that surround the stimulus e.g., prior statistics knowledge, course experience and grade, if the course is a required course or an elective, and being a statistics major or non-statistics major. Math anxiety and statistics anxiety are not one in the same but math anxiety can be transferred onto and predict statistics anxiety (Onwuegbuzie & Wilson, 2003; Lalonde & Gardner, 1993; Zeidner 1991). Also, as part of the situational factors Onwuegbuzie and Wilson (2003) shared Wilensky's (p. 172, 1997) definition of epistemological anxiety "a feeling, often in

the background, that one does not comprehend the meanings, purposes, sources or legitimacy of the mathematical objects one is manipulating and using" (p.197). Situational factors in statistics anxiety essentially entail the experience within or regarding the statistics course itself.

Dispositional factors that contribute to statistics anxiety are the cognitive attributes an individual brings to the setting such as mathematics self-concept or general self-perception of ability in mathematics, self-esteem, and perfectionism (Onwuegbuzie & Wilson, 2003). Students with perfectionist tendencies may be more anxious than other students when confronted with multiple solutions and interpretations because they erroneously believe there is only one correct solution (Onwuegbuzie & Wilson, 2003). Lastly, the authors discuss environmental antecedents, events that occurred in the past, noting that women have higher levels of statistics anxiety than men but achieve comparably well, and that older students have the highest level of statistics anxiety, African American students have higher levels of statistics anxiety than White students, and international students report higher levels of statistics anxiety compared to domestic students. This has great implications for the developing methodological capacity of students.

When describing the curriculum of undergraduate students in the social sciences, Zeidner (1991) stated that "statistics may be one of the most rigorous, demanding, and perhaps anxiety evoking courses" students are required to take in their program of study. I acknowledge the problematic assumptions about rigor and demands implied in this statement; however, if we return to the second language simile, statistics may very well be the most rigorous and demanding because students are required to utilize a different vocabulary, symbols, and software that they may not readily comprehend. Wilensky's epistemological anxiety, "a feeling, often in the background, that one does not comprehend the meanings, purposes, sources or legitimacy of the mathematical objects one is manipulating and using" (p.197, 1997 as cited in Onwuegbuzie

& Wilson, 2003) provides a useful conceptualization of the anxious students' state of mind. As graduate students, these students have succeeded in progressing through all of the preceding segments of the educational pipeline. They have likely always been strong students and learning statistics may be the first time they are confronted with a subject they simply do not understand. Lovitts (2008) examines the ability/ desire to take risks and the willingness to make mistakes. Risks and mistakes are a part of science. Mistakes, specifically the process of learning from mistakes are not rewarded or often explicitly taught.

Writing apprehension among graduate students has not been as extensively researched as statistics anxiety. However, there have been some interesting findings that support its inclusion as a curricular antecedent to methodological capacity. Writing apprehension is a "situation- and subject-specific individual difference concerned with people's general tendencies to approach or avoid writing" (Daly, 1978, p.11 as cited in Onwuegbuzie, 1999). Writing apprehension has been related to poor quality research proposals by graduate students (Onwuegbuzie, 1997). Onwuegbuzie (1999) examined the relationship between writing apprehension and self-perception of creativity, intellectual ability, scholastic competence, social acceptance, and self-worth. Graduate students enrolled in an introductory research method courses participated in the study. Perceived scholastic competence, a subscale of the Self-perception Profile of College Students that has items on student self-perceptions of coursework mastery that are separate from perceptions of intellectual ability, explained the majority of the variance in writing apprehension, 22%, followed by perceived creativity, 2.4%. The author determined graduate student writing apprehension to be an academic issue with implications for professional and career decisions. One of the major components of scholarly work is the dissemination of knowledge via the written word. Students that struggle with writing and/ or have low confidence in their writing

regardless of ability are likely to have problems utilizing both quantitative and qualitative methods. Thus, their methodological capacity and likelihood of pursuing a research career are greatly limited.

University: Core socialization of graduate program.

The core of the Weidman et al., (2001) framework encompasses the institutional culture and climate, the process of socialization, and the elements of knowledge acquisition, investment, and involvement. This section will specifically focus on the process of a student becoming a researcher; transitioning from being solely a consumer of research to becoming a producer of research as well. In order to understand the methodological choices women faculty make, it is necessary to examine how they developed as researchers in the first place. There are three subsections covered: the academic department as the research training site, self-efficacy for research tasks, and the evolution from student into independent scholar.

Research training environment. Gelso (1993) defined the research training environment as "all of those forces in graduate training programs (and, more broadly, the departments and universities within which the programs are situated) that reflect attitudes toward research and science" (p.470). Although, he was referring specifically to professional psychology (clinical, counseling, and school psychology), his definition can be applied across the social and behavioral sciences to understand the socializing influence of the graduate program or academic department on students' development as researchers. Academic departments and faculty serve as mediators between students and disciplines. Fox (1995) identified four ways in which faculty advantage students with access and opportunities to engage with the academic community: research training and experience necessary for professional and intellectual development; nominations for fellowships and awards; professional visibility by introducing students to other

faculty in the field and collaborating on presentations and publications; and providing assistance during the job search process. The reliance on faculty, often one member of the faculty, can be problematic because the successful induction of the student into the field is heavily dependent on one person. This is particularly troubling for women who report feeling marginalized and excluded from many of the interactions with faculty outside of the classroom (Fox, 1995).

In 2003, Major and Dolly examined the graduate program experiences that prepared new faculty[2] in education for their roles as researchers. They identified the graduate school experience as a key part of the preparation process that enabled new faculty to assume academic tasks confidently or not. Major and Dolly (2003) found early career faculty were less comfortable with their research responsibilities compared to their teaching responsibilities, with women rating their research confidence lower than men. Some of the experiences from their graduate programs the new faculty found helpful in the development of their research expertise were: conference presentations, publications, working on grants, collaborating on research projects, having a successful dissertation experience, mentoring from faculty, and receiving feedback from faculty.

These programmatic experiences are echoed in the work of Fox (1995) and align with the call of Gelso (1993) that "[graduate] program faculty have the most power to affect the [research training] environment, they also have the greatest responsibility" (p. 472). Faculty, knowingly and unknowingly, are models for students (Austin, 2002; Bard et al, 2000). Thus, it is important for faculty to share the good and the bad with students; the manuscript rejections and acceptances, the denied and approved grant applications, and the experiments or analyses that

[2] New faculty were defined as faculty that graduated within the preceding four years and had not yet had their first critical pre-tenure review.

did not quite turn out as expected (Gelso, 1993). Providing students with a transparent, realistic impression of their aspired profession while also putting into perspective their own successes and failures is essential to the well-rounded development of future scholars.

Research self-efficacy. Research self-efficacy is the "degree to which an individual believes he or she has the ability to complete research tasks," and is thought to affect the initiation and persistence in research behaviors (Bieschke, Bishop, & Herbert, 1995 as cited in Bard, Bieschke, Herbert, & Eberz, 2000, p.48). Phillips and Russell (1994) found that research self-efficacy was positively correlated with both the training environment and research productivity. In other words, students that feel confident in both their abilities to conduct research and their graduate program's ability to prepare them for research were found to be more productive than those students that were not similarly confident in their abilities or graduate preparation for research. Conversely, Meyers, Reid, and Quina (1998) examined the extent to which psychology graduate students perceived they were prepared for faculty roles. They found students perceived a gap between the importance of research training preparation and the level of training received. The relationship between research self-efficacy and the research training environment is further emphasized in Engstrom's (1999) investigation of the scholarly writing habits of women doctoral students, "because of the research and writing they did in graduate school and the influence of mentors and peers, they developed essential skills, recognized the values, norms, and styles of work required of those committed to research activities" (p.271-272). The practices and habits students gained in their programs increased their confidence in their research abilities and prepared them for productive careers.

The studies of Phillips and Russell (1994), Gelso (1993), Meyers et al. (1998), Bard et al. (2000), Major and Dolly (2003) studies were each conducted with discipline specific samples

including psychology, education, and rehabilitation counseling. However, the findings are not discipline limited but rather demonstrate the student experience of the research training environment and faculty in students' research self-efficacy across the social and behavioral sciences. Students in doctoral programs across the social and behavioral sciences are being challenged to develop their research skills and abilities to become confident scholars in their fields, not only in psychology, education, and rehabilitation counseling.

Professional communities. Student involvement in campus organizations is widely acknowledged to be a great benefit to the academic success of undergraduate students (Astin, 1977, 1984, 1993; Pascarella & Terenzini, 1991, 2005; Tinto, 1993 as cited in Gardner & Barnes, 2007). Gardner and Barnes (2007) looked to extend this line of research to the graduate level to explore the benefits of graduate student involvement and the relationship to socialization for the professional role. Graduate student involvement was defined as participation in a wide range of organizations from professional associations at the national or local level, student-based organizations on their campuses, or opportunities to engage in service in their local communities. The participants categorized student involvement at the graduate level as primarily focused toward professional development and is a mechanism to engage in their field. Students were able to manage their level or degree of involvement by participating in a number of ways: paying dues, attending conferences, running for leadership positions in the organization, presenting, or chairing a session (Gardner and Barnes, 2007). Students were also able to craft their involvement relative to their personal and professional needs, i.e. time to degree, specialization, family-life issues. Graduate student involvement was not only a student initiative, but Gardner and Barnes (2007) found that programs that were geared toward producing future faculty were encouraging of students' co-curricular involvement. The element of graduate student

involvement adds another layer to the graduate student socialization for faculty role discussion by expanding the sphere of influence beyond the specific department but to the larger scholarly community. Indeed, students are not only the students of their specific faculty advisor and graduate program, but are the students of their discipline and profession. Thus, their development and socialization is a communal exercise. Additionally, it could be quite possible for women and people of color that professional associations provide the socialization, mentoring, and support that may not be available, or a supplement to what is available, on their home campuses. For example, women graduate students of color may attend conferences or participate in professional associations in order to network with other women and men of color because of the low numbers of people of color in graduate programs and faculty positions on most campuses.

Novice professional practitioner

Doctoral students enter their programs in a dependent/structured phase. They learn about the field, consuming the research of other scholars, and ideally progress over time into the independent, self-directed phase of becoming responsible for producing original research (Walker, Golde, Jones, Bueschel, Hutchings, 2008; Gardner, 2008; Baker & Pifer, 2011). After the completion of coursework, students ideally begin to establish their academic identities, seeing themselves as members of and participants in the scholarly community (Baker & Pifer, 2011). The socialization experiences of the student are manifested during this time as she is able to utilize her networks and put into practice what she has learned regarding research. The advantages and/or disadvantages she has accumulated will also be apparent at this point in the process and influence her transition from student to scholar (Clark & Corcoran, 1986). For

example, if she excelled in her coursework, presented at conferences, collaborated with her advisor on scholarly projects for publication, overcame her statistics anxiety to experiment with several advanced quantitative methods as she crafts her dissertation and long-term research agenda, then she should be able to have a favorable transition from student to independent scholar.

The evolution from student to scholar is not completed in isolation. It is the result of the socialization process, as Weidman (2010) states, "the process through which doctoral students develop knowledge, skills, and values that will equip them to be producers as well as consumers of research" (p.46). All of the previously discussed elements (gender differences in graduate education, pre-doctoral experiences, research training environment, professional involvement and networks, research self-efficacy) have a role in the transition from student to independent scholar. However, though we understand somewhat the process of becoming a researcher we don't know why students in the social and behavioral sciences pursue a particular course of research methodology training, whether quantitative, qualitative, or mixed.

Chapter Summary

Both curricular and co-curricular factors contribute to the socialization and methodological capacity of women graduate students. Students enter graduate programs with prior experiences, such as undergraduate research experiences, which are able to socialize them into the academic community and aid in the development of their scholarly identity (Hunter et al., 2007). Graduate student involvement is another co-curricular socialization mechanism. Students engage in scholarly conversations, network with peers and mentors, and hone their skills in preparation for their professional roles (Gardner & Barnes, 2007). Inside of the classroom, statistics anxiety can be debilitating to student achievement in statistics, particularly for women in time-limited situations such as exams or quizzes (Zeidner, 1991, Onwuegbuzie,

1995; Onwuegbuzie et al., 1997). Statistics anxiety can also limit the methodological capacity of women students because the introductory statistics course is often the prerequisite for more advanced quantitative methods courses. As a result of their angst, they avoid statistics courses or modify their academic and career plans to limit encounters with statistics (Zeidner, 1991; Onwuegbuzie et al, 1997). This is unfortunate because it limits students' methodological fluency, the potential research questions they can address, and capacity to engage in scholarly discourse. Curricular and co-curricular factors work together in concert to facilitate the socialization of women graduate students into the social sciences professoriate.

Chapter III: Methodological Approach of this Study

This study investigated the educational and socialization experiences that contribute to research methodology selection of women faculty in the social sciences using both quantitative and qualitative methods. This chapter outlines the methodological approach used for this mixed methods study.

Mixed methods research developed in the late 20th century across several disciplines and fields as researchers were exploring ways to approach complex research problems (Creswell & Plano-Clark, 2011). This approach is an effort to garner a more complete understanding of a topic by using complementary qualitative and quantitative techniques (Babbie, 2013; Onwuegbuzie & Leech, 2005). Today, mixed methods research is becoming increasingly popular in both theoretical and applied social and behavioral science disciplines and fields (Alise & Teddlie, 2010; Tashakkori & Teddlie, 2003). Creswell and Plano-Clark (2011) outline the type of research problems particularly suited for mixed methods research as:

> Those in which one data source may be insufficient, results need to be explained, exploratory findings need to be generalized, a second method is needed to enhance a primary method, a theoretical stand needs to be employed, and an overall research objective can be best addressed with multiple phases, or projects. (p.8)

The current investigation used mixed methods to build upon what is known in the literature about the process of becoming a scholar and provide a multifaceted picture of the research methodology selection process.

An explanatory sequential design was used in which the quantitative survey data was collected first, followed by in-depth qualitative interviews to further understand the phenomenon of research methodology selection (Creswell & Plano-Clark, 2011; Creswell, Plano-Clark,

Gutmann, & Hanson, 2003). During the initial phase, quantitative survey data was used to identify variables derived from the literature predictive of research methodology selection. In the second phase, in-depth phenomenological interviews were used to further explore the process, experience, and the impact of research methodology selection on the careers of women faculty in the social sciences. This study addressed the following research questions:

- What educational and professional experiences in the early careers of women faculty influence the selection of a particular methodological tradition? To what extent does the selection of a particular methodological tradition influence later career experiences and opportunities?
- How do women faculty in the social and behavioral sciences come to select a particular methodological tradition—quantitative, qualitative, or mixed? At what point(s) in their training and careers do they make such a selection?
- For each of the above questions, to what extent and in what ways are the experiences of women of color similar to or different from the experiences of White women? How can these differences and similarities be better understood?

Research Design

This study used an explanatory sequential mixed methods design to examine research methodology selection of women faculty in the social sciences. The guiding purpose of an explanatory sequential design is to use the qualitative findings to add further understanding to the quantitative results, by exploring the experiences of a few purposefully selected participants in greater detail (Creswell et al., 2003; Creswell & Plano-Clark, 2011; Tashakkori & Teddlie, 1998). The quantitative survey data was collected first, followed by qualitative interviews in this study.

In the initial phase of the study, quantitative survey data were collected from women faculty in the social sciences at research universities with very high research activity, according to the *Carnegie Classification of Institutions of Higher Education*, to assess the relationship between educational experiences, socialization during graduate school, and research methodology selection. The second phase of the study, used Seidman's (2013) approach to phenomenological inquiry, which consists of three in-depth interviews with each participant. The first interview established the context of the participant's experiences by focusing on her undergraduate and pre-graduate educational experiences and decision-making. The second interview allowed the participant to reconstruct her experiences during her graduate schooling and induction into the profession. During the third interview the participants recounted their transition from student to faculty life and allowed time for reflection on the significance of their experiences in becoming a researcher.

According to Creswell (1998), a phenomenological study focuses on a concept or phenomenon seeking to describe and understand the meaning of individuals' experiences. The concept or phenomenon in question is the process of selecting a particular research methodology. Specifically, the focus is on describing and making meaning of the experience of selecting a particular research methodology and becoming a researcher within that methodological tradition within the context of a social science discipline.

Sampling Approach

The participants for both phases of the study were women faculty in the social sciences at research universities with very high research activity. The 2005 and 2010 update of the Carnegie Classification of Institutions of Higher Education – Basic Classification identified three sub-categories of doctorate-granting institutions according to research activity: research universities

with very high research activity, research universities with high research activity, and doctoral/ research universities. Research activity was measured using several correlates of research activity such as research and development expenditures, research staff, and doctoral conferrals. Two indices of research activity were created. One represents the aggregate level or research activity and the other represents per capita research activity. Institutions that were considered to have very high research activity if ranking very high on either the aggregate or per capita research activity index. A list of the 108 research universities with very high research activity is included in appendix A. Limiting the sample to research universities with very high research activity was important because of the focus on research methodology selection. Conducting research is a high priority for women faculty at universities with very high research activity, thus they are likely more aware of their methodology usage and decisions than women faculty at institutions where conducting research may not be as high a priority. They may be more likely to have greater opportunities to develop expertise in—and possibly attachment to— particular methodological traditions in research university settings, though not necessarily more variety or choice, depending on their disciplinary context.

Furthermore, faculty were selected instead of graduate students because faculty are better able to articulate the implications of their graduate socialization experience as it relates to methodology choice because they have lived through the experience under investigation. This process is described in Gelso (1996):

> In essence, people tend not to accurately assess themselves on certain qualities (e.g., initial research attitudes) until after they have received sufficient experience through particular interventions (e.g., research training in graduate school). The experience gathered through intervention, such as research training, allows students to have a better

understanding of where they were to begin with (e.g., on research attitudes) - thus the superiority of recalled report. (p. 312).

Furthermore, using a retrospective approach allows for the women's research methodology to be placed in the broader context of research training and practice with the influence of educational and socialization experiences (Cobb, Confrey, diSessa, & Schauble, 2003).

Systematic random sampling was used here, it is defined as "selecting every *n*th unit of the target population from a randomly ordered list of the population" (Kemper, Stringfield, and Teddlie, 2003 p.278). I selected from the population of research universities with very high research activity instead of from the population of all women social science faculty because there is no central list of women faculty in the social sciences. A systematic random sample of 25 institutions was selected from the randomly ordered list of research universities with very high research activity. The sample was further limited to include women faculty within the disciplines of sociology and psychology and the interdisciplinary fields of education and women's studies. The rationale for limiting the disciplines/fields was to ensure the participants were in an area/ discipline where a methodological choice is made by the individual and not by the paradigmatic norms of the field or discipline. In other words, I sought areas of study in which quantitative, qualitative, and mixed methodology research are prevalent within the field/ discipline instead of disciplines which are primarily guided by a singular methodological perspective, e.g. anthropology or economics (Alise & Teddlie, 2010; Hutchinson & Lovell, 2004; Klein, 2004; Ritter, 2012; Ross & Onwuegbuzie, 2010). I created the pool of potential participants by generating a list of names and email addresses of women faculty from the websites of the selected areas and institutions. I made my best effort with the information available to include only faculty with doctoral degrees granted after 1990, who were primarily at the assistant or

associate professor rank, and those using qualitative, quantitative, or mixed research methodologies according to the biographically statement in their profile or curriculum vitae.

Quantitative Sample

There were 655 women faculty identified from the criteria listed above and invited to complete the quantitative survey with 198 participating, a 30.23% response rate. A slight majority of the participants described their research methodology as primarily quantitative (n = 101, 51%), followed by primarily qualitative (n=64, 32%), then primarily mixed methods research (n = 33, 16%). There were 75 assistant professors (38%), 86 associate professors (43%), 30 professors (15%), 1 emerita (0.5%), and 6 (3%) with ranks not included in the aforementioned choices such as lecturer, research associate, or clinical professor. The participants earned their doctoral degrees in the following disciplines or fields: education (n = 68, 34%); sociology (n = 51, 25%); psychology (n = 45, 22%); and other disciplines or fields such as the humanities, cultural studies, life sciences, political science, and anthropology (n = 34, 17%). The majority (n = 131) of the women earned their doctoral degrees between 1998 and 2009. The mean year the participants earned their doctoral degree was 2001. Figure 3.1 shows the distribution of when the participants earned their doctoral degrees. The majority of the participants were White women (n = 147, 74.75%), followed by Black women (n = 23, 11%), Asian women (n = 14, 7%), Latinas (n = 12, 6%), multiracial (n =9, 4.5%), and American Indian/ Alaska Native (n =9, 4.5%). Participants were able to identify with more than one racial ethnic category. English was the native language of 178 participants (89.90%).

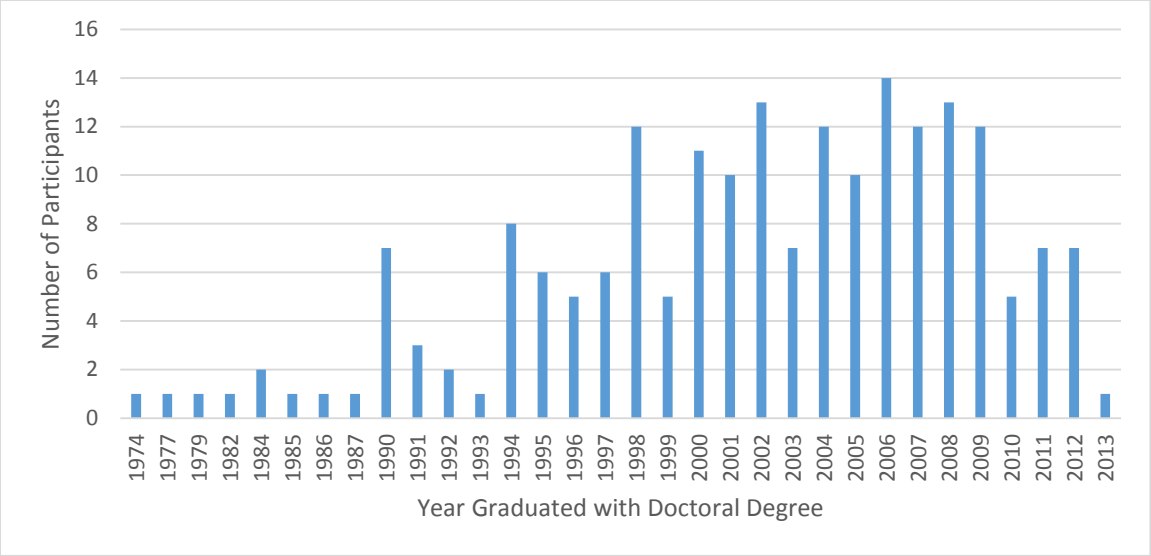

Figure 3.1. Distribution of Doctoral Degrees Earned by Participants by Year

Qualitative Sample

Participants in the second phase, qualitative interviews, were selected from those that completed the survey. Specifically, one survey item requested the participants submit their contact information if they would be interested in participating or would like more information about the qualitative follow-up phase of data collection. There were 51 participants that expressed interest in learning more about the second phase of the study. Purposeful sampling from the participants' survey responses was used to further narrow the sample for the second phase of the study (Creswell et al., 2003; Tashakkori & Teddle, 1998). My goal was to obtain a robust range of experiences to achieve maximum variation in the phenomenon of research methodology selection across the selected disciplines and fields (Akerlind, 2007; Glaser & Strauss, 1967 as cited in Merriam, 2009). The criteria for selection included primary research methodology, discipline/ field, racial ethnic background, and faculty rank. I invited 25 women to participate in the qualitative follow-up interviews. There were six participants in the qualitative sample. General descriptive information on the interview participants is presented in table 3.1.

Table 3.1. Interview Participants

	Angela	Anna	Kimiko	Sophia	Stella	Uma
Matriculation Discipline/ Area	Sociology	Psychology	Sociology	Sociology	Education	Biology
Racial/ Ethnic Background	Black	White	Asian	Latina	White	South Asian
Faculty Appointment Area	Sociology	Psychology	Sociology	Joint - Education and Ethnic Studies	Education	Education
Doctoral Training Methodology	Quantitative	Quantitative	Mixed	Mixed	Qualitative	Mixed
Primary Faculty Methodology	Quantitative	Quantitative	Qualitative	Quantitative	Qualitative	Mixed
Faculty Appointment	Associate	Associate	Assistant	Associate	Professor	Assistant

Survey Instrument

The Survey of Research Methodology Selection of Women Faculty in the Social Sciences (SRMS) was created for the quantitative portion of this study in the absence of an extant instrument on faculty research methodology. The SRMS was specifically designed to answer the first and third research questions concerning the educational and professional experiences that influence research methodology selection as well as those that determine racial/ ethnic differences in experience. The complete instrument has 70, both open-ended and close-ended, questions and is included in Appendix C.

The SRMS is divided into several subsections: background/ demographic information, undergraduate education experiences, master's level graduate experiences, doctoral education experience, doctoral scholarly productivity, doctoral advising and mentoring, postdoctoral academic productivity, and current professional information. The survey items regarding

research productivity and graduate program experience/ socialization were adapted from the Nettles and Millet (2006) Survey of Doctoral Student Finances, Experiences, and Achievements. Nettles and Millet (2006) surveyed doctoral students at 21 universities in the social sciences, humanities, sciences, mathematics, and engineering to understand doctoral student finances, socialization, and research productivity. Additionally, the research self-efficacy items for qualitative and quantitative research are a modification of the research self-efficacy scale used by Holden, Barker, Meenaghan, and Rosenberg (2007). The research self-efficacy scale was used to assess the confidence in the ability of social work students to complete research activities (Holden et al., 2007). In the present analysis, the quantitative research self-efficacy scale of Holden et al. (2007) was modified to inquire about the participants' research self-efficacy for both qualitative and quantitative research after taking qualitative and quantitative research methodology courses, separately. If they responded that they had taken at least one quantitative or qualitative course they were presented with the respective research self-efficacy scale. I modified the response categories from the original scale from zero (cannot do at all) to 100 (certain can do) with ten point intervals to a five point Likert-type scale. The five categories were: not confident at all, slightly confident, somewhat confident, quite confident, and extremely confident. My goal with the SRMS is to use elements of the aforementioned instruments to draw upon prior work on research productivity, doctoral socialization experiences, and research self-efficacy to understand the experience of research methodology selection.

The variables that created the quantitative research self-efficacy scale were related to the quantitative research process; research question development, research design creation, selection of measurement approach, data analysis, and study presentation. A confirmatory factor analysis was conducted to determine if the measured variables were represented by a latent construct for

the quantitative research self-efficacy scale. Cronbach's alpha was used to evaluate the internal consistency of the scale. The Cronbach's alpha for quantitative research self-efficacy was .974, which indicate the quantitative research self-efficacy measures are good indicators of the latent construct quantitative research self-efficacy.

Procedures

The SRMS was administered online using SurveyMonkey®. The invitation to participate was sent via email and included a link to the survey. A reminder email was sent after the initial invitation to non-respondents. The initial invitation and reminder emails are included in Appendix C. As an incentive and token of appreciation, at the end of the survey participants could opt to be included in a random selection for one of three cash payments – one for $500 and two for $250. One of the survey items asked participants to include their name and email address for inclusion in the random selection. In the reminder email, non-respondents were informed of the random selection deadline, a strategy shown to encourage early participation and increase response rates (Babbie, 2013). After the deadline, the names of the participants that opted into the drawing were randomly sorted with three names drawn. The three participants selected to receive the cash payments were notified via email and asked their preferred mailing address. The cash payments were then mailed to the participants' specified mailing address.

The qualitative follow-up used Seidman's (2013) approach to phenomenological inquiry, in which three in-depth interviews were conducted with each participant. As mentioned, the first interview established the context of the participant's experiences by focusing on the life history and prior educational experiences of the participant with particular attention to their experiences leading up to graduate education. The second interview allowed the participant to reconstruct her graduate school experience and socialization. The third and final interview allowed the

participant to reflect on the meaning of her experience within the context of her current role as a faculty member.

The invitation to the qualitative follow-up phase of the study was sent to the 25 women selected from the sample of those that completed the survey and expressed interest in learning more about the qualitative follow-up. The invitation is included in Appendix D. Once the participants agreed to participate they were emailed a pdf of the consent form that was signed, scanned, and returned to me via email (see Appendix E). Interviews were then scheduled based on the participants' schedules. All eighteen interviews were conducted via Adobe® Connect™ a web conferencing platform with video capabilities. After the interviews were scheduled, each participant received a unique link to access the virtual meeting room for the interview. The interviews were semi-structured and used the protocol in Appendix F to guide the conversation. On average the interviews lasted one hour. Each interview was audio-recorded and transcribed.

Data Analysis

Analysis for each phase of the study was conducted separately. The quantitative survey data was analyzed first using multinomial logistic regression to predict primary research methodology from undergraduate and graduate experience variables. I used IBM SPSS version 21 to conduct the quantitative analysis. Logistic regression is more flexible than other multivariate analysis techniques in that predictor variables can be continuous or discrete and are not required to be normally distributed, linearly related, or to have equal variance in each group (Tabachnick & Fidell, 2007). Multinomial logistic regression allows for more than two group outcomes that are not necessarily ordered in nature and emphasizes the probability of group membership for each case. The outcome variable was research methodology with primarily quantitative methodology serving as the reference category to primarily mixed methods and

primarily qualitative methods. The first model estimated was the baseline model, without any predictor variables to predict group membership. The other three models address elements of the educational and socialization experiences, specifically, undergraduate experiences, graduate program experiences, and graduate socialization experiences. Multiple imputation was used to account for missing values. There were four variables that had five or fewer missing responses: undergraduate math or statistics courses, required methods courses, qualitative courses, and advisor primary research methodology. The other two variables with missing data were research assistantship with 28% missing responses and author or co-author a journal article 8% missing. The pooled parameter estimates for the five imputations are presented in the next chapter.

The models and variables are described in table 3.2. The chi-square significance test provided the statistical evidence of a relationship between the predictor variables and the outcome variables. A reduction in the likelihood values for each model compared to the baseline model was expected and an indication of a relationship between the independent variable and the dependent variables that is different than what could be anticipated due to chance (Schwab, 2002). The logistic coefficients indicate the amount of change in the logit, odds of being a quantitative researcher, for each unit change in a predictor. A logistic coefficient near zero indicates the predictor has little or no influence predicting the odds of being a quantitative researcher (Starkweather & Moske, 2011).

A Wald test was used to test the relationships between the independent variables and the dependent variable. Additionally, two-tailed tests and a .05 alpha level were used to assess statistical significance.

Table 3.2. Multinomial Logistic Regression Variables and Models

	Outcome Variable	
	Research Methodology	Primarily Quantitative Methodology (reference category), Primarily Qualitative Methodology, Primarily Mixed Methodology
Models	**Predictor Variable**	**Response Categories**
Undergraduate Experiences	Undergraduate Major	Education; Sociology; Psychology; Other Social Science; Life Science, Physical Science, Business; Humanities (reference category)
	Undergraduate Math/ Stats Courses	0, 1, 2, 3, 4, 5 or more
	Participated in Undergraduate Research	Yes or No
Graduate Program Experiences	Master's Math/Stats Courses	0, 1, 2, 3, 4, 5 or more
	Doctoral Degree Area	Education, Sociology, Psychology, Other
	Number of Required Methods Courses	1, 2, 3, 4, 5 or more
	Number of Quantitative Courses Taken	0, 1, 2, 3, 4, 5 or more, Cannot recall
	Number of Qualitative Courses Taken	0, 1, 2, 3, 4, 5 or more, Cannot recall
	Quantitative Research Self-Efficacy Scale	Not confident at all, Slightly confident, Somewhat confident, Quite confident, Extremely confident
	Research Assistantship	Yes or No

Graduate Socialization Experiences	Research Team Participant	Yes or No
	Faculty Advisor Methodology	Quantitative, Qualitative, Mixed
	Author or Co-author of a journal article	Yes or No

The second phase was guided by a phenomenological interview approach. "Phenomenology aims at gaining a deeper understanding of our everyday experiences" (van Manen, 1990 p. 9). The purpose of including the in-depth interviews was to gain a deeper understanding of the process and experience of becoming a researcher in the social sciences. Results from the quantitative analysis were used to refine the in-depth interview protocols conducted during the second phase of the study. I reviewed my notes and the recordings of the preceding interview in preparation for the next interview. Interview data were not analyzed until all interviews were complete. The interviews were recorded and transcribed. I uploaded the interview transcripts to ATLAS.ti 7 qualitative data analysis and research software for analysis.

I began my analysis process by reading and coding the transcripts of the first interview of all participants before coding the second and third interviews. I used both descriptive coding to identify important elements related to the topic and process coding to note actions and context (Saldana, 2013). Some of the codes I used were: graduate decision-making, research experiences, gendered experiences, course-taking experiences, and changing programs. Interpretation of the codes was accomplished through three steps: collection, reduction, and interpretation of lived experiences (Nelson, 1989). The codes were then organized into thematic categories to align with the Weidman et al., (2001) graduate and professional student socialization framework (Coffey & Atkinson, 1996; Nelson, 1989; Spinelli, 2005). Select quotes and excerpts from the

thematic categories were then organized to add insight and integrated with the relevant models of the quantitative results (Miles & Huberman, 1994; Moustakas, 1994; Nelson, 1989; Seidman, 2013).

I chose to analyze and present the interview data by coding and creating excerpts and thematic categories instead of creating participant profiles (Seidman, 2013). By the nature of this study, tracing the women's careers from their undergraduate and graduate programs to the professoriate, presenting the data in profiles could make it possible to identify the interview participants. The women's careers as scholars makes much of their professional lives public and easily accessible, e.g., institutions attended, institutional mobility as a student and staff member, and their research interests. My goal was to convey to the reader their stories as completely as possible but maintain their anonymity to the best of my ability.

Additionally, as an explanatory sequential mixed methods study, I decided to present the data thematically with the survey data and multinomial logistic regression results. Presenting both types of data together allows the women's experiences to add depth while also demonstrating the similarities and uniqueness of their experiences. Some of the themes have accounts from all six of the women in the interview subsample, while other themes only have accounts from two or three women. The general format of the interviews was the same but the conversation depended greatly on the participants' experiences. Some women shared more about certain aspects of their experience and less about other parts. However, together all of the experiences recounted in the surveys and interviews provide a robust understanding of the factors affecting research methodology selection and utilization during graduate school and beyond.

Data Integration

A fundamental part an explanatory sequential mixed methods design is connecting the quantitative and qualitative data to inform each other. The data for this study were integrated at three levels; research questions, data collection, and data analysis and presentation. The research questions have both qualitative and quantitative elements in order to illuminate the process and experience of research methodology selection. During data collection, the survey data was used to select participants and refine the guiding interview protocol for the second phase of the study. Thus, I was able to have a large number of women share the breadth of their experiences via the survey while also incorporating the depth of experiences of a few women from the three-part in-depth interview sequence. Additionally, there were some open-ended survey items with text responses that were analyzed with the qualitative interview data. Data analysis primarily occurred separately but was integrated during the presentation of the data to provide a multi-faceted description of the phenomenon of research methodology selection.

Researcher Role

The participants in this study were women faculty in the social sciences at research universities with very high research activity. As a woman graduate student aspiring to a career in the professoriate, I saw myself in the experiences of this group of women. In many ways their stories are my story. We have majored in psychology, attended large predominately White research institutions, pursued graduate study and research careers but there remain some differences. Before closing the third and final interview, I asked each participant if they had any questions for me. They usually asked about the origin of my idea for this study and I was able to share my experience of being on both sides of the proverbial methodological fence and seeing the differences in the populations of students and scholars on each side. Often being one of a few women of color or the only Black woman in conversations and courses on quantitative methods,

I began to think about why people choose to conduct research in certain ways and how personal experiences in graduate school and undergraduate education influence those choices. In this brief moment of sharing my story with participants that spent approximately three hours sharing their stories with me, I was able to reveal some of my experiences that sparked my curiosity into their experiences. This was an exceptionally rewarding experience to have nearly 200 women faculty respond to my survey and to have spent a minimum of three hours one-on-one with six women faculty as they candidly shared their experiences in academia. I do not take for granted the wisdom they have shared with me and count it my responsibility to share their stories with others.

Limitations

The generalizability of the quantitative results to other populations is limited because the participants were women faculty at a select number of research universities with very high research activity whom may have very different experiences compared to women faculty at other types of institutions. Also, only a few disciplines and interdisciplinary fields were selected. The results of this study may not generalize to those in other areas in the social sciences. Future research should examine the experiences of women at various types of institutions and academic areas.

Additionally, both the quantitative and qualitative components of this study relied on the participant's ability to recall experiences in both the near and distant past. This retrospective approach could be viewed as a limitation. However, prior research has found retrospective examination of graduate socialization to be a beneficial mechanism to understand research skill development (Akerlind, 2007; Engstrom, 1999; Gelso et al., 1996).

One potential limitation is that this study does not examine the research methodology selection of men in the social sciences. This is purposeful, when considering the representation

of women in the social sciences and humanities compared to STEM fields and disciplines, and that the prevailing rationale for the underrepresentation of women in STEM is due to gendered curricular affinities and departmental/ institutional climates. I wondered if the same gendered curricular affinity patterns and climate are present within the social sciences with regard to research methodology. In other words, are the reasons women are underrepresented in STEM mirrored in the social sciences with respect to research methodology? However, before that question can be answered it would be helpful to understand the process of research methodology selection for women in the social sciences. I do not attempt to essentialize the methodology selection experiences of women but the study may create future opportunities to consider the research methodology selection of men faculty.

Chapter Summary

The purpose of this study is to understand the research methodology selection process. This chapter chronicled the methodological approach with a particular focus on the research design, sampling, measurement, and analysis. Additionally, my role as the researcher and the limitations of this study were presented. The following chapter will present the data from both the quantitative and qualitative phases of this study.

Chapter IV: Presentation of the Data

The purpose of this study was to investigate the educational and socialization experiences that influence research methodology selection of women faculty in education, sociology, psychology, and women's studies. The survey and interview data are integrated in this chapter into four thematic sections: undergraduate experiences, graduate program experiences, graduate socialization experiences, and novice professional experiences. The sections are presented chronologically from undergraduate experiences through novice professional to align with the Weidman et al., 2001 framework for understanding graduate and professional student socialization. The first three sections begin with the multinomial logistic regression analysis of the survey data and descriptive information of the sample for the variables in the corresponding models. The multinomial logistic regression results for the three models are presented in table 4.1. The themes originating from the interview data are included to supplement and provide more insight into the women's lived experiences. The fourth thematic section uses interview data to delve into the student-to-faculty transition and continued research identity development and methodology ascription.

There were 198 survey participants. Most of the women (51%) primarily used quantitative research methodology in their work, followed by primarily qualitative research methodology (32%) and primarily mixed methods (16%). Many of the women obtained their doctoral training in education (34%), followed by sociology (25%), psychology (22%), and 17% who earned their doctoral degrees in other areas. A subsample of six participants completed the three-part interview sequence. The subsample of interview participants were trained in sociology (n=3), psychology (n=1), education (n=1), and biology (n=1). Mixed methods (n=3) was the most prominent methodological approach used by the interview participants in their doctoral

training, followed by quantitative (n=2) and qualitative (n=1). Additional descriptive information about the sample for both the survey and interview participants is provided in chapter three.

Undergraduate Experiences

The purpose of including undergraduate experiences was to explore the pre-graduate education experiences that influence later research methodology selection. This section provides background information to help better understand who the participants were before entering their graduate training programs. The undergraduate experiences that were of particular interest were coursework and major selection and early introductions to research.

The undergraduate experiences part of the multinomial logistic regression analysis included three variables: participation in an undergraduate research program, the number of undergraduate math courses, and undergraduate major. Involvement in an undergraduate research program was split fairly evenly with 51% saying yes (n=102) and 49% no (n=96). Most of the women had two or more undergraduate math courses, n = 144, 72%. Psychology was the most common undergraduate major (n = 57, 29%). Psychology and Sociology were the most common undergraduate majors for both women of color and White women. The life sciences, physical sciences, and business category was the third most common undergraduate major category for women of color. However, other social science disciplines and fields were the third most common undergraduate major for White women.

The overall undergraduate experiences model for both the mixed methods – quantitative comparison and the qualitative – quantitative comparison had a Nagelkerke R^2 value of .34, indicating the model was able to reasonably predict individual research methodology of the research subjects as faculty. The chi-square value ($\chi^2 = 67.97$ (14), $p < .001$) indicates the

undergraduate experience variables collectively are significant predictors of individual research methodology. The mixed methods - quantitative comparison yielded one statistically significant predictor, an undergraduate major in the Life Sciences, Physical Sciences, or Business, $b = 2.70$, Wald F (1) = 4.77, $p < .05$. Recall from table 3.2 that the reference category for undergraduate major was humanities. The odds ratio tells us that as undergraduate major changes from humanities to the life science, physical science, or business category, the change in the odds of being a mixed methods researcher compared to being a quantitative researcher is 14.88. In other words, life science, physical science, or business majors are far more likely to be mixed methods researchers than quantitative researchers.

The qualitative methods - quantitative methods comparison had two significant predictors: participation in an undergraduate research program and an undergraduate major in psychology. Participation in undergraduate research was a statistically significant in predictor of quantitative primary research methodology compared to qualitative primary research methodology, $b = -1.14$, Wald F (1) = 8.06, $p < .05$. Qualitative researchers are 3 times less likely to have participated in an undergraduate research program compared to quantitative researchers. Undergraduate major in psychology was also a statistically significant negative predictor of current qualitative primary research methodology, $b = -2.38$, Wald F (1) = 10.59, $p < .001$. Qualitative researchers are not likely to have majored in psychology as undergraduates, when compared to quantitative researchers.

In the interviews the women provided more insight into the role of their undergraduate experiences from preparing for college and the role of their family in that decision to how they developed their interests in the social and behavioral sciences.

Table 4.1 Multinomial Logistic Regression Coefficients

Variables	*B*	S.E.	Wald	Sig.		Odds Ratio	95% CI Lower	95% CI Upper
Baseline Model								
Constant – Mixed v. Quantitative	-1.12	0.20	31.12	0.000	***			
Constant – Qualitative v. Quantitative	-0.46	0.16	8.16	0.004	**			
Undergraduate Experiences								
Mixed Methods v. Quantitative								
Constant	-1.86	1.09	2.91	0.088				
Undergraduate Research	-0.89	0.46	3.78	0.052		0.41	0.17	1.00
Undergraduate Math Courses	-0.03	0.16	0.03	0.860		0.97	0.71	1.33
Undergraduate Major[#]								
Life Sci., Phys. Sci, Bus.	2.70	1.24	4.77	0.029	*	14.89	1.32	168.24
Psychology	0.51	1.20	0.18	0.668		1.67	0.16	17.43
Sociology	1.63	1.18	1.90	0.168		5.11	0.50	51.97
Other Social Science	0.93	1.22	0.59	0.443		2.54	0.24	27.45
Education	2.23	1.26	3.15	0.076		9.28	0.79	108.52
Qualitative v. Quantitative								
Constant	1.17	0.48	5.82	0.016	*			
Undergraduate Research	-1.14	0.40	8.06	0.005	**	0.32	0.15	0.70
Undergraduate Math Courses	-0.16	0.14	1.30	0.255		0.85	0.65	1.12
Undergraduate Major[#]								
Life Sci., Phys. Sci, Bus.	-0.09	0.77	0.02	0.903		0.91	0.20	4.10
Psychology	-2.38	0.73	10.59	0.001	**	0.09	0.02	0.39
Sociology	-0.42	0.62	0.45	0.504		0.66	0.19	2.24
Other Social Science	-0.50	0.60	0.70	0.402		0.61	0.19	1.96
Education	0.22	0.74	0.09	0.771		1.24	0.29	5.25
Cox & Snell R^2	0.29							
Nagelkerke R^2	0.34							
Chi-Square	67.97 (14), p <.001							
Graduate Program Experiences								
Mixed Methods v. Quantitative								
Constant	1.09	1.23	0.79	0.374				
Master's Level Math Courses	0.11	0.20	0.31	0.577		1.12	0.76	1.65
Required Methods Courses	0.92	0.27	11.68	0.001	***	2.51	1.48	4.26
Quantitative Courses Taken	-0.66	0.25	7.18	0.007	**	0.52	0.32	0.84
Qualitative Courses Taken	0.17	0.27	0.42	0.518		1.19	0.70	2.02
Quantitative Research Self-Efficacy	-0.43	0.28	2.40	0.121		0.65	0.37	1.12
Doctoral Degree[+]								
Psychology	-2.73	0.87	9.87	0.002	**	0.06	0.01	0.36
Sociology	-1.31	0.75	3.00	0.084		0.27	0.06	1.19
Education	-1.26	0.77	2.68	0.102		0.28	0.06	1.28

Variables	*B*	S.E.	Wald	Sig.		Odds Ratio	95% CI Lower	95% CI Upper
Graduate Program Experiences continued								
Qualitative v. Quantitative								
Constant	3.33	1.20	7.68	0.006	**			
Master's Level Math Courses	0.48	0.24	4.04	0.044	*	1.62	1.01	2.61
Required Methods Courses	0.58	0.30	3.77	0.052		1.79	0.99	3.22
Quantitative Courses Taken	-1.29	0.29	19.51	0.001	***	0.28	0.16	0.49
Qualitative Courses Taken	0.84	0.28	9.12	0.003	**	2.31	1.34	3.98
Quantitative Research Self-Efficacy	-0.91	0.28	10.69	0.001	***	0.40	0.23	0.69
Doctoral Degree[+]								
Psychology	-3.51	1.30	7.31	0.007	**	0.03	0.00	0.38
Sociology	0.29	0.85	0.12	0.730		1.34	0.25	7.09
Education	0.17	0.90	0.04	0.847		1.19	0.20	6.93
Cox & Snell R^2	0.55							
Nagelkerke R^2	0.63							
Chi-Square	158.78 (16), p < .001							
Graduate Socialization Experiences								
Mixed Methods v. Quantitative								
Constant	-0.42	0.70	0.36	0.547				
Research Assistantship	-0.66	0.74	0.79	0.383		0.52	0.11	2.42
Research Team Member	-0.40	0.57	0.48	0.488		0.67	0.22	2.07
Journal Article Author or Co-author	-0.45	0.62	0.53	0.468		0.64	0.19	2.15
Advisor's Primary Methodology								
Mixed Methods	1.86	0.59	10.01	0.002	**	6.45	2.03	20.51
Qualitative	1.77	0.68	6.89	0.009	**	5.89	1.57	22.14
Qualitative v. Quantitative								
Constant	-0.59	0.82	0.52	0.477				
Research Assistantship	-0.37	0.98	0.14	0.717		0.69	0.08	6.34
Research Team Member	-0.46	0.55	0.68	0.409		0.63	0.21	1.88
Journal Article Author or Co-author	-0.85	0.59	2.07	0.151		0.43	0.13	1.36
Advisor's Primary Methodology[^]								
Mixed Methods	1.76	0.64	7.53	0.006	**	5.80	1.65	20.38
Qualitative	4.06	0.58	48.16	0.001	***	57.69	18.35	181.39
Cox & Snell R^2	0.42							
Nagelkerke R^2	0.49							
Chi-Square	108.98, (10) p < .001							

Undergraduate Decision-Making

Each of the women described knowing from an early age that she would pursue a college degree after graduating from high school. Some of the women went to small liberal arts colleges while others went to large, public universities. Sophia knew she would go to college but thought she would go to one of the large, public universities in her state. However, her plans changed when her family moved to a new neighborhood just before she began high school, "my parents moved us to a predominantly White neighborhood that I think changed the course of my educational experience and career, so it was in high school that my physics teacher recommended a small liberal arts college." Sophia was offered admission to this small, liberal arts college that was also close to home. She was unsure as to how she would be able to afford to attend such an expensive institution.

> My mom told me, "Just tell them you're going and we'll figure it out." It was really small and I ended up loving it there. It was a really good fit for me, certainly an adjustment but it ended up being a really good place for me.

Contrary to her original plans to attend a public university, through the support and encouragement of her high school teacher and family Sophia was able to take full advantage of the opportunities afforded to her at a smaller undergraduate institution.

Uma and Kimiko both transferred to different institutions during their undergraduate studies. Uma transferred undergraduate institutions due to financial concerns. Her family was planning for her to be able to become an in-state student at her first undergraduate institution but the rules changed and she was unable to qualify for residency. She transferred to the large public university in her hometown, where her father was a professor.

Kimiko is Japanese and transferred to a large, public university in the United States after her freshman year. Kimiko describes the impetus for her transition.

> I felt like I went to college because I wanted to learn and I felt really uninspired and sort of unmotivated by the classroom. I think the instructors were very intelligent people, but the peer culture, particularly I think for somebody who was kind of highly aspiring to pursue career, wasn't really best for me.

Many of her friends at the university in Japan were international students themselves and encouraged her to consider studying abroad. Her early interests in media and the influence of mass media on society lead her to consider communications as an undergraduate major. Kimiko used her interests to bolster her case to study abroad as there were not many communication programs in Japan at the time. In order to convince her parents to allow her to study abroad, she selected a large, public university in the United States with numerous resources and a reputable communications department.

Once in the U.S., Kimiko began to develop mentoring relationships with her professors. She describes her relationships with a sociology professor and an education professor, "[They] really took me under their wings and they went out of their way to guide this foreign student who clearly kind of didn't know where she was going." The education professor would invite Kimiko to be a guest speaker in his class, which helped her develop her public speaking skills. It also provided the opportunity for Kimiko and the education professor to converse about her semester or post-graduation plans. The professor's feedback played an integral role in her development.

> Interaction with the sociology faculty really gave me that sort of level of intellectual confidence that I knew what I was doing and also I had some potential in me that certainly had to be refined, but they communicate it not just by grade, but also I think in

> the way that they treated me that I had something important to say and I appreciated that … I think I was waiting for that. [He] gave me a lot of confidence that I really certainly was lacking at the time. Also I think that got me to think a lot more about sociology as a potential field for my grad[uate] school because I felt like [I] was getting a lot more feedback from sociology professors than [in] communications, so that got me interested in that too. I wasn't really getting that in other areas."

When it was time to select a graduate program, Kimiko sought the advice of the professors who mentored her during undergraduate studies. They were able to suggest programs for her to consider based on her research interests.

Sophia began her undergraduate studies as a pre-medicine student. However, after struggling in chemistry and biology she changed her plans and took courses in sociology, psychology, and economics and "fell in love with sociology."

Angela described her attraction to sociology.

> I took a lot of different classes my first year and the one that really excited me the most was sociology. So I took a sociology class and it was the first time I really had a name for the things I had experienced growing up in [the South], which was discrimination, and that you can actually study that and study inequality... I had no idea that sociology even existed before I went to college. But once I took that first sociology class, I had really, really dynamic instructors and one of the first talks that I saw when I went to that campus was one on violating social norms by a faculty in sociology that turned out to be a mentor and my friend to this day, who really just expanded my mind in terms of thinking about society and how society works. It was in that first year taking a sociology class that I realized, I need to be a sociologist. So at that point, I was like what can I do with this

> degree, and they were like go to graduate school and become a professor. So at that point I just decided this is what I want to do. So it was pretty early on that I made that decision.

Anna began her undergraduate studies thinking she would major in sociology. However after taking a few sociology courses her plans changed.

> I was always interested in the idea of sort of how our culture and our social contact influence us as individuals and that kind of stuff. I took a few Sociology courses and I just ended up feeling dissatisfied with sociology because I felt like all these big broad social phenomena that we were talking about in the sociology courses. There was not really anything you could ever do [anything] about; like there wasn't really anything that you as an individual person, or an individual researcher, can do about social movements or things like that.

She found herself being drawn to psychology.

> I felt like psychology has the focus more on the individual. I felt more like there were things you could do there [in psychology] in a way that your research or your work have practical application, and that was something that was important to me, and that was how I got into psychology."

Anna was also able to appreciate the different areas of study within psychology, "Cognitive psychology, social psychology, and developmental; they're all different from each other and all interesting in different ways, so I felt like there are [a] lot of different interesting things going on there." Anna graduated with a double major in psychology and linguistics with a minor in creative writing.

Stella's undergraduate major and graduate program choices were often influenced by observing and having conversations with peers as well as trial and error. She was originally undeclared and recalled her process to select a major.

> I did a lot of experimenting so I think I picked my first major based on one of my roommates, [she was] in social work and I liked her and thought, "Oh! I can do social work." I looked into that and then I didn't want to do that and then I thought about education. I took a couple of classes and I thought, "I'm not sure about that." I took some business classes. It didn't really resonate. I started taking [a friend's] classes in political science and public administration and I thought, "Oh, this seems good." I think I felt part of that community in some way. It wasn't like I had a deep conviction to public service as much as, when I was in those classes they just resonated with how I thought about things. I liked the people that were there and then I did well. I started to come into my own.

Stella earned her bachelor's degree in political science.

Emerging research interests and familial and peer influence equipped the women with the tools to make decisions during their undergraduate careers that prepared them to pursue graduate study.

Undergraduate Research Experiences

Early participation in research as an undergraduate allows students to see faculty outside of the classroom. Students are sometimes able to develop mentoring relationships with faculty that are essential to preparing for and applying to graduate school. Ideally, students are exposed to different research approaches and begin to apply their early research methodology training. It is also during this time that students begin to imagine themselves in research careers. Uma,

Sophia, Angela, and Anna each shared their experiences participating in research as an undergraduate and how these experiences prepared them for graduate school.

Uma attended a laboratory middle and high school on the campus of the university where her father was a professor. During high school she decided she wanted to be a veterinarian. Uma and her parents decided she would go to college out-of-state and then return to veterinary school at the university in her hometown. However, she returned sooner than originally planned due to financial concerns. She remained an animal science major but began applying for scholarships to help pay for her last two years as an undergraduate. One scholarship required research participation and a mentor professor. She also worked in several labs during her time as an undergraduate. Through Uma's experiences working in the labs and completing the scholarship requirements with her thesis she "discovered the world of research."

> I quickly became aware of the pecking order and how a lab works. Because I had worked in two different labs [at out-of-state university] and then I had a job in one lab in [hometown university] but then also did my research with a different professor, I sort of felt the dynamics of all four of those labs and granted, they were all related to biology somehow but I realized that the number one person who was going to help me was the technician. The technicians were the ones who were my immediate sort of supervisors who were the gatekeepers to the professors. The professors actually weren't people I really interacted with. They were busy writing grant proposals or doing their own things. [One professor], I don't even think he knew who I was. I went and introduced myself to him a year after I was working there and he didn't know who I was because I was an undergrad[uate] worker, so I was lowly. I understood the dynamics of a research group

and the different roles and the pecking order and how things were done. Some people included me in lab meetings and some people didn't. I became acculturated to lab culture.

Sophia and Angela were introduced to the world of social science research through their participation in an American Sociological Association [ASA] summer program. The program was hosted by different universities that provided courses and research opportunities to undergraduate students of color. Angela and Sophia did not attend the same institutional host of the summer program but both had similarly positive experiences. Sophia used the experience to work with faculty and graduate students to develop her undergraduate thesis.

> It was intense but it was really cool to see other minority students. It was a really good mix and I met really cool people from across the country and we supported each other and yeah, it was fun. That's when I realized I really like doing research and, obviously, part of that program was pushing us to consider graduate school and academia. When I came back [to school for] my junior year, that's when I told [my undergraduate faculty advisor/mentor], "Okay, I want to do this. I want to get a PhD in Sociology," and so then we started working towards that.

After participating in the summer program, Angela attended the American Sociological Association annual meeting to present her work. The experience of presenting her work in conjunction with her undergraduate training prepared her for graduate school.

> [My undergraduate faculty] were all amazing. I was lucky enough to go to an institution that has just spectacular sociologists and my mentor there had very close relationships with the students. The classes were incredibly rigorous, so I was getting great training. Early on we were learning. By the time I was in my senior year I had already

done quantitative research, I had done qualitative research, I had written research papers. I presented at ASA. Overall it was a phenomenal, positive experience and it really prepared me for graduate school.

Anna also participated in research projects as an undergraduate that prepared her for graduate study. She worked on a long-term project with a graduate student. She was able to be involved in the early stages of planning the study, data collection, and writing for publication. They interviewed participants in settings that were sometimes familiar to her and sometimes new. She reflected on the experience saying, "Seeing that variety of experiences [among the participants] was interesting, molded me, I think, professionally and personally, too. That set of experiences helped me realize psychology was the track that I wanted to go into when I was looking at graduate school."

Graduate Program Experiences

The graduate program is the primary site of professional socialization for graduate students (Weidman et al., 2001). During the graduate program students take courses to learn both broadly and in-depth about various topics of interest. The second model of my multinomial logistic regression analysis focused on the institutional/ departmental culture and experiences during the graduate program. There were six variables included: the number of master's level math courses, the number of required methods courses, the number of quantitative courses taken, the number of qualitative courses taken, quantitative research self-efficacy, and doctoral degree area (1 = Psychology, 2 = Sociology, 3 = Education, doctoral degree in another area was the reference category). The most common number of required methods courses was two courses (27%), followed by three courses (25%), four courses (19%), one course (17%), and five or more courses (19.2%). One of the most striking differences in methodological coursework is the number of quantitative and qualitative courses taken. Many participants did not take a qualitative

methods course, nearly 43%. The distribution of number of both quantitative and qualitative methods courses taken is shown in Table 4.2. Women of color also took a lower number of quantitative courses when compared to White women. An independent samples t-test showed a statistically significant difference in the number of quantitative courses taken by women of color (M= 2.31, SD= 1.59) and White women (M=2.96, SD=1.46); t (196) = 2.76 p = .006.

Table 4.2. Qualitative and Quantitative Methods Courses Taken by SRMS Participants

	Qualitative Courses		**Quantitative Courses**	
	Frequency	Percent	Frequency	Percent
Zero courses	85	42.9%	12	6.1%
One course	65	32.8%	37	18.7%
Two courses	25	12.6%	40	20.2%
Three courses	13	6.6%	40	20.2%
Four courses	6	3.0%	34	17.2%
Five or more courses	4	2.0%	35	17.7%

Collectively the graduate program experience variables significantly predicted individual research methodology (χ^2 = 158.78 (16), p < .001). The Nagelkerke R^2 was 0.63, an increase from the undergraduate experience variables, indicating the graduate program experiences better predict individual research methodology compared to the undergraduate experience variables. The mixed methods – quantitative comparison had three significant predictors. The number of required methods courses significantly predicted being a mixed methods researcher or a quantitative researcher, b = 0.92, Wald F (1) = 11.68, p < .001. As the number of methods

courses taken increases, the odds of being a mixed methods researcher increases compared to being a quantitative researcher.

Additionally, the number of quantitative courses taken negatively predicted being a mixed methods researcher compared to a quantitative researcher, b = -0.66, Wald F (1) = 7.18, p < .01. As the number of quantitative courses increases the odds of being a mixed methods researcher decreases compared to being a quantitative researcher. A doctoral degree in psychology was found to negatively predict being a mixed methods researcher compared to being a quantitative researcher, b = -2.73, Wald F (1) = 9.87, p < .01 as well.

The qualitative methods – quantitative comparison had five statistically significant predictors; the most of any of the comparisons and models. The first predictor was the number of master's level math or statistics courses, which significantly predicted primary qualitative research methodology (b = 0.48, Wald F (1) = 4.04, p < .05). The number of quantitative courses taken significantly negatively predicted being a qualitative researcher compared to being a quantitative researcher, (b = -1.29, Wald F (1) = 19.51, p < .001). As the number of quantitative courses taken increases, the odds of being a quantitative researcher increase. Similarly, as the number of qualitative courses increases, so do the odds of being a qualitative researcher, (b = 0.84, Wald F (1) = 9.12, p < .01). Quantitative research self-efficacy was a significant negative predictor of being a qualitative researcher compared to being a quantitative researcher, (b = -0.91, Wald F (1) = 10.69, p < .001). The higher the quantitative research self-efficacy score the more likely the person is a quantitative researcher than a qualitative researcher. Lastly, having a doctoral degree in psychology was a significant negative predictor of being a qualitative researcher, (b = -3.51, Wald F (1) = 7.31, p < .01). Similar to the mixed methods - quantitative

comparison, a person with a psychology degree is likely to be a quantitative researcher instead of a qualitative researcher.

The women shared their experience in selecting a graduate program, the culture of their programs, course experiences and advising relationships with faculty to provide more insight into the role of the graduate program in their research methodology selection.

Graduate Program Selection

As the women approached the end of their undergraduate programs, they began to consider graduate education and in particular what type of program they desired to attend. Anna, Angela, Sophia and Kimiko enrolled in doctoral programs without having to complete a master's degree first. Conversely, Stella and Uma earned master's degrees separately in different programs from their doctoral degrees. The women discussed their experience selecting a graduate program by describing both the application process itself as well as the alignment of their emerging research interests and the research specializations of the graduate program. Anna developed the following approach to selecting a graduate program.

> I didn't know exactly what I wanted to do research wise; in a way that like, now, I feel like it's a little bit embarrassing, actually. I knew I wanted to work with kids; I knew I wanted to be on the social development [side] rather than the cognitive development [side of psychology]. In terms of the cognitive-social split. I knew I wanted to do something that I felt like could have practical application; even if I wasn't necessarily doing something really applied. I wanted to do something that I felt like could be applied; could have practical application."

She was also mindful of the type of advising experience she would have during her graduate program.

> In terms of feeling the fit with the faculty members, my [prospective] advisor, who I ultimately ended up working with, I liked her a lot; I felt comfortable with her. One of the other things that I really liked about her research in comparison to some of the other faculty members who I might have worked with is that she was doing experimental research, which I thought was really cool. Other people I was potentially going to work with weren't doing anything really experimental, so that was another thing that pushed me in terms of going to that position.

Anna appreciated that her prospective advisor's approach to working with students was more collaborative than the authoritarian approach of some other professors.

After working in the labs and completing her thesis research project, Uma was approaching the end of her undergraduate program but was unsure which area of study to pursue at the graduate level.

> I was really at this point really debating whether I should continue in research for my graduate work or go into public health, because I knew I wanted to combine—I wanted to work with humans, people, and do some type of social science work, but I still loved science. I was trying to figure out how I could combine those.

Uma went on to pursue a master's degree in animal science. The university she attended required students to get a master's degree if there was no bachelor's degree offered by the department. As she was finishing up her master's degree, she met a guest faculty speaker that had an affiliation with a non-governmental organization at a departmental seminar. He was doing work that combined her interests in life science and public health education. She recalls her experience,

> I said, "This is great." I was so excited that this was bringing together all of my ideas of working with people and working with science, but he said, "I don't take married

> women." He said, "I will not take any married women," as his grad students. I said, "Why is that?" He said, "I have a very hard time. They seem to be very focused on trying to get back and spend time with their spouses." I said, "Would you take married men?" It was like he was offended by this. He said, "I don't know." He said, "I've had two married women, grad students, and some male students, and my women students seems so focused, concerned about being able to get out of the field site to spend time with their spouse."

Uma was newly engaged to a fellow graduate student though he was further along in his program. Her ideas of combining her interests in life science and social science were put on hold.

As an undergraduate Stella worked on-campus in one of the administration offices. She attended a talk given by a colleague. She recalls a conversation they later had that guided her graduate program selection.

> I remember asking her if I want to do what you do, how would I do that? She said you have to get your master's degree. She said you ultimately have to have a doctorate degree. You could do it in Higher Education. You could do it in Public Administration. You can do it in Labor Studies. She just gave me some options and then I basically just followed her. She doesn't even know me. My whole career [may] have hinged on her, that 5-minute conversation. At that point, I went and looked at graduate programs [in the above mentioned fields] and off I went.

Peer encouragement, perceptions of future advisor support, as well as prospective advisor sexism-based discouragement shaped the selection of the women's graduate programs. These interpersonal relationships and interactions mattered both before the application process in Uma's and Stella's situations and after acceptance as recounted in Anna's experience.

Academic Program Methodological Orientation and Culture

After completing the application process and selecting a program to attend the women continued their induction into their professions through their academic program. The graduate program serves as the primary site of professional socialization as this is where students spend the most time. Likewise programs invest greatly in students' knowledge, skills, and abilities through coursework, seminars, and research opportunities. The culture and methodological orientation of the academic programs was explored in the second interview to explore how the norms and values of the programs were impressed upon the students.

The socialization influence of the academic program was not limited to the graduate program. Kimiko recalled the heavy quantitative methodological orientation of her undergraduate sociology program.

> I don't think we took any qualitative methodology. Although a lot of the materials that we read in class were very qualitative like ethnography or interview based studies, but methodologically I don't think we got … I don't even know if we actually even covered ethnography in method really. That was kind of interesting. Yeah, come to think of it, I think it was very heavily quantitative. I didn't really question that at the time, but that was late 90's I guess so it should have been not so much of a disciplinary norm at the time.

However, her graduate program was slightly different. She recalls,

> I wouldn't say at the time the department had any particular leaning towards qualitative data methods, but clearly structurally it did. I still felt that it was important for me to justify my use of something like ethnography [for my dissertation research] as a

legitimately sound research method as opposed to hierarchical linear modeling or something like that.

Angela attended a large, predominantly White, flagship institution for her graduate degree in sociology. Her program was typically predominately White with a male dominated faculty. However, her entering cohort was one of the most ethnically and socioeconomically diverse cohorts ever admitted into the program. She describes some of the tensions that manifested in the classroom.

> A lot of the students of color were feeling like, okay, this is a heavily quantitative program but they didn't get a lot of experience doing quantitative methods so they were struggling. But then one of the African American students in our cohort was an advocate for her education and said, I demand that we get tutoring. We should get tutoring. We should go to the Office of Diversity and figure out how to get tutoring for students of color. So this caused all kinds of crazy drama in our cohort because the White students were then, like, we should get that too. The White students were, like, we should get tutoring too even though they were making A's in quantitative methods… It was an interesting time because it did create tremendous tension and as an institution and a department they hadn't figured out how to deal with that kind of diversity and certainly deal with it in an appropriate way.

Anna's doctoral program in psychology was heavily research focused. Students were allowed flexibility in their course selection but were expected to be in the lab working on research projects with their advisors. The faculty in Anna's program each had their own particular area of research. Students' were admitted to work with a particular faculty member and were a part of their research team from the beginning of their program.

Kimiko's sociology graduate program was structured as a cohort with prescribed courses students had to take the first year without much room for electives. The second year students worked on individual research projects that were to produce a potentially publishable article length paper. There was a seminar to support students as they developed their projects.

> We met and there was person who would lead the seminar who was sort of advisor to everyone in a sense, but not for the specifics of each project but [to] make sure that everybody's progressing. We sort of came together to talk about the problem that we were having and how to overcome certain sort of humps along the way. The way they designed the project to be the second year project sort of basically forced us to dive right into it after one year of graduate work. That definitely was harder but I don't really know how else they could have done it rather than just pushing it further out.

Sophia's sociology graduate program was also a highly structured cohort program that focused on theory and methods in the first year. The composition of the faculty was a shock to her as her undergraduate program had many Latina professors but her graduate faculty was comprised of mostly older men.

Stella and Uma both completed separate master's and doctoral programs. Stella recalls her experience in her education master's program.

> I came in in December, and there was … I definitely felt like it wasn't intentionally [designed as a] cohort, but the people who came in every fall kind of became a cohort. They were pretty generous to me, so I sort of became part of … I sort of straddled two cohorts. The people that were there before me, they took me under their wing and I had a lot of classes with them. Then there was the following year, that group of new people. I remember being kind of a leader with those people. I sort of was part of two cohorts. It

wasn't like everybody moved through lockstep. There were several different people that came in in January. It was pretty full.

Uma attended several institutions as a graduate student. The first institution she attended after her undergraduate graduation was where she earned her master's degree in animal science. Her partner is an academic as well. After relocating often due to his short-term appointments, they decided Uma should pursue her Ph.D. in their next location where he had a longer term appointment. Uma describes her experience pursuing her Ph.D. in a new program area and working with an incoming faculty member.

> There was no [formal] program for [Science Education] and so she and I chatted for a little bit and [after] a couple of months we talked to the department head. And he said, "well, we hired [incoming faculty member/ prospective advisor] to do this but we haven't really figured out how she would get graduate students." They assumed that she would have master's [level] students and then be the advisor for pre-service teachers. So they hadn't figured this out. I think she wanted to make sure she wasn't devalued in that department as an education person. And I think she was looking to come in and have a Ph.D. student. So the deal was I would take all of my courses and my pre-lim[inary] exams would be in Biology. But my dissertation could relate to Science Ed[ucation]. And that was sort of the agreement.

The women's experiences highlight the influence of structural constraints and support on one's program experience. Both the courses offered and the courses not offered by a program are an indication of what the program faculty and institution deem as important for students to know as members of the profession. Additionally, the flexibility of the program of study and timing allow students to craft an experience that best meets their needs and professional goals.

Course-Taking Experiences and Statistics Anxiety.

The women shared their experiences taking courses within their programs and across campus. Angela added population and demography to her sociology program of study. The dual degree program allowed her to explore the intersections of her research interests in other areas.

> [The dual degree program] was great because then I got to take all of these different classes, and different disciplines and I loved the interdisciplinarity of it because I felt like I got a much more broader education than I might have had I stuck with sociology alone. For me that part of it was a lot fun, and actually getting into those more advanced classes was also a lot of fun. When I started taking these classes, those were the classes that got me really excited and I think that the methods courses that I took in the population program really gave me a sense of the way that we can use quantitative methods to answer some of these empirical, theoretical questions that we have.

Anna's methods courses in psychology were fairly prescriptive. She took an initial statistics and methods overview course, a regression course, and one on programming and data analysis. In one course in particular, she noticed a disconnect between what was being taught and what she wanted to learn.

> There was one, it was called, like, computer-based statistics, and I was, like, "Oh, it's going to be about how to use SPSS, it'll be great." It was about something totally different; I was irritated. It's hard for classes to really prepare you for what you're really going to do. The classes were more focused on the theory behind it and doing stuff by hand, and not too focused on using SPSS and more practical applications. I can certainly understand the benefit in knowing the underlying theory and understanding it. I don't think that I ever got to that point during those courses of really fundamentally

> understanding what was going on. When they started saying, "Oh, the matrix," and they wanted you to understand algebra and that's not going to happen for me. I think I could have benefited from courses focused more on this is how you're going to use it and this is how to interpret the SPSS output. I ended up teaching myself a lot of that stuff partly when I was in grad school and more I found out when I had my own job.

After taking several statistics courses and becoming more focused on her research program, Anna began to have a sort of tunnel-vision with regard to what types of methods she needed to learn to do the work now without regard for her future work.

> I thought, "I don't need to take the more advanced regression classes, because I'm not doing regression for the kind of studies I'm doing now." I didn't really think about the idea five years down the line, I might want to do a regression study and so maybe I should take that advanced regression class. I didn't realize that I might be doing that later, and so again, that's something I had to learn on my own later on.

Stella felt overwhelmed by the new world and language she was immersed in during the first year of her graduate program in education.

> My whole first year of graduate school, my whole first semester for sure, I just felt like I had been dropped [into a foreign world]. I mean I felt like I could have been in a German program. I remember initially feeling like people were just talking in another language, like I had no idea what anybody was talking about. I remember feeling pretty self-conscious. I remember having a fair amount of anxiety about research methods.

Stella was in graduate school during the height of the paradigm debates in education. She found the discourse to be very engaging and began taking research methods courses. She took courses

in phenomenology, hermeneutics, and all of the philosophy courses available in her college. After taking her third research methods course she said, “It was kind of repetitive. I remember thinking, "Oh, I finally get it." Then, from there I just felt really empowered and I got really excited, and off I went.”

Statistics anxiety and math anxiety were discussed by some of the women as they reflected on their experiences as students and now as faculty. When Kimiko was in her undergraduate sociology program she noticed her peers’ statistics anxiety.

> I didn’t really have a problem with statistics. It seems that a lot of my peers did and so we did a lot of study sessions and that also gave me a bit of a confidence. I was still struggling to communicate in English, but I could tell that I was getting the concepts better than some of my peers who clearly were fluent in English. That definitely was an interesting process to feel like, “Oh, I actually know something.”

Anna attended a math and science focused high school, which allowed her to feel more comfortable with math in general. She said, “I didn’t have that math anxiety that a lot of people have that interferes with doing well in statistics.” Angela also had some reflections on prior educational experiences and statistics anxiety.

> How much of that [anxiety] links back to in terms of even how you are socialized prior to college? How you approach math? Where the emphasis lies in the work that you’re doing? I even wonder sometimes, like, when we were in college if we start to see this kind of tracking into certain areas; where we don’t necessarily think we can answer our question using quantitative work, or not even being comfortable taking one of these classes. Because people aren’t exposed to it early to realize “Wow this is really cool, this

is something that you can use." Sometimes sitting down working on it is a lot of fun. I definitely saw a lot of that kind of intimidation around statistics [among other students].

Sophia too thought about some of these questions from experiences with her students, particularly women students.

> The students come to my office and I say, "Have you taken quantitative methods?" A lot of them are, like, "Oh no, that is scary, or, I am not good at math," and not surprisingly a lot of them are women, so I keep thinking there must be something about their high school experiences or college experiences that have made them feel they are not good at math... I think that has a lot to do with it. I think women, young women, girls get those messages that they are not particularly good at math. That they should not pursue math and science and then, so it is not surprising that at the graduate level they are not pursuing those methods."

Though initially many of the women had moments of confusion during their coursework experiences as they were exposed to different ideas and concepts, over the course of time they each had a sort of "light bulb" moment when what they were learning began to make sense. They were able to see the applicability of what they learned to their own work. And perhaps even more importantly they were able to decipher what they needed to know and what they did not, at least not at the current time. The transition from confusion to clarity seems to have propelled them into becoming independent researchers, confident in their own abilities.

Graduate Socialization Experiences

The third and final model of the multinomial logistic regression analysis focused on the processes, namely immersion in research that socialized the women into their disciplinary

communities and prepared them for careers in the professoriate. There were four variables in this model: having had a research assistantship, being a research team participant, faculty advisor research methodology, and being an author or co-author of a journal article during her doctoral program. The overwhelming majority of the women had a research assistantship at some point in their program, (n=133). Similarly, 75% of the women participated in a research team and 73% received authorship credit on a journal article. However, of the 181 women that responded to the authorship item, 85% of the White women had authored or co-authored a journal article during their doctoral program compared to 69% of the women of color. Many of the women, 59%, described their advisors as primarily using quantitative research methodology. Most of the women that currently primarily use quantitative methodology had an advisor that primarily used quantitative methodology, 87%. A smaller number of women had advisors that primarily used a different method from what the respondent ultimately chose: primarily quantitative student—qualitative advisor 5%, primarily qualitative student—quantitative advisor 20%. The primarily mixed methods students most often had a quantitative advisor, 51%.

The third model included four variables; having a research assistantship, participating in a research team, being an author or co-author of a journal article, and advisor methodology (1 = primarily mixed methodology, 2 = primarily qualitative methodology, 3 = primarily quantitative methodology (reference category)). The chi-square for this model ($\chi^2 = 108.98$, (10) $p < .001$) demonstrates that graduate socialization experiences significantly predict individual research

methodology. However, the Nagelkerke $R^2 = 0.49$, which is lower than in the previous model, of graduate program experiences, but the model is still reasonably able to predict primary methodology. This model does better predict primary research methodology than the first model, of undergraduate experiences, which had a Nagelkerke $R^2 = 0.34$.

The only predictors that were statistically significant in both the mixed v. quantitative comparison and the qualitative v. quantitative comparison were advisor's primary methodology. Having an advisor whose primary research methodology was mixed methods was a significant predictor of being a mixed methods researcher compared to being a quantitative researcher, b = 1.86, Wald F (1) = 10.01, $p < .01$. Similarly, having an advisor whose primary research methodology was qualitative was a significant predictor of being a mixed methods researcher compared to being a quantitative researcher, b = 1.77, Wald F (1) = 6.89, $p < .01$. Mixed methods researchers are more like to have had advisors that primarily used mixed methods or qualitative methods rather than an advisor that primarily used quantitative methods.

In the qualitative - quantitative comparison, having an advisor whose primary research methodology was mixed methods was a significant predictor of being a qualitative researcher compared to being a quantitative researcher, b = 1.76, Wald F (1) = 7.53, $p < .01$. Likewise, having an advisor who conducted primarily qualitative research was a significant predictor of being a qualitative researcher compared to being a quantitative researcher, b = 4.06, Wald F (1) = 48.16, $p < .001$. In sum, these results show that, compared to quantitative researchers, qualitative

researchers are likely to have had an advisor that primarily used mixed methods or qualitative methods.

The interview findings presented in the following section uncover the women's research experiences and socialization into disciplinary and methodological communities.

Faculty Advising

Faculty advising is one of the most influential socialization experiences for graduate students. It is from faculty that students learn the type of researchers they want to model themselves after in favorable relationships and also an example of what not to do in less than favorable relationships. The women shared some of their advising experiences.

Kimiko had several different advisors in her doctoral program, each with their own assets and challenges. She was assigned to her first advisor. She described their relationship as,

> [It was] more of a cordial relationship because it was soon clear that neither of us were really interested in the same thing. She did her obligatory sort of meet every few months just to see how things are going, but she didn't really have much to offer which is not really her fault.

Kimiko and her second advisor were a better personality match than the first advisor. He understood her project better but he was an assistant professor approaching tenure.

> He was also still very busy as an assistant professor trying to protect his own time. He definitely was a good advisor, but I think his mentorship was very much geared towards the project's completion not necessarily my whole career path.

Her second advisor also influenced her methodological approach.

> My second advisor was one of those sort of math geniuses. He could just see the number and he can tell the story. Especially after interacting with him, I just felt like I don't have that in me. I can understand what is going on statistically, but numbers don't really speak to me in that way.

Kimiko thought qualitative research would be a better fit for her because she enjoyed talking with people. She took a seminar in qualitative research methods and learned about the challenges of qualitative research. She said, "It's not easier was something I learned. Obviously I learned how even more complicated it is to really do the research once I started to do my own dissertation project, but [the seminar] was at least a good preparation for that."

Her dissertation advisor had already earned tenure and been promoted to professor. He took a more holistic approach to her development.

> ...not just how you are doing on your project but how do you see yourself by doing this project promoting yourself or marketing yourself or what do you see your fit in this particular job market, for example? He was always able to talk about those larger picture items in addition to how's your chapter coming along? Also, personality wise, I think he was the best fit for me.

For Kimiko there seemed to be three important elements of a good advising relationship - subject matter experience or understanding, personality compatibility, and short and long-term advising orientation.

Angela and Sophia both had methodological changes of heart that had an impact on their relationships with their advisors. Sophia wanted to use ethnography in her work but after taking an ethnography course with her advisor she did not like it. Her advisor was upset and their

relationship ended when Sophia decided to pursue statistics. Angela had a similar experience. She described it as follows.

> When I came in I still was thinking about qualitative work because I had just come off doing a[n undergraduate] thesis that was qualitative. So I came in thinking, well, I want to do more qualitative [research]. But when I talked to my methods professor, she was like, no, you can't do that. I was, like, but I want to do that and I wasn't used to anybody telling me no I can't do that. I was socialized that when people tell you no, then, just figure out how to make it happen. She was, like, well, if this is how you feel about it, then maybe you shouldn't be here. Maybe you shouldn't be in graduate school. At that point I was, like, wait a minute. So again, it's one of those things where my dad's, like, don't ever let anyone tell you what you can't do. My mother was the same way because my mother had the experience of someone telling her that she couldn't do something and she ended up not getting a college degree. So, I was brought up to really, you know, if you want something you have to fight for it. I said fine, I will do a quantitative master's thesis, but I will be damned if I am going to leave this program. That made me so angry that I was, like, I am going to figure out how to make this quantitative thing work because this woman is not going to tell me that I am not cut out for graduate school, even though I reluctantly went the quantitative route. Now, I am happy that I did. I really love what I do and I am glad that it worked out that way, maybe it was what I needed to hear, but at the time I was deeply and incredibly affected by that. I felt like that was a pretty rude remark to make to a young student who just started the program. It is like you don't even know me, you don't know anything about me, but to already put a barrier up in my way, if I were a weaker person I would just pack my stuff and leave.

Angela was able to successfully navigate her advisor discouraging her methodology selection. However, if the methodology selection topic was addressed in a more open way with clarifying questions it may not have been as contentious for both Angela and her advisor.

Stella and her advisor met each other at the right time for both of them. She said:

> We connected in a class, and then off we went. I think we kind of found each other. She was new and kind of looking for an advisee, and I was new and kind of uncertain of things. She took me under her wing and then she became my advisor and then my research assistantship advisor.

Stella and her advisor worked on several projects throughout Stella's doctoral program including book chapters, articles, a book, and a grant. Conversely, Angela changed advisors during her program and her dissertation chair/ major professor often published with his students. However, he and Angela did not publish together. She describes why not publishing with him may have been to her long-term advantage "I think that actually turned out to be a blessing that my name was not tied to his because he has some controversial ideas about students of color and it is probably for the best that I was not tied to him professionally in the long run."

Advising relationships can be very difficult to navigate with many of the risks taken on by the student.

Emerging Research Interests and Experiences

Another part of becoming a researcher is developing your own research interests and questions. The women shared how their experiences shaped their emerging research interests. For Sophia and Kimiko, wrestling with their identity and social position influenced their questions. Kimiko said, "...at the time [preparing for graduate school] I somehow was very much

interested in race, ethnicity, immigration, gender because I think that was really what I was facing as a personal trouble and issue." Similarly, Sophia was pondering issues of race, gender and place even as far back as high school. She recalls,

> I'd already started engaging with conversations about why I am the only Latina in my high school in honors and so then it became … it was even more -- what's the word I'm looking for – more explicit in college. So even fewer Latina students there [attending her undergraduate university] but I [had] already started engaging with that kind of issue and that was one of the reasons I think I wanted to go to a small [college] and really do well but the biggest adjustment was probably the social class differences.

This line of questioning fueled her interest in sociology.

> I found the topics [in sociology] really interesting. I felt like it gave me a lot of freedom... the topics that I found particularly engaging were issues having to do with gender and gender differences and gender and equality, education, race and ethnicity; so race relations in society and social class differences. I guess I felt they spoke to my experiences and in many ways I was attracted to the idea of making change and making this a better place to live for people like me and my family.

The personal connection to her research continues today.

> My research then and now comes from a very personal place, so I looked at the educational experiences of Latino students and partly because I'm the first one from my family to go to college let alone get a PhD and very few of my cousins have gone on to college; I guess it became my mission to understand why. It comes from a very personal place so I continue to look at those issues today.

Stella's research interests emerged through a combination of taking women's studies courses and working with her advisor who was developing her ideas about feminist research and gender in the academy. Additionally, her experience participating in debate competitions in high school and college was important.

> Those experiences actually really did help clarify my interests and what my ideas were and what my position was. I think, before that, a lot of times my position on the issue was just whatever the prevailing position was. I had a lot of convictions, and I think as a result of the combination of the courses I think people saw some things in me before I saw them. Then those things sort of coalesced throughout my graduate program.

Before pursuing her doctoral degree, Uma spent time working for a STEM access program in the college of education. It was there she began to explore conceptually combining her interests in science and education. She was drawn to science curriculum and methods of instruction. She said, "I didn't care if it was K-12 or if it was undergraduate. I was just interested in what we teach, how we teach and how it impacts learning."

As the women discovered their research interests they also became more familiar with the different types of research and how the research process varied. For example, Stella remembers not understanding the research process prior to her master's program.

> I don't know that I knew how research took place. Before that, my idea of research was probably, like, test tubes and scientific research. It was in the course of my master's program that I realized that there's this whole world of that life as a scholar. That's what made me realize I want to be part of that world.

Angela began working on a research project with a faculty member outside of sociology early in her program. The faculty member was working on the qualitative component of the

study at the time and Angela assisted in interviewing and coding. This experience working on a qualitative study influenced the development of her quantitative research agenda. She remembers her thought process, "Okay, I am going the quantitative route, so let me start trying to delve into these questions empirically at a quantitative level."

Kimiko had minimal research experience upon entering her sociology doctoral program. She recalls, "When I got to graduate school I really didn't have any actual tangible experience of doing research. I knew what it was. I've heard of it, but I've never actually done it myself." One of her first research experiences was working on her second year paper. She recalls some of the challenges of that experience.

> The hardest part, as it turned out, to me wasn't the technical part it was the quantitative research. That's actually one of the only quantitative research [projects] that I've done so far. I was afraid of making mistakes in the calculations because it involves a lot of technicality of looking at the math and making sure that I got the right data from the right group.

She went on to describe the challenges of connecting the empirical aspects of the project to the theoretical framework.

> I was so invested in the empirical aspect of the project that some of the questions that were starting to be raised towards the, I guess, midway through my project by people "Well that's real interesting but what's the point?" Or "So what?" I really went "Uh, I don't know." That was definitely a really a big struggle for me to realize that at least the way I was being trained wasn't just about crunching numbers or being able to process things, but to engage it at this level of theoretical dialogue with this existing academic

body of knowledge. That's something that I understood as a vague abstract concept but I really learned what that meant to really make your project theoretically significant.

Anna had research experiences even as an undergraduate, serving as an undergraduate research assistant. Her experience with her master's thesis encouraged her "to continue with research and continue with quantitative research in particular." She continued,

> It was a ton of work getting the data. It took forever. We analyzed the data. It wasn't exactly what we expected. It more or less confirmed our hypotheses, which is as good as it ever gets as far as I could tell; able to present it at a high-status conference and get it published in a high-status journal. That process was very reinforcing for me. It's, like, "Oh, you put a bunch of effort into it and it worked out." I don't think honestly that I've had anything since then that's worked out so nicely and cleanly... Essentially finding a good answer to the question; it was one of those things to remember. We didn't find exactly what we expected to find. It was mostly what we expected to find. The things that we didn't expect we could come up with a good logical explanation for.

Anna's research skills were further developed during her time in her faculty advisor's lab. All of her advisor's advisees worked on subsidiary projects of the larger lab project. Anna noticed her data analysis skills growing over the course of her program. "The data analysis, in terms of being able to use SPSS and analyze the data, and talk about data analysis; that was certainly something that I recognize, I was learning as we went along." In addition to her growing analytic skills, her role in the different phases of the research process also changed over time.

> On some projects, I was more involved in planning the study than in others. I was pretty much always involved in data collection, and I was always involved in analyzing the

data. In terms of writing it up, there would usually be some amount of kind of splitting it up into sections, "You're going to do this section, and I'm going to do this section." That shifted a little bit as I moved through the program, as I got more advanced in the program, I took more of lead on more of the writing, whereas when I was starting off, my advisor did more of the writing, and similar with planning the studies, she probably did more of the planning early on, and I did more of the planning later. In terms of writing, I think I developed some skills there through writing stuff up and submitting it for publication, and doing revisions. That's a process that definitely will be of use, but both the writing and the data analysis are the ones that as I continued to grow on that after I finished my graduate program, I don't feel I could stop learning or stop developing on those; when I finished the graduate program, that was just the beginning of the developmental process which is still going on.

Sophia applied for a position in a research center to make additional income during her sociology doctoral program. The position involved interviewing participants in a large research project. Sophia and many of the graduate students that were working for the center eventually became research associates. The project director became Sophia's advisor. Sophia described the research center environment as a community.

We would have regular meetings particularly when we were analyzing data. We would have regular meetings and we talk about, okay, this is what I'm finding and we get ideas about what to do next. It was very collaborative. A lot of times, we would organize meetings just to practice conference presentations so I remember my advisor sent me to a conference because she couldn't present a paper, so she sent me to present it and so then

she wanted me to practice, so we schedule a meeting. I went through the presentation and got feedback. It's definitely a community

Similar to Anna and Sophia, Uma worked in a lab/ research center setting. However, since Uma was in the life sciences her experiences were somewhat different. Uma discussed the hierarchical nature of the different labs she worked in during both her undergraduate and graduate experiences. The professor was in charge followed by technicians, who in Uma's experience were sometimes the wife of the professor, postdoctoral researchers, or advanced graduate students with beginning graduate students at the bottom of the hierarchy. Her first graduate lab experience was a less than favorable experience. She said it "didn't foster that type of freedom and creativity that I think should exist in a lab." The professor was busy with administrative tasks and the technician was very picky and demanding. Uma was placed with a postdoctoral researcher but there was a communication barrier in addition to him not wanting to have a first-year graduate student to supervise. Other graduate students in the lab were more encouraging. They said, "You know, you should leave this lab. This advisor, he's the head of the department, he's so busy with administrative work he puts a lot of trust into his technicians, his wife and this post doc. If you're not independent and you need help, this is going to be a difficult lab for you to be in."

After the encouragement from her fellow graduate students, Uma had a meeting with her advisor. Her advisor was upset that she took a foreign language course in which she excelled but received a low B in her biochemistry course. He told her, "You know, I don't see the sparkle in your eyes. I think you should probably get your master's and not your Ph.D., and maybe you should be in social science. I'll help you get into public health school." She recalls her response,

What a jerk! Who are you to tell me who I am and what I can do? I've never talked about public health, and you're talking as though social science is something beneath science." So I said, "Screw you." I had a classmate who had an advisor in another department, so I went and talked to him.

Uma's classmate's advisor referred her to another professor that had funding available. This professor then called her advisor to make sure it was okay for Uma to change labs.

> He called up and talked to him and said, "Yeah, Uma's a good worker." I was working very hard. I just was frustrated. I actually generated data. The data were published without any acknowledgment of me. That's just how it worked. I quickly realized that was one of the … I don't know if it was because I was a woman or because I didn't go and fight, but one of many experiences where I realized that being a woman scientist can be pretty crappy.

She left that lab and joined one that she soon felt was more of the community she was seeking.

> I'm so glad I was in that lab. Now, the advisor had his issues. I was fortunate because, unlike my other professor/advisor who was a full professor but who is busy with administrative work, this professor was an associate professor. He'd already gotten tenure, so, apparently, he was a little less of a bear according to the people in the lab who knew him pre-tenure, but it was a really nice community of scientists and researchers. I think we all respected that we all played different roles. Hierarchy was there, but we were all socially really part of a unit. We were a real tight knit group. Our desks were in the lab, so we were always there. Our advisor was there from eight to eight, so therefore, we were too, because he was there from first thing in the morning until night. He created that culture of really by modeling a strong work ethic.

Through their experiences these women students were able to gain an understanding the many elements of the research process from collaboration and collegiality to integrating theory and empiricism. Angela and Kimiko both wrestled with methodology and how it is used. Anna, Sophia, and Uma shared experiences of research collaboration in a psychology lab, a sociology research center, and a life sciences lab, respectively. These experiences prepared them to apply their research interests in the development of their dissertation projects.

Dissertation Research Process

The dissertation is the culminating research product of doctoral study. The individual research project forces the student to use all she has learned in her prior years of study and research experiences. The women shared some of their challenges at different stages of the dissertation process.

Uma's academic home in her Ph.D. program was biology, but she worked out a plan with her advisor and department chair that allowed her to write a science education dissertation. She recalls her experience entering her doctoral program while also recognizing the differences between biology and education.

> I came in, in the fall, ready to go. This is important, because in biology departments, unlike my experience with education, you do your research the day you start. You jump in and you're learning about research and taking your classes at the same time. In biology it's extremely common to do a lot of pilot studies to refine your ideas and to refine your instrument and your protocol. And so, I had that mindset. I never was under the impression that I would take my classes for two years, then think of a proposal and then only do my research for a year. That model I don't understand. I don't allow my current graduate students to do that now even though they're out of education. I tell them that you

> need to know from day one [what you want to study] and if not figure it out by the end of the semester otherwise I don't know how to advise you.

During her first year she conducted several pilot studies for her dissertation, collecting and analyzing the data, then defending her proposal during the summer. There were two people that were pivotal in helping her decide to use grounded theory as her dissertation methodological approach. The first was her father, a retired professor in an applied social science field, that used grounded theory methodologies in his research. The other was a woman she met by participating as a graduate student in a women-in-STEM faculty group. The two women did not have the same specific research interests but the woman helped Uma understand content analysis as a mechanism to analyze writing. She describes her experience using grounded theory and having a committee that was unfamiliar with the approach.

> I wrote about it in my proposal and my committee didn't know what in the heck it was. They were mostly interested in the content, misconceptions, and the implications for how they teach in their department. They just said, "Go to it. Go for it." They didn't help me at all with my methodology. They had no idea, neither did my advisor. I was independent in that way.

Uma's committee was familiar with her topic but not her method while Kimiko's advisors were familiar with her method but not her topic. Kimiko's advisors were highly versed in qualitative methodology but she realized early on that she would have to explore the topic and become the expert herself. She said,

> I think I came up with an idea really more from my personal interest than my advisor's line of work. I really had to figure out how to frame it on my own. I mean, once I did it, they could just say "Well, that sounds like a really good way to approach a research

[topic?],” or “That sounds very theoretically framed,” but I had to sort of get there on my own because there wasn’t really a model that they could say, “Well, previous scholars have done it this way.”

Taking an independent study course with one of her advisors helped Kimiko refine the topic for her dissertation proposal. Her advisor had her follow the framework of a National Science Foundation (NSF) grant proposal. This was shorter than the dissertation proposal but the focus on explicitly defining the intellectual merit and broader, social impact helped her further narrow her topic. She recalls,

> It was really sort of a self-guided process with my advisor sort of steering me every time I kind of wandered off too much out of sociology or too much into sort of a too big of a project, he would sort of help scale it back or put me back on the track. But he never really was sort of like “Here’s the data set that you should use,” or “Here is this new concept that you should really be thinking about.” He certainly had suggestion for readings but it was definitely more of a supplemental nature than, “Here’s the three people that you certainly need to read and build on.”

Kimiko wrote an ethnographic dissertation even though her second year paper was quantitative. Here she describes how she decided on her dissertation methodology.

> Narrowing down the topic was really based on my own sort of haphazard reading of the materials in the area on a topic and I was certain clear that ethnographic ... Well, actually qualitative method was really the way to go. I don’t think I really wanted to do a large quantitative data analysis for my dissertation. I’ve already done that for my Master’s second year paper. I liked it but it didn’t quite feel like that’s really where my general

calling was in. I felt that the qualitative method spoke to me better in terms of type of question that I wanted to ask and the type of data that I wanted to play around with.

As she was collecting data she realized the intimate nature of ethnographic work during data collection.

> It was a definitely a very challenging process. Again, in hindsight, I really don't think I was prepared to do the work that I set out to do. It's not so much that I lack training per se, but I think I maybe didn't have the right personality for the type of work that I was getting myself into. In my mind, I have this idea of writing some very awesome ethnographic accounts of [her participants], their sort of day to day struggle. I got a few [such accounts] but not a lot. Not as many. And I just kind of realized that "That's not the type of ethnographer that I am." I realized that problems come to you at different points in your research. And had my advisors not been so positive and kind of encouraging, I don't know if I would actually have made it through that first hump. That was a really, really important learning lesson for me as an ethnographer I think. Now I feel like I know what I can and can't do. [The] personal level investment and reaction was something that I wasn't prepared for and I certainly try to emphasize that in my teaching or advising especially when they try to do ethnography. I say that it's ... it's not that it's difficult, it's just a very different type of method, doing even interview which is kind of a limited contact that you have with someone as opposed to throwing yourself out there as a person.

To respond to these challenges, Kimiko shifted her approach and made her previously supplemental interview component a more central component of her data collection.

Sophia too considered her personality and undergraduate experiences when deciding her methodological approach during her graduate program.

> At undergrad, I had to take one statistics class and it wasn't very good so I didn't feel confident in my statistics skills so that's why I went [into my graduate program] thinking I'd be a qualitative person but when I took ethnography, it just wasn't me. I didn't feel like I had the personality for it so then I pursued the quantitative methods and my first year, there were two required statistics courses and I ended up doing really well so then that made me think, okay maybe this is an option for me.

Sophia's dissertation was mixed methods. She used secondary data from her advisor and supplemented those data with interviews. She described her process and rationale for adding the supplemental interviews.

> I like crunching numbers, but I wanted to hear from [her participants], and partly my advisor said you need some interviews... I think it provided some richness to what I was finding quantitatively. I like that approach now. Right now I'm doing a lot of quantitative work, but I would like to go back to doing interviews.

Going through the process of completing their dissertations exposed both these women's strengths and weaknesses. Also, as a part of the process, though familiar with their chosen methods, they gained a more nuanced understanding of some of the situational challenges to using particular research methods. Sophia and Kimiko were also able to make modifications to their methodological approaches to incorporate what they learned from their dissertation process into their research identity.

Scholarship Discourse and Community

Attending and presenting at conferences, partnering with colleagues, as well as publishing in scholarly journals, are socialization experiences and processes that induct future faculty into their disciplinary and scholarly communities. Anna shared some of the challenges she and her colleagues faced trying to publish a mixed methods study in a traditionally single-method, and often-quantitative journal. Most of Anna's research is quantitative. As part of a large-scale study, Anna and her colleagues decided to add a qualitative component to the quantitative data. She said,

> It was a true mixed methods [study] but the burden of doing mixed methods, is you have got to be strong in both methods. Trying to take this qualitative data and make it fit into more of a quantitatively oriented world was really challenging.

She noticed that many psychology journals expressed an openness for both quantitative and qualitative submissions but rarely published qualitative manuscripts. Another challenge Anna and her colleagues faced trying to publish the mixed methods study was the journal's page limits for manuscripts. They submitted a manuscript that was slightly over the page limit with a cover letter that included their rationale for the longer paper. They were told to resubmit below the page limit. Additionally, some of the reviewers' feedback demonstrated an epistemological disconnect between Anna and colleagues and the reviewer.

> Some of the reviewers were saying, "Oh you can't just use the responses to make the categories, you have to have a theoretical prediction for why these categories are important." That was a frustration definitely and a challenge to come up with a way of describing the data that both represented the data we actually had and also involved theoretically based predictions [that] was a challenge for sure. There is certainly still a

> strong view of, you should have a clear hypothesis, you should test that hypothesis and then beyond that you should confirm that hypothesis. That's not as amenable to certain types of research questions and certain types of data.

Angela has a prestigious grant with mentors for her grant at different institutions across the country. She met many of her grant mentors through one of her committee members that she stayed in touch with over the years. In addition to her grant mentors she has also published with people in other disciplines and in fields within sociology. She describes what her collaborative experiences have taught her.

> Ultimately, that also means you end up learning different sociologies. You end up learning that there are some ways to answer questions that you may not be able to answer otherwise. I'm finding that some of the questions I want to answer we don't have data for.

She attributes her comfort in an interdisciplinary environment to her population studies program that she completed concurrently with her sociology program. She said,

> For me, I feel silo'd if I'm only in a sociology [environment]. I want to be a sociologist. My identity is as a sociologist, not necessarily as a demographer, but I always want to have access to people who are in different disciplines. I never feel like what I'm doing completely makes much sense to me if I'm only working with sociologists.

Several of the women shared their experiences in professional organizations and attending conferences. The annual meetings of their organizations would sometimes remind them of their isolation while at other times creating a welcoming community of support. Uma described feeling like an outsider at her professional organization meetings because many people

spend time socializing with their graduate program cohorts or other faculty in their departments. However, she had neither such group in her current professional organization.

> I always felt like this orphan. I still sort of do, it's just over the last couple of years I've always found money to bring a teacher. I just walk around with a teacher who also feels like an orphan there because they feel like, "Oh none of these yahoos know anything about practice. They're all talking about research." I take teachers who are interested in that research to theory, research to practice bridge.

Uma's professional organization is also where as a graduate student she learned about social science research methodologies.

> I learned that there was something called quantitative and qualitative and mixed methods. I didn't even know what those meant. I learn a lot sort of by myself, going and listening, but I definitely feel very disconnected. I feel like I'm a biologist walking around sort of posing. People will say, "Oh, I'm sure you've read this in your graduate studies." I'll say, "I have no idea what you're talking about." I didn't read some classic things. I've read things on my own just because I felt like I needed to learn things.

By contrast, when Angela attends the conferences in one of the subfields that she has been active in since her graduate program she said the "meetings feel like home. I walk around there and I just know people."

Participating in the larger scholarly community is a requirement of faculty at research institutions. However, cultivating productive relationships with people outside of your home institution can be very challenging, particularly, if one feels isolated at her home institution. Attending conferences and association meetings can mirror that isolation or ameliorate it by helping attendees find community and support for their research. Additionally, scholarship

discourse also shapes what is considered important and what is not, similar to graduate program coursework, by establishing what and how knowledge is presented and distributed. Anna, Angela, and Uma's experiences demonstrate the impact of graduate socialization experiences beyond the graduate program to the larger scholarship and discourse community.

Novice Professional Practitioners

The preceding sections have focused on the formal educational experiences during undergraduate and graduate education, as well as the co-curricular experiences that influence the methodological approach, of women faculty in the social sciences. The final section explores the women's continued research and methodological development after completing their doctoral degrees and transition into their faculty careers. During this time period the women's research approach choices become more their own. They are no longer working on research projects under the guidance of an advisor but instead have now become an advisor to graduate and undergraduate students. This section highlights their continued research identity development and methodological approach while also examining their role in their disciplines and departments.

Continued Research Identity Development as a Faculty Member

After completing their doctoral degrees, the women were able to reflect on their experiences and continue to refine and shape who they desired to be as researchers. Angela's research streams became more integrated after becoming a faculty member and receiving a grant.

> It was an epiphany. Part of the research that I do, I feel like it's the research that I'm doing for my grandmother, for my family, for the community. I feel like this is something

> deeply, deeply personal to me, and so at the time when I wrote the second version of the grant, and was just, like, you are all going to give me this money. This isn't my money. I was, like, this is what I'm supposed to be doing. I feel like the … You know, the light bulb just came on. It literally became a calling. It became that thing that this is what I need to be spending the rest of my career working on. At that point, then the grant became a mechanism for me to get to the point to make the shift in my research.

Recall that Angela entered her doctoral program with an interest in qualitative research. However, she shifted to quantitative research in part because of the primarily quantitative orientation of her department and recommendation of her advisor. Now as a faculty member she's able to incorporate qualitative work into her research.

> It's been an interesting journey in the sense that here I was thinking, well, maybe I'll never get back to answering research questions using qualitative research. I was, like, I'm fine with just being a quantitative researcher, but then realizing in terms of how you pursue questions there are different tools that you can use to ask different parts, or address different parts, of a research question. I feel like it's happening when it's supposed to happen. Now in my career I'm ready, and I'm equipped to make methodological shifts that I could not have made previously.

Angela's methodological shift also included incorporating other disciplinary perspectives outside of the social sciences. She described receiving a very prestigious multi-year grant as the fulcrum that changed her trajectory.

> It allowed me the flexibility, the support, and in some ways, the credibility that I needed to do this new transition into this new kind of research. Maybe I could have done it without this grant, but it would have been extremely difficult. Because what I proposed is

to be a very different type of sociologist, the kind of sociologist that we don't actually have right now.

One of the drawbacks to Angela's methodological orientation was that it made it challenging for her to connect with other scholars of color on campus and in her disciplinary community.

There is this kind of weirdness that is going on around these intersections with gender, race, and expectation. The fact that I was quantitative and I wasn't a qualitative African American researcher, moved me into a realm of not really being able to connect with a lot of scholars of color even on campus. Because most of the scholars of color on the campus are qualitative. They don't understand what I do. In a lot of ways they act like they appreciate that about you, which is fine. I don't really think they appreciate it, which is fine. I think that being a unicorn kind of make things a little weird. We can be lonely from time to time. For some reason, it seems like that intimidation that some scholars of color have with the quantitative methods also becomes released on those scholars of color that are doing quantitative methods.

Feeling a sense of alienation because of her methodological expertise was not a new experience for Angela. Angela worked at a policy research institute for a year after completing her doctoral degree and before taking a postdoctoral appointment. During this position she noticed that projects were not assigned by expertise or interest.

There was a lot of racial tracking, if you will, in terms who got to do what kind of projects. African Americans tended to get pushed into technical assistance types of jobs where they were going to schools and teaching them how to give tests. The Caucasians

would end up in more management style positions and then Asian Americans and Asians would end up doing the sophisticated data analysis even though there are some of us African American women who came in with quantitative skillsets, we had to actually fight to get those kinds of positions. There was a real hierarchy and stratification system that was hard to break out of and so there was a clear glass ceiling that became painfully evident three months into the job that it was going to be really difficult to move up at that place.

Angela left the policy institute and began a postdoctoral appointment at a university renowned for social science research methodology training and research.

> It was such a beautiful place. Because you didn't walk into a room and you were the only one. You're in a room full of Black people that know how to use STATA. They know how to use SAS, and you could talk to them about methodology. That was a really exciting space to be in, because it was a space where it was, like, "Wow."

Angela and the other scholars of color she worked with during her postdoctoral appointment recognized the rarity and privilege to not be the "only" woman, Black person, or Black woman using sophisticated quantitative methods.

Kimiko also wrestled with defining her identity as a sociologist. Senior colleagues in her department encouraged her to strive to be a well-rounded sociologist that publishes work in multiple venues. She began to consider how to generate interest in her work in both the larger field of sociology and her sub-field. During one of our conversations she reflected on the evolution of her identity as a researcher.

> I definitely am now highly aware of how qualitatively oriented I am. When I finished my Ph.D., depending on the project, I thought I could go either way and part of it perhaps is

> because at that point I had done both [quantitative and qualitative research], but since then it really has been clear to me that the type of research project that pops in my head always somehow involves qualitative data collection. It is not so much that I think I really want to do interviews, but when I think about it there is a social phenomenon I want to study, this is how I want to study it and how to go about studying that, and always somehow end up in some form of qualitative data set. I noticed that I have been trying to resist it to some degree. I think I wanted to be a little more, again going back to "well-rounded." I did not want to be pigeonholed as a qualitative researcher but I guess I am. I think I am starting to accept that, at least as an inclination. I am starting to be aware of just how much more skillset training I would have to have in order to actually really do high quality quantitative research now.

In addition to viewing herself as primarily qualitative, Kimiko described herself as a predominantly independent researcher. More recently she has begun to recognize the benefits of collaboration, in particular collaborating with colleagues with more advanced quantitative research skills helped her realize that she does not have to know it all.

> I used to think, "All right I can't do it because I don't know how to do it," but then I realized, "Oh I don't have to do it. I can actually team up with somebody who actually can answer that or use that data," and I can still ask the question that I wanted to and am able to use the proper data set. That revelation actually has been pretty freeing to me.

She said she is comfortable discussing a quantitative project with her colleagues but when it comes time to do the analysis she feels unsure. Her confidence is the difference she sees between her approach to quantitative and qualitative research. She said, "I don't feel like I have that

hesitation with my qualitative work. I feel like I can stand on my own. I think that probably is what gives me the inclination to go for more qualitative work than quantitative."

Kimiko also described how her location influences her interests. She moved from a suburban area to an urban area and discussed the impact on her work.

> I certainly dropped the whole suburban idea and switched over to the urban partly because that's where I live. And I think maybe that by itself tells you that I'm an ethnographer by training, like, if I can't see the data, if I'm not around the people that I'm studying, somehow that's not really what I'm really interested in. I see something and I just go, "Oh, that's interesting. Let's study [it]."

Sophia's joint appointment in education and ethnic studies has posed some challenges for her in defining her scholarly identity. She is an active member of professional associations in both areas that have different types of work in addition to the regular logistical challenges of having commitments in different buildings across campus. She now positions herself as a sociologist of education specializing in Latino/a studies.

Similar to Sophia, Uma was trained in another discipline but has a faculty appointment in education. She said, "I always felt like a little bit of an outsider in education, and I typically explain to people, I'm a biologist in the School of Education." As s self-perceived outsider in education, Uma made theory to practice work the cornerstone of her research.

> I'm not trained as a theoretical educational researcher. For me, it's all about practice. I publish with teachers either at the undergraduate level or at the K-12 level. I see teachers as equals, equally valuable in contributing to the work. They may not know how to do all the analysis but they definitely know the implementation and how to help me develop the

> ideas and help with the final editing if I'm writing up the papers or presenting at conferences. That made me feel I was less of a poser again, posing as a teacher when I only really had one full year and then a couple of partial years when I was a teaching fellow.

Her experiences in academia as a child of academics, a student, and now as faculty taught her the impermanence of academic life and that if she ever needed to leave her department that she would probably return to biology.

> The only way I would be competitive is if I had a CV which biologists valued, not educational researchers. Those grants were really important. I don't fall into [a particular] paradigm. I do both inductive and deductive work. I do both qualitative and quantitative. The grant stuff has allowed me to do that. It's been a way for me to bridge my interests and to communicate with biologists, and communicate with other scientists who are valuing my work. When I submit things to just education journals, the only people who are reviewing it are educational researchers. When I send grant proposals off, I'm sending it to people who I really think are my peers… They're scientists who have an interest in education and improving education. They know that the only way to improve practice is through research. That's probably why I centered so much on grants because it was sort of that compromise, for me.

Stella was committed to doing it her "own way," from her time in her graduate program to becoming a faculty member. She wanted to have a life different than the lives of her faculty mentors. She saw their work-life balance as uneven, heavy on the work side without enjoying the fruits of their labor. In turn she thought her faculty mentors did not think she was serious enough which caused her to have low self-esteem about her abilities to get things done.

Stella described how the different elements of the research process contributed to her learning and built her confidence after completing her doctoral degree.

> I just jumped in to writing grants and writing papers. Suddenly I was getting invited to do things. Then I realized, like, "Oh, I can do this. I'm fine. I might not be doing it how [my mentor is] doing it, but I'm doing it in my own little domain and that's good enough for me." I mean it sounds trite, but [I] learned from my mistakes. I feel like, for me, research has been really a developmental process. Put stuff out there, get it accepted, get feedback, take the feedback, add to the next part of the puzzle, and just kind of rolling it into the next experience.

Stella has been a faculty member at three institutions over the course of her career. Through her experiences at these institutions she has been able to shape and become confident in her scholarly identity. She felt the least able to be herself and carve out who she was at her first institution. She said, "I spent a lot of time trying to monitor the environment and then do what the environment wanted me to do. But then it didn't really connect with who I was so there was sort of some dissonance there." The second institution was a much more positive experience in that she felt embraced and celebrated for her work allowing her to "do my own thing." Stella's confidence and clarity of her perspective have guided her career.

> Method, theory, it's always clear in my head why I'm doing what I'm doing. So it then becomes clear in [other] people's heads too. I, at some point along the way, adopted this confidence too of, "I'm getting a lot of work done and I'm bringing in a lot of money in the university. I'm writing articles. Students like me. I'm working. If that's not good enough, then screw you." I've never been obnoxious and spoken about it, but that's how I

have felt internally. “I’m giving you my best work here. If this isn’t good enough, I don’t want to be here anyway.”

The process of refining and further establishing their research identity was influenced by institutional context and climate as well as by the women becoming more and more confident in their abilities as researchers.

Methodological Approach

How the women approached their research now as faculty was influenced by both internal and external factors. Angela had some quite profound reflections on her methodological approach as a woman scholar of color.

> [Methods courses in the Population and Demography program] gave me a sense of the way that we can use quantitative methods to answer some of these empirical, theoretical questions that we have. It is not perfect by any stretch, but I started feeling like at that point scholars of color tend to end up, in some ways because we feel like our questions cannot be answered by quantitative research, so many of us go into qualitative work, which is fine but the problem is there is so few of us that have a voice in quantitative research and we bring a different and special perspective to quantitative research. I felt like I may not be able to perfectly answer some of these questions using quantitative research, I can at least bring my unique perspective in when interpreting the results that are quantitative. Up until very recently, race ethnic differences in [my field] were seen as an error term. It was seen as, “Well, if we cannot explain this all the way by income, then it is just error. The rest of it is just error.” And I am telling them it is not error. Are you kidding me? I felt like I wanted to bring a unique perspective and so I felt like taking these classes that allowed me to start thinking about what those kinds of perspectives

might be, but I do not think it really germinated, it just kind of was cultivated, like those seeds were planted in graduate school but they did not come to flourish until I became a postdoc.

Angela worked for a research institute the first year after obtaining her doctoral degree. The following year she had a postdoctoral research associate position at a prestigious university where she was surrounded by skilled scholars of color doing quantitative research. She said the return to academia was a "welcome home."

Angela was strategic in her approach to studying racial differences. She began by using comparison groups and controlling for race or stratifying race in her papers. Her approach allowed her to then later focus more specifically on African Americans.

Because I established myself as a legitimate quantitative researcher by publishing these papers, that were across-race papers, but then started moving into looking explicitly at African Americans. Then I think I will have to expand again, but in looking at different racial ethnic minority groups.

Angela shares her approach with the students of color she teaches and mentors. She said, "This is just the nature of the business. They are going to want to see a comparison group. I know that irritates you, but you really need to talk about this."

Anna shared how she viewed the role of her discipline, psychology, in the selection of her methodological approach.

I think in terms of becoming specifically a quantitative researcher, I think I feel like, based on my graduate training and really even my undergraduate training, I think that was the picture I had in my mind, kind of what research was. That is what I saw people doing around me. I liked doing that. I don't … I'm not sure how much there was an active

decision to become a quantitative researcher versus a qualitative researcher. I'm not sure that I knew that a qualitative researcher was something that you could be; at least not in psychology. I was aware there were qualitative researchers in anthropology and sociology and that kind of thing. To me, psychology was quantitative research.

As a faculty member, Anna was able to integrate qualitative elements into her quantitative research, which piqued her interest in exploring further qualitative types of data. Here she reflects on her preferences and decisions.

I do think probably there are certainly parts of me that like doing the quantitative side and doing the experimental side. I like the cleanness of the question and the cleanness of the answer you can get from a quantitative method or an experimental method. The downside is that you don't get the richness that you get often times from a qualitative methodology. As I've progressed through my career, I've started to be more interested in some of those other types of data as well. Yeah, again I don't know that it was a conscious decision exactly to be a quantitative researcher.

Faculty responsibilities of teaching and service influenced Kimiko's approach to doing her research.

All of that really restricted the amount of time that I could use for the type of qualitative data collection that I tend to do and certainly with ethnography. I really couldn't commit to being out at the [research site]. I just couldn't be there at a certain time. I started to be a lot more strategic and a lot less open ended in terms of my research questions. I started to be a little more hypothetical and deductive than just let's just go in and see what happens.

Kimiko decided interviews would be a more manageable and flexible form of data collection that would also produce manageable research projects. This has been the path Kimiko has pursued as she prepares for tenure and promotion to associate professor.

One of Stella's personal mantras that she shares with her students is "You can do whatever you want, as long you can explain it to me and make an argument on why that's the best approach." She came to this position after overcoming some of her own anxieties and hesitations of using feminist theoretical approaches.

> I felt a slight bit of censure, I don't know that I had the confidence to say, "Here's what I'm doing and why it's important." It's taken me a while to become more theoretically sophisticated, and also now I can really clearly and articulately explain what a theoretical perspective adds or what a feminist perspective adds. I don't know that when I was first starting out I had the confidence to articulate that. As a result, I would sometimes feel hesitant. Nobody ever said, "Don't use a feminist perspective," but I think because I had enough hesitation that I wasn't real strong.

Confidence, time, and disciplinary contexts each influenced how the women approach their research. The type of methodologist one could become was shaped by what is presumed possible in the discipline or field. Additionally, the women had to deal with the very real time constraints placed on their research by tenure and promotion preparation and other competing faculty demands.

Disciplinary Methodological Differences

The social and behavioral sciences have both sometimes rigid and sometimes quite fluid boundaries. For example, some institutions have departments that combine several social science areas into one unit while other institutions may have very large departments dedicated to one

discipline or field with several sub-units and specializations. Several of the women shared their experiences of moving across different disciplinary and field boundaries. Angela began her faculty career with a joint appointment between sociology and ethnic studies. Through the appointment, she thought she would be able to collaborate with other faculty in the ethnic studies department. However, that was not the case.

> The majority of the people in ethnic studies were in the humanities. I thought I was going to have a team of people that I could collaborate with. It turned out that the people who were social scientists, African American, and are doing work on race and ethnicity, most of them were not in ethnic studies.

Sophia had a similar experience. She has a joint appointment in ethnic studies and education, though she is trained as a sociologist. The ethnic studies program is small and her colleagues are in the humanities. She said, "It is difficult to collaborate because we just aren't trained the same and the disciplines are so different, but in the School of Education I have collaborated with different types of people and that has been really neat."

Anna was trained as a psychologist but her appointment is in educational psychology. Her research, which uses experimental methods, is well-received and lauded in psychology for its unique approach. However, the reception of her research is different in education.

> When I got into education, there was definitely more a view of experimental methods of you know as fake, that sort of, "Oh you're bringing people into a lab and you are doing this weird manipulation and that's not like the real world and instead you should really be looking at people out in reality, in classrooms and things like that." I think that's a place where my two different fields, of which I am a member, differ in terms of what they view as a desirable methodology. I do think education as compared to psychology, it's

certainly more welcoming of qualitative methods, at least compared to the psychology training that I had. Obviously, different psychology programs are different.

Stella, who is also in education, commented on the methodological diversity that is accepted in education.

> The more I go to interdisciplinary stuff on campus, I feel like we are years ahead of other disciplines with regard to paradigmatic openness and epistemological range in terms of how we think about research questions and openness to different methodology, and no longer having to defend something if it's not [a] randomized control trial.

Uma did not view the methodological openness of education in the same way as Stella. When she came into education from her natural science background she was not familiar with education and social science research methods.

> I didn't really know anything about research paradigms. I didn't really think about qualitative versus quantitative. I mean that language never entered my mind… until I entered the world of education. I think it's kind of a silly designation of quantitative or qualitative because it's not even one that's... it's not even a division related to concepts or constructs. It's how we answer questions. It doesn't matter what methods you use as long as you know what your question is and you're able to answer that question.

Uma also shared some of the misconceptions of educational research held by some people in the natural and physical sciences.

> In the natural sciences and physical sciences there's a real misunderstanding [of] what educational research is and definitely a very prevalent perception that it's non-rigorous research. There were plenty of people who also, I realized, did rigorous research [in education]. It's just that there were [an] equal number of people who stood out who, I

thought, what are they studying? I don't understand what those techniques are and the language of writing for an educational research journal is very, very different than natural science journals.

Uma had to transition her writing style from a natural science audience to a social science, educational research audience. She describes her transition.

> Now, I feel comfortable with my writing and I've always gotten reviews that I'm a strong writer, but I still am very, very cautious in my papers to say this is a bigger deal than what I think it is, because I was trained as a natural scientist, to not overly state any causation. My most consistent negative review when I submit papers is, "what's the "aha" moment?" "You need to problematize." Look, I don't think that's a word, but social scientists use it. (laugh) I've never seen so many people posit things as they do in educational research. No one posits anything in natural science research. When I did make a bigger deal, then things got published. I'm still trying to figure that out, but I think I figured it out… how I can do it in a comfortable way. I've kind of now slowly figuring out how I can compromise where I'm feeling true as a research scientist, but then feeling like I'm understanding that new community [of] practice of educational researchers. That's probably one of the biggest transitions.

Navigating the differences within and across academic areas posed many challenges but also seemed to allow these women to position themselves to be successful. The women had to learn the unique aspects of their departments and institutions in order to know how to situate their work.

Methodological Orientation of One's Department as Faculty

As faculty now, the women recognized their role in training future scholars and establishing the methodological orientation of their departments. Sophia teaches a statistics course but ensures her students appreciate the utility of other methodological approaches.

> Even though my brain likes the number crunching, I also make sure to let my students know that this is not the only way to answer your research questions. This is one way and partly because I have done interviews before, qualitative work, I make sure to tell them there are other ways to do this: one-on-one interviews, focus groups, ethnography. This is one way and this [is] currently how I do my work, but it is not the only way and it is not the perfect method either. No method is really, so even though we focus on the stats, I make sure to bring in conversations about how might we better answer the question you'd like to answer.

Angela shared Sophia's sentiment and reflected on how women of color scholars can be an example.

> Because I think that we also need to be examples for people, so that they can see that you can actually do quantitative research, and you can start to do qualitative stuff if you think that there are some aspects that you can actually address with your qualitative stuff. I think that as pedagogues, and as you move into pedagogy once you get your PhD, it's one of those things to think about seriously, how we can get that next generation of students of color thinking about different ways of education and different ways of approaching scholarship, then it might be the most normative way to go about it.

Angela's current department is heavily oriented towards quantitative methods. However, graduate students come to the program with a desire to do qualitative research.

> We're a department that doesn't even try to act like they're methodologically diverse. I mean, we are basically a quantitative department. Even though, interestingly, a lot of students, again, they come in wanting to do qualitative work. Some of them have a fear of numbers. Some of it is just, like, they don't know that there are other ways to do research and to students it seems easier. Qualitative work seems easier, which we know is not the case. If it's done well, it is not easy. I think students come in with this preconceived notion that it is easier. There is a disconnect in our program, although there is definitely a respect in our department of qualitative research.

Kimiko also acknowledged that, though there is respect for qualitative research in her current department, there seems to be a generational difference present.

> I think we are pretty split, but generationally speaking there is a slight weight on quantitative work among the older faculty maybe in terms of how they respond to the type of work that junior faculty are doing, but that is more of a subtle thing. I don't think they would come out and say, "I don't think your work is worthy because you are using photography" or anything of that nature. I can sort of see attending different talks how they respond to it, what kind of questions they ask, I can see them more engaging with the quantitative research maybe because that is what they are familiar with. It is not so much of a negative [stance] towards qualitative, I think it is more affinity towards quantitative and I think that is probably a generational comfort with that particular line of work.

Stella was a newly hired assistant professor and assigned to teach a qualitative methods course. As she was reviewing the syllabus and textbook used by the previous instructor, she had what she now recognized as an "epistemological moment."

> I wouldn't have framed it at the time but it was sort of an epistemological moment because the book they used in the previous syllabus had been very much teaching qualitative research from a quantitative perspective and that's not at all the way that I was taught. I think at first I really relied on, for all my initial teaching, it was very much tied to how I was taught and that was certainly the case for that class. Because I had taken a lot of research methods classes by people who I thought were experts and masters at the time and I really initially kind of replicated what they had [done] into my class.

Later in her career, Stella had the opportunity establish the methods curriculum and sequence for the college. The process entailed having numerous meetings with faculty from different departments and programs in the college. Stella said, "Those were pretty intense because when you're talking about methods, you're really talking about epistemology and people feel really strongly about what is the construction of knowledge and how to best teach it." As the meetings progressed, they began to dissect what is important for students to know to be prepared as graduates of the college but also to support their dissertation research.

> If everybody is getting their doctorate in education regardless of their sub-discipline, what are things people need to know? So, there was sort of a sense they had to have some background on history and philosophy and science epistemology, those kind of big topic conversations. They needed to know about the pragmatics of doing research regardless of whether it's quantitative or qualitative. Then there needed to be some sense of what the difference is between qualitative and quantitative. The idea was that everybody would take one quantitative and one qualitative and then they would need additional courses too.

Stella was able to influence the methodological training through her teaching and through creating policy and processes for student methodological training for all students in the college.

As faculty, the women have transitioned from learning and refining their personal research identity and approach to methodology to also shaping how future scholars learn about research and approach their work. They have come full circle from learning about research methods, utilizing research methods, teaching research methods, and influencing institutional policy and procedure on research methods.

Research Questions Answered

- What educational and professional experiences in the early careers of women faculty influence the selection of a particular methodological tradition? To what extent does the selection of a particular methodological tradition influence later career experiences and opportunities?

  There were three statistically significant predictors of a researcher primarily using mixed methods compared to primarily quantitative methods: undergraduate major in the life sciences, physical sciences, or business; a higher number of required methods courses in one's doctoral program; and an advisor that primarily used qualitative methods or mixed methods. Conversely, the statistically significant predictors of identifying with quantitative methods compared to mixed methods were a doctoral degree in psychology, a higher number of quantitative methods courses, and an advisor that primarily used quantitative methods.

  There were more statistically significant predictors in the qualitative – quantitative comparison than in the previous comparison. Participation in undergraduate research, having an undergraduate or doctoral degree in psychology, a higher number of quantitative methods courses, a higher quantitative research self-efficacy, and a primarily quantitative advisor were predictive of primarily quantitative methods usage. The

statistically significant predictors of primarily qualitative compared to primarily quantitative methods usage were the number of master's level math or statistics courses, the number of qualitative methods courses taken, and an advisor that primarily uses mixed or qualitative methods.

- How do women faculty in the social and behavioral sciences come to select a particular methodological tradition – quantitative, qualitative, or mixed? At what point(s) in their training and careers do they select their methodological approach?

During the course of the in-depth interviews the most influential experiences discussed by the six women studied were early opportunities to participate in the research process for those using primarily quantitative approaches and continued research experiences and opportunities throughout their doctoral program for of the women regardless of methodological preferences. These experiences were pivotal because they allowed the women to connect their emerging research interests with growing methodological expertise. Through their participation in the research process with faculty supervisors the positive feedback of success affirmed their continued development.

Methodological selection was most malleable during graduate study. The women were learning methods and practicing those methods in their milestone assignments and collaborative works at the same time as they were creating their own research identity. The key methodological decision time points were dissertation, pre-tenure, and post-tenure. The dissertation decision was often described as what is necessary to finish. Similarly, pre-tenure methodology decisions were made on the basis of ensuring productivity to meet tenure requirements. Post-tenure was viewed as a time of reflection

and opportunity in some cases to modify one's methodological approach to incorporate broader interests.

- For each of the above questions, to what extent and in what ways are the experiences of women of color similar to or different from the experiences of White women? How can these differences be better understood?

  Many of the women of color developed an interest in academia because of the connection between the social sciences and their personal beliefs, identity, concerns, and social realities. They came into contact with scholarship, most of which was qualitative or theoretical in nature, during their undergraduate programs that reflected their ideas and emerging research interests. Women of color took fewer quantitative courses during their graduate programs than White women. Their limited numbers within quantitative courses was a source of isolation both during the courses and beyond. There were challenges connecting with other scholars of color for the women of color that primarily used quantitative methods because of the different methodological approaches used by other scholars of color.

Chapter Summary

The data presented in this chapter from the survey and individual interviews highlight the socialization processes and experiences that influence the research methodology selection of women faculty in the social sciences. The survey data were analyzed using multinomial logistic regression to predict primary research methodology from undergraduate, graduate program, and graduate socialization experiences. The interview data from six women in education, sociology, psychology and ethnic studies chronicle the research methodology selection process as the women moved through the four sections in this chapter: undergraduate experiences, graduate

program experiences, graduate socialization experiences, and becoming novice professional practitioners. The following chapter will include a discussion of the results and findings connected to extant literature, a summative answering of the study's research questions, and will address implications for social science graduate programs, deans, and research methods professors.

Chapter V: Discussion, Implications, and Conclusions

The purpose of this study was to gain an understanding of the educational and socialization experiences that influence the research methods selected by women faculty in the social and behavioral sciences. The key educational experiences that were found to influence research methodology selection were having an undergraduate major and doctoral degree in psychology, the quantity of methods courses taken during their graduate programs, and the doctoral advisor's primary research methodology. The socialization process into a particular methodological approach began during undergraduate study through early research experiences and was solidified, and sometimes redirected, during graduate study through the practice of research. This socialization process continued after the completion of the doctoral program into the women's faculty careers influenced by their work with students, their disciplinary communities, and coming into their own faculty research identity. This chapter discusses these findings in connection with prior research and provides implications for future research and practice.

Role of Undergraduate Research and Curricular Experiences

Induction and acclimation to the academy begins during undergraduate study. Select undergraduate education opportunities and experiences, including undergraduate major and research participation, had an impact on the women's later research methodology selection. It was during the undergraduate years that the women were attracted to their fields of study, which helped to situate their thoughts and ideas into the larger scholarship community. There were two main elements of the undergraduate experience that influenced research methodology selection;

undergraduate major and early opportunities to engage in research. The women were oriented to the ideas and topics of their discipline or field through their undergraduate major. While some women pursued graduate study in the same area as their undergraduate major, many transitioned into other areas for graduate study. The women were also exposed to the elements of the research process and methodology through undergraduate research experiences.

Exposure to methodological approaches and epistemology during the undergraduate program provided a foundation for later exposure and further training during graduate study. Examining the women's academic trajectories and comparing the disciplines like psychology and sociology to broader fields like education allows them to see the rigidity and fluidity within and across disciplines and fields.

Undergraduate major was predictive of the ultimate choice of primary research methodology. The women selected their undergraduate majors after developing formative relationships with faculty and a connection to the ideas and themes presented in their courses. Specifically, an undergraduate major in psychology was predictive of primarily quantitative research methodology and an undergraduate major in the life sciences, physical sciences or business was predictive of primarily mixed methods research. Psychology, sociology, and education were the undergraduate major categories that directly aligned with a doctoral degree area. Most women continued their graduate training in the same area as their undergraduate major. While women with an undergraduate major in one of the other categories (life sciences, physical sciences, and business, humanities, and other social science) most often transitioned from these areas and obtained a doctoral degree in education. Psychology is more methodologically rigid as a discipline in favor of quantitative methods compared to sociology and education (Alise & Teddlie, 2010). Thus, the exposure to quantitative methods as an

undergraduate had an influence on the ways the women chose to approach their own research later. Similarly, the women with undergraduate majors in the life sciences, physical sciences, and business were able to incorporate the diversity of thought and exposure to different approaches into their work by ascribing to a primarily mixed methods approach in their faculty careers.

Additionally, it is important to note that undergraduate research experience was statistically significant in the qualitative - quantitative comparison. The women in the interview sample that participated in research as undergraduates were all involved in quantitative projects with only one mentioning gaining experience in a qualitative project as well. It may be that there are more quantitative research opportunities for undergraduate students compared to qualitative research opportunities. Participation in undergraduate research experiences working with faculty on projects, participating in summer research programs, and individual student research projects or theses provided an advantage, a familiarity with the research process prior to entering a graduate program. This is consistent with the literature emphasizing the experience of learning about and actively participating in the research process while also committing to a career in academia (Hunter et al., 2007; Corcoran & Clark, 1984). Furthermore, extending Hunter et al., (2007) to subject areas beyond STEM to the social sciences, early research experiences enhance professional socialization into academia.

Influence of Graduate Program Faculty

Graduate program faculty had a profound impact on the research methodology selection of women faculty. From the survey data, advisor's primary research methodology was predictive of student research methodology across all methodology comparisons. There could be the potential of self-selection, in that the advisor is selected based on methodological preferences or

even self-selection into a graduate program with a particular methodological orientation. In particular, advisors that primarily used quantitative methodology most often had students that also primarily used quantitative methodology. The reproduction of same-methodological tradition students serves as an example of the methodological silos that can develop within academia. It is unsurprising that after collaborating with a faculty advisor throughout the course of doctoral study that the student would also use the same types of methods in her own work. However, both students and faculty should be cognizant of the types of research they are exposed to and use to inform their work. This was particularly true in Anna's experience. As a student in psychology all she saw was quantitative research being conducted in her program and lab and she did not see that becoming a qualitative researcher was something that she could become within psychology because as she said, "Psychology is quantitative."

Graduate program faculty have a significant role in establishing the methodological rigidity or fluidity of their programs, both formally and informally. The formal establishment of course requirements and methods course availability are the responsibility of the faculty. Having more methods courses required predicted students' primarily using mixed methods when compared to quantitative methods. Unsurprisingly, the number of quantitative methods courses taken was predictive of primary quantitative methods used when compared to primarily qualitative methods. Encouraging, through requirements, students to take more methodological coursework can expose them to a broader range of research approaches and gives them more time to think critically about their approach to research.

Additionally, through informal conversations with students, faculty signal what methodological approaches are appropriate for students to learn and pursue. Sophia and Angela both had profoundly impactful experiences of faculty discouraging their methodological choices

during their graduate programs. It may be that faculty are unaware of their methodological biases or are giving advice based on their inability to support students using different methods. However, the tone those conversations could be improved to ensure a more favorable impact. For example, Sophia discussed how serving as an advisor to students that are using different methods than her own has been an opportunity to learn about her own biases and expand her knowledge base.

Graduate program faculty can use their influence to guide students directly as their primary advisors or methods professors or indirectly by establishing methods course requirements for program graduates. They can also encourage their students to broaden and deepen their repertoires.

Continued Post-Doctoral Methodological Development

Some of the women began faculty careers immediately after completing their doctoral degrees while other women pursued administrative or postdoctoral scholar positions before beginning their faculty positions. The transition from student to faculty required the women to solidify their research identity. The women began to publish work stemming from their dissertation but they also had to develop new projects and collaborations. The pre-tenure period placed some limitations on the type of research they could explore. In order to obtain tenure, they needed to be as productive as possible while also addressing the competing demands for their time -- teaching, faculty meetings, working with students, and university and disciplinary service. This was a challenge primarily for Kimiko as she was interested in ethnography. She found it challenging to have large blocks of available time to immerse herself in the communities she was researching. Also, being on the tenure-track and not having long-term security in her position made her hesitant to imagine long-term projects. As the women approached and

obtained tenure, they reflected on the opportunity to assess their research and imagine their next steps. Many of the women discussed incorporating other methodological approaches into their work through their own continued study or through collaborating with peers.

The women also continued their methodological training by attending training institutes or conferences to expand their expertise. Collaborating with students and other faculty was a learning experience as well. These learning experiences allowed the women to build new collaborative relationships and capitalize on older relationships.

Research methodology selection is not a singular decision but rather a series of decisions influenced by personal research interests, experiences, expertise, and professional demands. The findings of this study highlight the evolution of women scholars' methodological decisions over time.

Recommendations for Future Research

The current study examined the process of research methodology selection of women faculty in the social sciences. A mixed methods approach was employed beginning with multinomial logistic regression to analyze original survey data followed by an in-depth, three interview sequence with a subsample of participants. A future study could seek to further understand the relationship between tenure and promotion and research methodology approach. In what ways do faculty continue or modify their research trajectories after tenure and promotion to associate professor and in preparation for later promotion to professor? Additionally, this study focused on people that have successfully matriculated in a doctoral program and obtained and often been promoted in a tenure-track faculty position at a research university with very high research activity. However, what about those that opt-out of the professoriate pipeline or are

denied tenure at such an institution. How could research methodology and research self-efficacy be involved in those experiences?

Future studies could also replicate this study with different populations. The sample for this study was limited by gender, discipline, and type of research institution. Modifications of each sample limitation would increase what is known about the experiences that influence how and why people choose to conduct research in certain ways. Women are overrepresented in the social sciences (Charles & Bradley, 2009). For men that pursue research careers in the social sciences, it would be interesting to explore how their experiences influence their research methodology choices using the results of this study for comparison. The disciplines and fields selected for this study were sociology, psychology, education and women's studies. These areas are broad with many different methodological approaches employed. A replicate study could explore other disciplines and fields within the social sciences, for example political science, anthropology, or geography. Lastly, this study sample was limited to women in faculty positions at institutions classified as having very high research activity. Could it be possible that faculty at other types of institutions have a different approach to their research? Research methodology may play a different role in their careers. These potential studies could extend what is known about the research approaches of social science researchers.

Implications for Theory and Practice

The findings of this study highlight the types of educational and socialization experiences that influence research methodology selection of women faculty. There are important implications for research preparation and training and participation in scholarly discourse.

The dominant recommendation for students' when selecting the appropriate research method for a project is that the question determines the method. However, this line of thought negates the role of prior experiences and training in developing research questions and how early methods predilections influences the selection of an appropriate research approach. This study highlights the important role of early and continued exposure to a variety of methodological approaches. The classroom is often the principal site of preparation to form and answer students' current and future questions. However, it is also important for students to have opportunities to apply what they learn outside of the classroom with the opportunity to make mistakes through collaborative research projects. Additionally, training and exposure obtained during graduate study may not manifest immediately in the research practice of doctoral students and early career faculty but may be used later. Thus, it is important for graduate students to learn and gain experience using methods that they may not use in their current research. Students should be prepared to answer both current and future questions.

Exposure to and familiarity with multiple research methods during training has the added benefit of allowing the researcher to participate more fully in scholarly discourse. Scholarship communities create norms and sanction what is valuable and appropriate. The influence of the scholarship community is present throughout the research process. The starting and end point is the research literature: from the literature a researcher is influenced by what she reads and begins to develop a question based on a gap in the literature. What she reads, the authors, the journals, the types of studies and theories presented, are all expressions of the language of her discourse community that will influence her questions, studies, manuscripts, and presentations. If she is able to understand and communicate with more people the more influences she has and the greater the likely reach of her work. Faculty and administrators with influence over the graduate

student experience should encourage students to become conversant across broad methodological traditions. Angela, for example, was able to craft her space as a unique type of sociologist because of her experiences in different scholarship communities. She was able to incorporate elements from the different areas into her work to answer questions yet to be asked from a sociological perspective.

Conclusion

The purpose of this study was to understand and reconstruct the research methodology selection process of women faculty in the social sciences. An explanatory sequential design was used in which quantitative survey data was collected first, followed by in-depth qualitative interviews to further understand the phenomenon of research methodology selection. During the initial phase, quantitative survey data collected using the Survey of Research Methodology Selection of Women Faculty in the Social Sciences (SRMS) developed by the author. This survey was used to (1) identify variables predictive of research methodology selection; and (2) identify relationships and experiences that differed by race and ethnicity. Multinomial logistic regression was used to analyze the survey data from the 198 participants.

In the second phase, in-depth phenomenological interviews with a sub-sample of six women were used to further explore the process, experience, and the impact of research methodology selection on the careers of women faculty in the social sciences. The key educational experiences that were found to influence research methodology selection were undergraduate major and doctoral degree in psychology, the quantity of methods courses taken during the graduate program, and the doctoral advisor's primary research methodology. The socialization process into a particular methodological approach began during undergraduate

study through early research experiences and was solidified but sometimes modified during graduate study through the practice of research. This socialization process continued after the completion of the doctoral program into the women's faculty careers influenced by their work with students, their disciplinary communities, and coming into their own faculty research identity.

Appendix A

Carnegie Classification of Research Universities with Very High Research Activity (n=108)

Arizona State University
Boston University
Brandeis University
Brown University
California Institute of Technology
Carnegie Mellon University
Case Western Reserve University
Colorado State University
Columbia University in the City of New York
Cornell University
CUNY Graduate School and University Center
Dartmouth College
Duke University
Emory University
Florida State University
George Washington University
Georgetown University
Georgia Institute of Technology-Main Campus
Georgia State University
Harvard University
Indiana University-Bloomington
Iowa State University
Johns Hopkins University
Louisiana State University and Agricultural & Mechanical College
Massachusetts Institute of Technology
Michigan State University
Mississippi State University
Montana State University
New York University
North Carolina State University at Raleigh
North Dakota State University-Main Campus
Northwestern University
Ohio State University-Main Campus
Oregon State University
Pennsylvania State University-Main Campus
Princeton University
Purdue University-Main Campus
Rensselaer Polytechnic Institute
Rice University
Rockefeller University
Rutgers University-New Brunswick
Stanford University
Stony Brook University
SUNY at Albany
Texas A & M University
The University of Tennessee
The University of Texas at Austin
Tufts University
Tulane University of Louisiana
University at Buffalo
University of Alabama at Birmingham
University of Alabama in Huntsville
University of Arizona
University of Arkansas
University of California-Berkeley
University of California-Davis
University of California-Irvine
University of California-Los Angeles
University of California-Riverside
University of California-San Diego
University of California-Santa Barbara
University of California-Santa Cruz
University of Central Florida
University of Chicago
University of Cincinnati-Main Campus
University of Colorado at Boulder
University of Connecticut
University of Delaware
University of Florida
University of Georgia
University of Hawaii at Manoa
University of Houston
University of Illinois at Chicago
University of Illinois at Urbana-Champaign
University of Iowa
University of Kansas
University of Kentucky
University of Louisville
University of Maryland-College Park
University of Massachusetts Amherst
University of Miami
University of Michigan-Ann Arbor
University of Minnesota-Twin Cities
University of Missouri-Columbia
University of Nebraska-Lincoln
University of New Mexico-Main Campus
University of North Carolina at Chapel Hill
University of Notre Dame
University of Oklahoma Norman Campus
University of Oregon
University of Pennsylvania
University of Pittsburgh-Pittsburgh Campus
University of Rochester
University of South Carolina-Columbia
University of South Florida-Tampa
University of Southern California
University of Utah
University of Virginia-Main Campus
University of Washington-Seattle Campus
University of Wisconsin-Madison
Vanderbilt University
Virginia Commonwealth University
Virginia Polytechnic Institute and State Univ.
Washington State University
Washington University in St Louis
Wayne State University
Yale University
Yeshiva University

Appendix B

Initial email invitation

Subject: Survey of Women Faculty in the Social Sciences

Dear [Participant]

I am writing to invite you to participate in a survey of women faculty in the social and behavioral sciences as a part of my dissertation research at the University of Washington. I am asking women faculty in Sociology, Psychology, Education, and Women's Studies at research universities to reflect on your educational and graduate school socialization experiences.

Your responses to this survey are very important and will help advance the understanding of the educational experiences prior to and during graduate school that influence faculty becoming qualitative, quantitative, or mixed methods researchers. This survey is part of a larger mixed methods study and will ask you to respond to questions about your educational experiences, performance, and research productivity.

The survey should take approximately 30 minutes to complete. Please click on the link below to go to the survey website (or copy and paste the survey link into your internet browser).

Survey link: http//www.surveymonkey.com/123567

Taking part in this study is voluntary. Participants can stop at any time and all information is confidential. If the results of the study are published or presented, I will not use the names of the people, names of the universities, or any other information that would identify participants. If you have any questions about your rights as a research participant, please contact the University of Washington Human Subjects Division: 206-543-0098.

Thank you for considering this opportunity. Should you have any questions or concerns, please do not hesitate to contact me by phone 405-503-5561 or via email at tjbrown1@uw.edu.

Many thanks,

Tiffany J. Brown

Doctoral Candidate
Educational Leadership and Policy Studies
College of Education
University of Washington

UNIVERSITY OF WASHINGTON COLLEGE OF EDUCATION

SURVEY PARTICIPANT CONSENT FORM

Investigator: Tiffany J. Brown
College of Education
Educational Leadership and Policy Studies
tjbrown1@uw.edu
Phone: 405-503-5561
Faculty Sponsor: Joe Lott jlott1@uw.edu 206-685-9204

INVESTIGATOR'S STATEMENT

I am writing to invite you to participate in an online survey of women faculty in the social and behavioral sciences as a part of my dissertation research at the University of Washington. The purpose of this consent form is to give you the information you will need to help you decide whether or not to be in the study. Please read the form carefully. You may ask questions about the purpose of the research, what I would ask you to do, the possible benefits and risks, your rights as a volunteer, and anything else about the research or this form that is not clear. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." You may print a copy of this form for your records.

PURPOSE

The main purpose of this study is to learn about educational experiences prior to and during graduate school that influence faculty becoming qualitative, quantitative, or mixed methods researchers. I may use what I learn from this study to help me with future research.

PROCEDURES

The Survey of Research Methodology Selection of Women Faculty in the Social Sciences asks you to respond to questions about your educational experiences, performance, and research productivity. The survey should take approximately 30 minutes to complete. You may find it useful to have your curriculum vitae (CV) nearby to help you answer some of the questions in a timely manner. The survey contains 61 questions. Your responses will be combined with those of other participants and will be reported as group averages. Your individual responses will be kept confidential, identified only number, and never connected with your name in any report. No faculty will be individually identified in any of the analyses or reports.

RISKS, STRESS, OR DISCOMFORT

Some people feel that providing information for research is an invasion of privacy. I have explained below how I will protect your privacy, and have made every effort to construct interview questions that will not make you feel uncomfortable. Some people feel self-conscious when notes are taken or interviews recorded.

BENEFITS OF PARTICIPATION

This study may shed light on how women faculty select their research methodology. You may not directly benefit from taking part in this research study.

CONFIDENTIALITY OF RESEARCH INFORMATION

Information about you is confidential (meaning I will not reveal to anyone the identity of the people whom I gathered data, nor use the data in the way that would allow people to be identified). I will code the study information so people and institutions cannot be identified. I will keep the link between your name and the numerical code in a secured location until June 2015. Then I will destroy the information linking your identification to the numerical code. If the results of this study are published or presented, I will not use your name or institution.

Government or university staff members sometime review studies such as this one to make sure they are being done safely and legally. If a review of this study takes place your records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

OTHER INFORMATION

You may refuse to participate and you are free to withdraw from this study from this study at any time without penalty. You do not have to answer questions you do not want to answer.

My funding is not sufficient to compensate everyone. However, as a token of my appreciation for your participation, you may enter your name into a random selection for the following cash payments after completing the survey

* One $500 cash payment
* Two separate $250 cash payments

I anticipate the random selection will be held around July 1, 2013. You will be asked to submit an email address so that you can be contacted in the event that you are selected. Your email address will be stored separately from your survey responses. In addition, I will produce a report of my findings that you can elect to receive.

If you have questions about this research study, please contact Tiffany J. Brown at the telephone number or email address listed at the top of this form. If you have any questions about your rights as a research subject, please contact the University of Washington Human Subjects Division: 206-543-0098.

Thank you very much for your cooperation.

Participant's Statement

This study has been explained to me. I volunteer to take part in this research. I have had a chance to ask questions. If I have questions later about the research I can ask the investigator listed above. If I have questions about my rights as a research subject I can call the University of Washington Human Subjects Division at (206)543-0098. Please print off this form to keep for your records.

You must be 18 years of age or older to consent to take part in this research study. If you have read and understand the above statements, please click the "Yes" button below to indicate your consent to participate in this study.

Do you consent to participate in the study described above? (Click one)

- ☐ Yes
- ☐ No

INTRODUCTORY PAGE OF THE SURVEY – AFTER CONSENT

Survey of Research Methodology Selection of Women Faculty in the Social Sciences

Conducted by

Tiffany J. Brown

University of Washington

Thank you for participating in this research on women faculty. You are one of a select number of women faculty in four social science disciplines and fields representing twenty-five research universities. Your participation is critical for the success of study and will inform scholarship about the educational and socialization experiences that influence research methodology selection.

Tiffany J. Brown is a doctoral candidate in Educational Leadership and Policy Studies at the University of Washington. The main purpose of this study is to learn about educational experiences prior to and during graduate school that influence faculty becoming qualitative, quantitative, or mixed methods researchers.

My funding is not sufficient to compensate everyone. However, as a token of my great appreciation for your participation in the study, you may enter your name into a random selection for the following cash payments after completing the survey

* One $500 cash payment
* Two separate $250 cash payments

I anticipate that the random selection will be held around July 1, 2013. In addition, I will produce a report of my findings that you can elect to receive. Thank you very much for your cooperation.

Appendix C

A Background Demographic information

1A When were you born?

i Year

2A Please mark the race or ethnicity which you think applies to you best?

i Latino

- Mexican, Mexican American, Chicano
- Cuban, Cubano
- Puerto Rican, Puertoriqueno,
- Other Latino (please specify)_____

ii African American/ Black, not of Hispanic origin

iii Asian or Pacific Islander (please specify)

- Chinese
- Filipino
- Japanese
- Korean
- Vietnamese
- Southeast Asian (Laotian, Cambodian/ Kampuchean, etc.
- Pacific Islander
- East Indian/ Pakistani
- Other Asian (please specify) _____

iv Middle Eastern (please specify) _____

v American Indian/ Native American/ Alaskan Native

- Tribe_____

vi White, not of Hispanic origin

vii Mixed race or mixed ethnicity

- Please specify _____

viii Race not included above (please specify)_____

3A Where were you born?

i City State Country

4A What is your gender?

i Woman

ii Man

5A Is English your native language?

i Yes

ii No

B Undergraduate Education Experiences

1B What was your undergraduate major?

i open space

2B Did you have an undergraduate minor?

i Yes (please specify)

ii No

3B When did you earn your bachelor's degree?

i MM YYYY

4B Were you required to take any developmental (remedial) education courses, i.e., mathematics, reading, or writing before you could enroll in college-level courses?

i Yes
ii No
- If so, which subject area(s)? For each area please note the number of courses you had to take before taking college-level courses.
  - Mathematics ##
  - Reading ##
  - Writing ##
  - Other (please specify) ##

5B How well do you feel your high school classes prepared you for college-level classes?
i not prepared at all
ii poorly prepared
iii somewhat prepared
iv moderately prepared
v very prepared
vi no opinion

6B How many math or statistics courses did you take during your undergraduate program of study?
i ##

7B Did you participate in any undergraduate research programs or activities?
i If so, please describe the type of project.

8B How many years elapsed between the time you completed your baccalaureate degree and beginning your master's degree?
i ## (in years)

C Master Level Graduate School Experiences

1C What was your Master's degree area and/or specialization?
i open space

2C When did you earn your master's degree?
i MM YYYY
ii Not Applicable

3C How well do you feel your undergraduate classes prepared you for graduate study at the master's level?
i not prepared at all
ii poorly prepared
iii somewhat prepared
iv moderately prepared
v very prepared
vi no opinion

4C How many mathematics or statistics courses did you take during your master's program of study?
i ##

5C Did you have an assistantship during your master's program?
i Yes
ii No
iii If so, what type of assistantship did you have during your master's program?
- Research Assistantship
- Teaching Assistantship
- Practitioner/ Administrative Assistantship

6C How many years elapsed between graduating with your master's degree and beginning your doctoral degree?
i ## (in years)

D Doctoral Education Experience

1D In which of the following disciplines/ fields did you earn your doctoral degree?
- i Education
- ii Gender and Women Studies
- iii Sociology
- iv Psychology
- v Other (please specify) _____

2D What is your doctoral area of specialization?
- i open space

3D When did you earn your doctoral degree?
- i MM YYYY

4D How well do you feel your master's level courses prepared you for doctoral-level study?
- i not prepared at all
- ii poorly prepared
- iii somewhat prepared
- iv moderately prepared
- v very prepared
- vi no opinion

5D What kind of financial support were you offered during your doctoral studies? (Check all that apply) Please note the number of years of support for each type of support you were offered.
- i Fellowship ##
- ii Research Assistantship ##
- iii Teaching Assistantship ##
- iv Administrative/ Practitioner Assistantship ##
- v Tuition/ Fees Waiver ##
- vi Loans ##

6D Did you participate in a research group or team during your doctoral program?
- i Yes
- ii No
- iii If so, what research methods were employed? Please check all that apply.
  - Quantitative
  - Qualitative
  - Mixed Methods

7D How many research methods courses were <u>required</u> by your doctoral degree program?
- i one
- ii two
- iii three
- iv four
- v five or more

8D How many <u>quantitative</u> methods courses did you take?
- i zero (If zero, skip to question 10D)
- ii one
- iii two
- iv three
- v four
- vi five or more

9D The following questions ask about how confident you felt in your abilities to conduct <u>quantitative research</u> after taking your <u>quantitative</u> courses.

i Formulate a clear quantitative research question or testable hypothesis?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

ii Choose a research design that will answer a set of research questions and/ or test a set of hypotheses about some aspect of theory or practice?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

iii Design and implement the best measurement approach possible for your study of some aspect of theory or practice?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

iv Design and implement the best data analysis strategy possible for your study of some aspect of practice?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

v Effectively present your study and its implications?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

10D How many qualitative methods courses did you take?

i zero (If zero, skip to 12D)
ii one
iii two
iv three
v four
vi five or more

11D The following questions ask about how confident you felt in your abilities to conduct <u>qualitative research</u> after taking your <u>qualitative</u> courses.

i Formulate a clear qualitative research question?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

ii Choose a research design that will answer a set of research questions about some aspect of theory or practice?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

iii Design and implement the best measurement approach possible for your study of some aspect of theory or practice?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

iv Design and implement the best data analysis strategy possible for your study of some aspect of practice?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

v Effectively present your study and its implications?
- Not confident at all
- Slightly confident
- Somewhat confident
- Quite confident
- Extremely confident
- No opinion

12D Did you take a methodology course(s) specifically addressing mixed methods research?
i Yes
ii No

13D Some departments specialize in training their students one methodological tradition more so than others. Was one method tradition emphasized over another in your graduate program/ department?
i Yes
ii No
iii If so, which method tradition?

14D Some professional associations, inter-university groups, and organizations offer supplemental research methods training workshops in the summer or before or after a conference e.g., ICPSR- Summer Program in Quantitative Methods, APA- Quantitative Training for Underrepresented Groups, AIR- National Data Institute. Did you participate in any research methods training workshops in addition to the courses offered by your institution or department?

i Yes (please specify) _____

ii No

E Scholarly Productivity and Engagement- Doctoral Level

1E Did you attend the annual meetings or conferences of any professional associations during your doctoral program?

i Yes

ii No (If no, Go to 3E)

iii If so, on average how many conferences did you attend each year?

- one
- two
- three
- four
- five or more

2E How many research papers and/or posters did you present at regional or national conferences? Indicate the research methods used.

i # quantitative

ii # qualitative

iii # mixed

iv # total (summation box)

3E How many articles did you publish in refereed journals and what research methods were employed?

i # quantitative

ii # qualitative

iii # mixed

iv # total (summation box)

4E How many first-author publications did you have as a doctoral student? What research methods were employed?

i # quantitative

ii # qualitative

iii # mixed

iv # total (summation box)

5E <u>During</u> your doctoral program, how many times did you do the following activities

i Published a book review

- ##

ii Published chapters in an edited volume

- ##

iii Submitted a research article for publication

- ##

iv Published a book

- ##

v Applied for an external research grant with a faculty member

- ##

vi Received an external research grant with a faculty member

- ##

F Advising and Mentoring – Doctoral Level

1F A faculty or research advisor is a person assigned by your department/ program to act in an official capacity in such ways as discussing and approving your coursework, or signing registration forms. Please check one response on each line regarding your faculty or research advisor.

2F Is your faculty/ research advisor the same gender as you?

i Yes
ii No

3F Is your faculty/ research advisor the same race as you?

i Yes
ii No

4F How would you describe your faculty/ research advisor's primary research methodology?

i Primarily Quantitative Research
ii Primarily Qualitative Research
iii Primarily Mixed Methods Research

5F Many doctoral students have someone to whom they turn for advice, to review a paper, or for general support and encouragement. This person may be thought of as a mentor. If you had more than one mentor during your doctoral studies, please comment on the one with whom you worked most closely.

6F Did you have a faculty member that served as your mentor?

i Yes
ii No (If no, Go to 13F)

7F Was your mentor the same person as your faculty advisor?

i Yes (If Yes, Go to 9F)
ii No

8F Was your mentor on the faculty at the same institution you earned your doctoral degree?

i Yes
ii No

- If no, briefly describe how you met your mentor.
  - Open space

9F How would you describe your mentor's primary research methodology?

i Primarily Quantitative Research
ii Primarily Qualitative Research
iii Primarily Mixed Methods Research

10F Please check one response on each line regarding your mentor.

11F Is your mentor the same gender as you?

i Yes
ii No

12F Is your mentor the same race as you?

i Yes
ii No

G Postdoctoral Academic Productivity- The following section asks about your research production since obtaining your doctoral degree. You may find it helpful to have your curriculum vitae (CV) accessible to help you answer the following questions.

1G Have you participated on a research team since completing your doctoral degree?

i Yes
ii No (If no, Go to 3G)
iii What research methods were used? _____

2G Are you currently a participant on a research team?

i Yes
ii No

iii What research methods are used? _____

3G How many research papers and/or posters have you presented at regional or national conferences and what research methods were used?

i # quantitative
ii # qualitative
iii # mixed
iv # total (summation box)

4G How many articles have you published in referred journals and what research methods were employed?

i # quantitative
ii # qualitative
iii # mixed
iv # total (summation box)

5G Since earning your doctoral degree, how many times have you done the following activities

i Published a book review
- ##

ii Published chapters in an edited volume
- ##

iii Submitted a research article for publication
- ##

iv Published a book
- ##

v Applied for an external research grant
- ##

vi Received an external research grant
- ##

H Professional Information

1H Did you have a postdoctoral research associate position after completing your doctoral degree?

i Yes
ii No

2H How would you describe your primary research methodology?

i Primarily Quantitative Research
ii Primarily Qualitative Research
iii Primarily Mixed Methods Research

3H What is your present academic rank?

i Assistant Professor
ii Associate Professor
iii Professor
iv Emerita
v Other (please specify) _____

4H What is your principal activity in your current position at this institution?

i Administrative
ii Teaching
iii Research
iv Other (please specify)_____

5H How many years have you worked at your current institution?

i ## (in years)

6H What is your current status at this institution?

i Tenured
- When did you earn tenure?
  - MM YYYY
  - Not Applicable
- If applicable, when were you promoted to professor?
  - MM YYYY
  - Not Applicable

ii On tenure track, but not tenured
iii Renewable Contract Instructor (e.g. Adjunct)

7H Have you ever taught a research methods course?
i Yes
ii No
iii If so, please list the title(s) and a brief description(s)

I Closing

1I Are there any experiences that you feel were pivotal to your development as a quantitative/ qualitative/ or mixed methodologists that have not been captured in the preceding questions? If so, please share below.
i Open space (large box)

2I This survey is part of a larger mixed methods survey. If you would be interested in participating in or would like more information on the qualitative follow-up interview, please include your contact information.
i Name
ii Email
iii telephone number

3I For your participation I would like to provide you with a report of the findings. If you would like to receive this report, please include your contact information
i Name
ii Email

4I Your participation is greatly appreciated. My funding is not sufficient to compensate everyone. However, as a token of my appreciation for your participation, you may enter your name into a random selection for one of three cash payments. I anticipate that the random selection will be held around July 1, 2013.
i Name
ii Email

Appendix D

Qualitative Interview Invitation and Consent Form

Initial email invitation

Subject: Women Faculty in the Social Sciences Interview

Dear [Participant]

I am writing to invite you to participate in a research project on the research methodology selection of women faculty in the social and behavioral sciences as a part of my dissertation research at the University of Washington. I am asking women faculty in Sociology, Psychology, Education, and Women's Studies at research universities to reflect on your educational and graduate school socialization experiences.

Your participation is very important and will help advance the understanding of the educational experiences prior to and during graduate school that influence faculty becoming qualitative, quantitative, or mixed methods researchers. The interviews are part of a larger mixed methods study and will ask you to respond to questions about your educational experiences, performance, and research productivity.

There will be three individual interviews scheduled during a time that is convenient for you. Each interview will last approximately 45 minutes to one hour.

Taking part in this study is voluntary. Participants can stop at any time and all information is confidential. If the results of the study are published or presented, I will not use the names of the people, names of the universities, or any other information that would identify participants. If you have any questions about your rights as a research participant, please contact the University of Washington Human Subjects Division: 206-543-0098.

If you interested in participating or have any questions or concerns, please do not hesitate to contact me via email at tjbrown1@uw.edu or by phone 405-503-5561.

Thank you for your consideration.

Tiffany J. Brown

Doctoral Candidate
Educational Leadership and Policy Studies
College of Education
University of Washington

Appendix E

UNIVERSITY OF WASHINGTON COLLEGE OF EDUCATION

PARTICIPANT CONSENT FORM

Individual Interview

Investigator: Tiffany J. Brown
College of Education
Educational Leadership and Policy Studies
tjbrown1@uw.edu
Phone: 405-503-5561
Faculty Sponsor: Joe Lott jlott1@uw.edu 206-685-9204

INVESTIGATOR'S STATEMENT

I am writing to invite you to participate in a survey of women faculty in the social and behavioral sciences as a part of my dissertation research at the University of Washington. The purpose of this consent form is to give you the information you will need to help you decide whether or not to be in the study. Please read the form carefully. You may ask questions about the purpose of the research, what I would ask you to do, the possible benefits and risks, your rights as a volunteer, and anything else about the research or this form that is not clear. When all your questions have been answered, you can decide if you want to be in the study or not. This process is called "informed consent." I will give you a copy of this form for your records.

PURPOSE

The main purpose of this study is to learn about educational experiences prior to and during graduate school that influence faculty becoming qualitative, quantitative, or mixed methods researchers. I may use what I learn from this study to help me with future research.

PROCEDURES

I am asking women faculty in Sociology, Psychology, Education, and Women's Studies at research universities to reflect on your educational and graduate school socialization experiences. If you choose to be in this study, I would like to conduct three individual interviews with you. Each interview will last about 45 minutes to one hour and will focus on your undergraduate and graduate educational experiences, performance, and research productivity. For example, I will ask you, "Tell me about your decision to attend graduate school," "How did you decide which graduate program to attend?" and "How would you describe your experience in your research methodology course(s)?"

With your permission I would like to audio tape your interview so that I can have an accurate record of our conversation. Within three weeks of the interview, I will create a written transcript of the conversation that will identify you by a fake name or code only. Within three weeks after your interview, I will destroy the original recording, leaving only the coded transcript of the interview. Only I will have access to the recording, which will be kept in a secure location. If you would like a copy of the interview transcript, I will gladly provide you with one.

RISKS, STRESS, OR DISCOMFORT

Some people feel that providing information for research is an invasion of privacy. I have explained below how I will protect your privacy, and have made every effort to construct interview questions that will not make you feel uncomfortable. Some people feel self-conscious when notes are taken or interviews recorded.

BENEFITS OF PARTICIPATION

This study may shed light on how women faculty select their research methodology. You may not directly benefit from taking part in this research study.

OTHER INFORMATION

Taking part in this study is voluntary. You can stop at any time. Information about you is confidential (meaning I will not reveal to anyone the identity of the people whom I gathered data, nor use the data in the way that would allow people to be identified). I will code the study information so people cannot be identified. I will keep the link between your name and the numerical code in a secured location until June 2015. Then I will destroy the information linking your identification to the numerical code. If the results of this study are published or presented, I will not use your name.

Government or university staff members sometime review studies such as this one to make sure they are being done safely and legally. If a review of this study takes place your records may be examined. The reviewers will protect your privacy. The study records will not be used to put you at legal risk of harm.

If you have questions about this research study, please contact Tiffany J. Brown at the telephone number or email address listed at the top of this form. If you have any questions about your rights as a research subject, please contact the University of Washington Human Subjects Division: 206-543-0098.

_____

Signature of Investigator Printed Name Date

Participant's Statement

This study has been explained to me. I volunteer to take part in this research. I have had a chance to ask questions. If I have questions later about the research I can ask the investigator listed above. If I have questions about my rights as a research subject I can call the University of

Washington Human Subjects Division at (206)543-0098. I will receive a copy of the consent form.

_____ I give permission for the researcher to audio tape me.

_____ I do NOT give permission for the researcher to audio tape me.

_____ I give my permission for the researcher to re-contact me to clarify information.

_____ I do NOT give my permission for the researcher to re-contact me to clarify information.

_____

Signature of Participant Printed Name Date

Appendix F

Qualitative Component – Semi-structured Interview Protocol

Interview One – Life History Pre- doctoral Educational Experiences

- Tell me about your educational story after graduating from high school?
- How did you select your undergraduate major?
- Tell me about your experiences with math courses in college.
    - Were you prepared to take college level math?
- Did you have to take any statistics courses during your undergraduate studies? Tell me about your experience in those courses.
    - Were they hard for you?
    - Describe how they were taught.
    - What do you think they prepared you for?
- Did you participate in any undergraduate research projects/ programs? If so, could you take a moment and tell me about your experience.
    - How did you learn about the program?
    - Tell me about the research project you worked on.
    - How would you describe your role in the research project?
    - After participating in the project, how did you feel about your ability to conduct research?
    - How would you describe the skills you developed from participating in the research project?
- What did you plan to do after you graduated from your undergraduate institution?
    - Did you plan to go to graduate school at that time? Why?
- Tell me about your decision to go to graduate school?
- How did you select an area of study/ program?
    - Describe the role, if any, your undergraduate professors played in your thinking about going to graduate school and your actual decision to attend?
- What was it like for you when you were preparing graduate school applications and essays?
    - Were you nervous? anxious? excited?
- What was your experience preparing for/ taking the GRE or GMAT or other graduate admissions exams?
    - How did you prepare for the test?
    - Were you nervous about the quantitative portion of the exam?

Interview Two – Graduate School Socialization

- Tell me about your transition from undergraduate study to master's level graduate study.
    - Did you feel prepared?
- Did you have a faculty advisor in your Master's program?
    - Tell me about that relationship

    - Were you assigned to him or her or did you select him or her?
- Did you have an assistantship, teaching, research, or administrative? Tell me about that experience.
    - How would you describe the expectations of your role?
- Tell me about the research methods course(s) you took at the master's level.
    - Were you nervous? If so, why?
    - What was your experience in the course?
    - What did you feel prepared to do after taking these courses?
- Did you participate in any research projects at this level?
    - Was there a thesis requirement in your program?
    - Tell me about the research project you worked on.
    - How would you describe your role in the research project?
    - After participating in the project, how did you feel about your ability to conduct research?
    - How would you describe the skills you developed from participating in the research project?
- Tell me about your decision to continue on to doctoral study.
- How did you select your program/ area of study?
    - Were you aware of the methodological focus of the different programs you considered?
- Did you identify a specific faculty member(s) you wanted to work with?
    - How did you select this person?
    - What type of research were they doing?
- Did you have ideas about what type of research methodology you would use in your own research when you entered your doctoral program?
    - How did these ideas develop?
    - Did you consider other options?
- Did you have an assistantship during your doctoral program, teaching, research, or practitioner?
    - Tell me about those experiences
- Do you and your advisor share methodological traditions?
    - Tell me about that experience- interacting within the same tradition or across traditions
- Tell me about your experiences working with your advisor on research projects
    - How would you describe your role?
    - How did your role change over time/ as your research skills became more developed?
- How would you describe your experience progressing through your research methods training during your doctoral program?
    - What were the challenges?
    - What experiences grew your confidence?

- How did you begin to feel connected to the larger scholarly community outside of your program?
    - How did that help your research skills development?
- Tell me about any activities outside of your program that were influential in you learning how to conduct research.

Interview Three- Reflection and Meaning Making

- How have your research skills continued to grow since completing your doctoral degree?
- How have you learned to do research?
- Looking back on your experiences, tell me what moments stand out in your journey to become a (quantitative, qualitative, or mixed) methodologist
- How would you describe the reception/ perception/ valuation of different methodological approaches in your field?
    - Within the department you currently teach?
- Thinking on your experience in these three interviews, tell me about some conclusions you've drawn about your experience through this process.

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