ADVANCE-ing Grounded Theory: Methodological Insights from a Qualitative Study of Latinas in STEM

Laura Grindstaff[1], Yvette Flores[2], Lisceth Brazil-Cruz[3]

[1] Department of Sociology, University of California, Davis

[2] Department of Chicana/o Studies, University of California, Davis

[3] Student Success & Institutional Effectiveness, Woodland Community College, CA

Abstract

In 2012, the University of California, Davis received an ADVANCE-IT grant to facilitate diversity efforts in Science, Technology, Engineering, and Math (STEM) already underway on our campus. One of the grant's five interlocking components was the Social Science Research Initiative (SSRI), the cornerstone of which is an interview study of Latina STEM scholars. This paper tells the story of how that study unfolded: the challenges we faced, the decisions we made, the problems we solved (and did not solve), our "grounded theory" approach to intersectional feminist analysis, and the importance of interdisciplinary collaboration – not only within the research team but also between us and the broader ADVANCE community. Although we highlight key findings, our main goal is to theorize what we learned in the research process in order to advance dialogue between STEM and non-STEM scholars about our mutual interest in creating a more diverse, inclusive academy.

Keywords: Latinas, qualitative research, grounded theory, racial matching, emotional labor, interdisciplinarity, intersectionality, diversity, inclusion, inequality.

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In 2012, UC Davis, a large R1 institution that is part of the ten-campus University of California system, received an ADVANCE-IT grant from the National Science Foundation (NSF). The "IT" stands for Institutional Transformation" because the grant aims to increase the representation and advancement of women and other "minority" scientists in academia through systemic transformation of academic *culture* (https://www.nsf.gov/crssprgm/advance/index.jsp). Academic institutions, like all social institutions, are not neutral spaces into which people of different genders and ethnicities enter and exit, but rather are themselves deeply gendered in their norms, practices, reward structures, and organizational imperatives (Fox, 2008; Roos & Gatta, 2009; see also Acker, 1990, 2006; Britton, 2000; Bird, 2011; Bilimoria & Liang, 2012, 2014; Stewart & Valian, 2018). Consequently, ADVANCE-IT efforts in higher education are not simply aimed at "fixing the numbers." They are interventions involving, as Bilimoria and Liang (2014) put it, "a diverse range of transformational initiatives, harnessing the synergies of partnering across multiple units within an institution" (p. 153).

The UC Davis ADVANCE Program is just such an intervention, with a unique emphasis on Latina faculty in STEM. It has been largely successful both because of the coordination among its programmatic elements (the synergistic "partnering across multiple units" noted above) and because of comprehensive buy-in from campus leadership, which includes prominent Latinx scholars. Latinx are the largest ethnic group in California, and UC Davis, like all UC schools, is a public, land-grant institution with a mission to serve the diverse peoples of the state.

U.S. Census projections indicate large increases in the Hispanic[1] population nationally and in California particularly – by 2060, roughly half the state's projected population will be Latinx. Yet, the number of Latinx students earning STEM degrees is disproportionately low (Hess et al., 2013; Hurtado et al., 2010) and the number of Latinx STEM faculty even lower; most Latinx scholars are clustered in the lower-paid and arguably less prestigious social science and ethnic studies programs, as well as departments of education: (https://www.humanitiesindicators.org/content/indicatordoc.aspx?i=315).

Although the underrepresentation of white women and people of color in academic STEM fields is a growing concern in the literature on diversity in higher education, less attention is paid to women of color specifically. According to a 2013 study, only 6,400 women of color with STEM doctorates hold tenured or tenure-track positions in universities compared to 19,400 white women, 20,500 men of color, and 65,100 white men nationwide (Hess et al., 2013). As a distinct demographic, Latinas are virtually invisible, representing only one percent of occupations in computer science and engineering, for example (Taningco et al., 2008; Tornatzky et al., 2006). Although barriers to entering and advancing in the STEM fields for women and people of color exist all along the educational "pipeline," the main focus of NSF ADVANCE-IT efforts is faculty representation in the academy.

UC Davis ADVANCE has taken a multi-pronged approach to diversifying STEM, developing a series of five interlocking initiatives aimed at: (a) building community, (b) systematizing mentoring, (c) improving personnel processes, (d) augmenting work-life policies, and (e) conducting research on Latinas in STEM (see http://ucd-advance.ucdavis.edu). The fifth

[1] "Hispanic" is an umbrella term used by the US census to characterize Spanish-speaking individuals from different geographical regions, including Mexico, Central and South America, Cuba, and Puerto Rico, as well as Americans with Hispanic heritage. In California the preferred term is "Latino/a" or "Latinx" (the latter being a gender-inclusive term encompassing non-binary, genderqueer, and transgender individuals).

prong of this broad effort, conducting research, is the purview of the Social Science Research Initiative (SSRI). The SRRI spearheaded a number of different projects, but the cornerstone and subject of this paper is our in-depth interview study exploring the personal, familial, and institutional factors that have both helped and hindered the career advancement of Latina STEM scholars in the United States. Statistical data are undeniably important. They can underscore the scope and scale of a problem, and justify the expenditure of resources (economic, political, intellectual) to intervene. But statistics cannot tell us *why* a problem exists, necessarily, or how to remedy it. Nor can they capture the experiential dimension of those negatively affected by marginalization. Qualitative research is better suited to these aims, and interviewing is a key tool in the methodological toolkit. Given the small numbers of Latina STEM scholars in higher education, a qualitative approach is arguably the only reasonable option.

This paper is thus an attempt to share the story of our research process– its scope and rationale, its opportunities and challenges, its successes and failures. We share why we made the decisions we did and what we learned along the way with the aim of furthering dialogue between scientists and non-scientists about our mutual interest in challenging social inequality. Working alongside a large team of STEM scholars on our campus, we often felt others did not understand (or fully appreciate) the value of qualitative research, which reflects a broader hierarchy of knowledge-production in much of academia. Indeed, being qualitative social scientists working on a STEM initiative in the context of a science-dominated campus constitutes a form of marginalization rarely (if ever?) recognized and discussed in the emerging literature on ADVANCE grant programs and other diversity initiatives.

The research we conducted leads us to a number of overlapping theoretical insights: diversity on research teams matter, but not in the same way or to the same degree across all dimensions of a project; the nature of the diversity *within* a research team need not automatically dictate the nature of diversity *between* researchers and those they study – that is, "matching" researchers with subjects (in terms of racial or gender identity, for example) may not be possible or even desirable; active, ongoing discussion and dialogue among members of the core research team was critical to the rigor of our analysis; understanding the experiences of Latinas necessitates an intersectional lens that includes class along with gender and race. Indeed, we found that U.S.-origin Latinas constituted a "minority within a minority" in our study because of their greater class disadvantage relative to their international counterparts; and finally, extant power differences between STEM and non-STEM academic fields cannot be ignored when institutional transformation depends on interdisciplinary collaboration.

What is qualitative research?

Although some readers will be familiar with the theory and practice of qualitative research, others will be less so, given the primary focus of NSF ADVANCE efforts on STEM. Yet, if achieving an inclusive academy through interdisciplinary collaboration between STEM and non-STEM fields is a goal, it is important for both qualitative and quantitative scholars to share a common understanding of, and appreciation for, qualitative research– particularly in institutional contexts where such research has been marginalized, and particularly when such research has been fundamental to understanding the very social inequalities that ADVANCE programs seek to rectify.

"Qualitative research" is an umbrella concept that encapsulates a variety of different methods, as well as the strategies (methodologies) for employing them. The word "qualitative" implies an emphasis on the *quality* of things, and on processes and meanings that cannot be easily measured or subject to experimental manipulation (Denzin & Lincoln, 2011). Qualitative research tends to be inductive rather than deductive; it stresses the socially constructed nature of reality, the relationship between the researcher and the researched, and the factors both personal and political that shape inquiry. There is no paint-by-numbers script to follow, although some methods are more formalistic than others, nor is there a substitute for human decision-making in determining the meaning of descriptive data, although specific tools or techniques may helpfully organize the parameters of interpretation. Consequently, objectivity is necessarily a relative term and should not be conflated with rigor.

Within the social sciences, "qualitative research" typically refers to (a) participant observation (ethnography), most common among anthropologists/sociologists, (b) historical-archival research, most common among historians, and (c) interviewing, which cuts across disciplines and can be structured, semi-structured, or unstructured/open-ended. Whereas ethnography involves in-depth immersion in the world of the people being studied and attends not only to what people say but also what they do, interviews—conducted over an extended period or on a one-off basis—privilege participants' own accounts of their experience (Duneier, 2019).

In the United States, these methods emerged in dialogue (and tension) with quantitative approaches in social sciences that prioritize experimentation or statistical analysis of large data sets. Like the natural sciences, quantitative social science presumes an objective reality that can be captured, studied, and understood independent of researcher influence or social context; it

emphasizes causal relationships between variables, not processes, as well as traditional evaluative criteria such as generalizability and internal/external validity (Denzin & Lincoln, 2011). Compared to quantitative scholarship, qualitative scholarship in the social sciences has been derided as "soft," unscientific, politically motivated, and biased (for an overview, see Carey, 1989). Carey (1989) suggests that resistance to qualitative research in US social science departments, which peaked in the post-war era of the 1950s and 60s, reflects both a desire to maintain hierarchies of legitimacy between "hard" and "soft" science and an effort to push back against the presumed threat posed by qualitative research to Enlightenment definitions of truth and objectivity.

Beginning in the 1970s, however, qualitative research gained traction in the academy due to broader socio-cultural shifts under way. Civil Rights protests, the black and brown power movements, gay liberation, and second-wave feminism all challenged existing inequalities and exclusions, including the exclusion of women and people of color as knowledge-producers within the academy. The founding of gender- and ethnic-studies departments in universities was one consequence of this cultural transformation, along with "diversification" efforts across more established academic departments. Relatedly, there was increased attention paid to questions of power and representation in the research process, especially among qualitative feminist scholars. What issues are deemed important, and why? Which questions are being asked? Whose voices are getting heard? In relatively new fields such as cultural studies, gender studies, education, communication, and the various ethnic studies disciplines, the "core" methods discussed above (participant observation, interviewing, and archival research) were gradually joined by a diverse array of interpretive approaches that now fall under the qualitative-methods umbrella, including auto-ethnography, narrative analysis, testimonios, and community-engaged research. These

approaches are concerned with, and raise questions about, researcher positionally—quite literally, the position of the researcher vis a vis "her" research participants. Why is she doing this research and who is she to them? How does her social location (in terms of race, class, gender, sexuality, and other categories of social identity) shape her experiences and perspectives in ways both similar and different to theirs? What are her commitments, motivations, and goals?

Our own research exploring the career pathways of Latina STEM scholars relies on semi-structured, in-depth interviews to elicit detailed narratives. In contrast to those who criticize interview methods for revealing what people want us to know about them rather than their "true" motivations (see Vaisey, 2009; Jerolmack & Khan, 2014), we found interviews useful for producing rich, detailed data with which to work– eliciting not simply the "facts" of women's lives, but also their thoughts, feelings, and ways of making sense of the intersecting forces shaping their experiences (see Pugh, 2013). The richness of the interviews was partly a function of the process by which we analyzed them, which was interdisciplinary, collaborative, and loosely informed by the tenets of an approach known as "grounded theory" (Glazer & Strauss, 1967; Charmaz, 2014). As we will discuss in more detail later, grounded theory methods are a set of inductive strategies for analyzing data in which researchers derive their analytic categories of interest directly from the data rather than from preconceived hypotheses.

As a qualitative research method, interviews are also well-suited for learning about marginalized communities wanting to tell their stories, which is one reason interviews are commonly employed by feminist scholars. Feminist interviewers typically do not attempt to bracket off or ignore either the personal and emotional dimensions of research or our motivations for why we might want to explore certain topics in the first place (see DeVault, 1996; Lesage, 1978). This does not mean abandoning rigor or systematicity; rather, it means rejecting the

premise that the researcher is a passive extractor of meaning and acknowledging that the interviewer and interviewee together produce the data to be analyzed. This co-production does not equalize power relations between the researcher and those researched but it is certainly more participatory and relational—and therefore potentially more rewarding and enjoyable for participants—than many other methods.

The SSRI Interview Study: Getting Started

The typical components of an interview study require researchers to undertake most or all of the following steps: identify the issues of interest and the population to target; construct an interview guide; recruit interviewees; conduct audio-recorded interviews, either in person or virtually; transcribe the interviews; code/analyze the transcripts for patterns and emerging themes (for us, this is where the grounded theory approach became most relevant); and disseminate what has been learned through conference proceedings, publications, etc. This is roughly what we did, but the process was neither as linear not straightforward as it sounds.

The Research Team

The first complication was that there is not one researcher but three – more, if we include the involvement of others at the beginning of the project's development: undergraduate research assistants, a graduate-student researcher, and two faculty administrators from the ADVANCE Program leadership affiliated with the SSRI. The three of us writing this paper formed the core research team, meaning we carried out all of the stages of research listed above. I, Laura, am a Sociologist, Yvette is a Chicano/a Studies professor and Clinical Psychologist, and Lisceth is a PhD in education formerly employed as a post-doctoral scholar on the ADVANCE grant and now Dean of Student Success & Institutional Effectiveness on a different campus. I am white/Anglo and moved to the United States from Canada at the age of 25. My expertise is U.S.

popular culture, feminist theory, qualitative methods, and race/gender/class inequality. Yvette, a first-generation college student who migrated to the United States at age 13, identifies as Latina with family roots in Panama and Costa Rica. She studies Latinx mental health, trauma, intimate partner violence, and masculinity. Lisceth identifies as Chicana of Mexican origin. She immigrated to the United States from Mexico at age 15 and studies the experiences of Mexican-origin immigrants along the educational pipeline. Both Yvette and Lisceth are bilingual, fluent in both Spanish and English. I am monolingual (English) but have a basic command of French and Spanish. This diversity proved to be a key strength of our study, as we'll see.

The Interview Guide

Our key questions of interest– why were there so few Latina scholars in STEM in the UC system? What barriers did they face in both their personal and professional lives? what factors were most important in overcoming those barriers?– were established early on as a direct outgrowth of the broader ADVANCE effort, as was the population of interest. Less self-evident was how to locate interviewees since none of us were immersed in STEM networks, and how to devise an interview guide specific to our target population but flexible enough to accommodate differences among interviewees.

We had a good foundation for the interview guide for three reasons. First, early on we conducted exploratory focus groups with Latina faculty and graduate students in our own professional networks on campus in order to get an initial albeit unsystematic sense of extant concerns. Second, I had previously developed, in collaboration with a visiting scholar, a guide focused on women scientists across the UC system; that guide was a useful starting point, but it did not ask questions of specific relevance to Latinas. Third, Dr. Ruth Zambrana, Professor of Women Studies at the University of Maryland, generously shared a protocol she had developed

to study workplace stress among URM faculty. As a result of these resources, we were able to craft a document that took a sociological, life-history approach to Latinas in STEM and whose questions made possible an intersectional analysis of interviewees' life experiences. In addition to basic demographic information, we asked questions about childhood family life, language use, parents' educational and occupational histories, early schooling and neighborhood experiences, timing and reasons for migrating, role of mentors, access to minority programs and other programmatic supports, experiences of discrimination, graduate and post-graduate training, current career opportunities and challenges, current family structure, and work-life balance.

The Interviewees

Finding individuals to interview was a more laborious process. The ADVANCE-IT grant awarded to our campus was intended to transform campus culture, laying a foundation for a STEM workforce that would mirror the broader demographics of California. Yet, there were fewer than a handful of Latina scientists at our own institution.

Because the University of California has a long-running and prestigious post-doctoral program expressly designed to attract a diverse pool of candidates across academic disciplines—the President's Postdoctoral Fellowship Program (PPFP)—we initially focused on past and current recipients of the fellowship. Of the 537 recipients dating back to 1988, we reasoned that some number of them would be women of color in science fields who had gone on to academic positions, most of them into the UC system because of hiring incentives built into the program. As it turned out, only 58 of the fellows in the archive self-identified as Latina or Hispanic, and of those, 23 were scientists. We attempted to recruit all 23 women, but some had never pursued academic careers, some declined to participate, and some did not respond to inquiries. In the end, we interviewed 10 women. To grow the pool, we sought to interview the faculty scholars who

were being hired into STEM fields at UC Davis as part of the ADVANCE Program's plan for institutional change. The campus hired scholars, primarily Latinas, in successive waves: four per year over the course of four years, commencing in the second year of the grant. Across cohorts, these hires were affiliated with an ADVANCE-initiated center called the Center for Advancing Multicultural Perspectives on Science (CAMPOS), which hosts conferences and events, funds a series of faculty awards, and provides mentorship and networking opportunities.

Even with the combined participation of PPFP fellows and CAMPOS scholars, we had a small sample and needed to expand beyond California. In addition to conducting online searches of STEM department websites in the US, we relied on pre-existing organizations, particularly the Society for the Advancement of Chicanos/Hispanics, & Native Americans in Science (SACNAS), the Latina Researchers Network (LRN), the Society of Hispanic Professional Engineers (SHPE), and Understanding Interventions (UI), an educational association. Some of these organizations agreed to circulate a short recruitment letter for us on their list-serves, which generated a few volunteers. Beyond that, we relied on referrals though snowball sampling, in which interviewees put us in contact with specific individuals in their own professional networks. Although we interviewed 37 individuals, this tally included one Latino man, one African American woman, and more than a dozen Latina scholars whose research was more closely aligned with the social sciences than the fields recognized by the NSF as part of STEM.

This left us with final sample of 21 Latina/Hispanic scientists with PhDs in science fields. Four of the women were senior scholars, four were early career professors, and the rest were mid-career faculty. Ten were born in the United States (nine on the mainland and one in Puerto Rico), seven were born in Mexico, and five in other regions (Spain, Portugal, Brazil, Uruguay, and Peru). The women from Spain, Brazil, and Puerto Rico migrated to the United States for

graduate school. Several of the Mexican women migrated as children; others after high school to attend college. The U.S.-born women for the most part were first-generation college students, whereas the women from Latin America, Spain, and Portugal had college-educated parents. Eleven, or roughly half, of the women described growing up as working class or poor. In terms of relationship status, 17 women were married or in long-term partnerships, three were single (never married), and one was separated and divorcing her partner. Ten of the women had children, two had stepchildren, and nine had no children nor were they planning to have or adopt any, primarily because they felt being a scientist was incompatible with motherhood. The new hires on our campus who were early-career scholars with children indicated that the campus' generous parental-leave policies and other work-life balance initiatives had been a deciding factor in accepting the job offer.

The Interview: Identity Matching, Emotional Labor, And Studying Sideways

When possible, we conducted interviews in person, but the majority were conducted over the phone. Interviews typically lasted from 90 minutes to two hours each (with one interview lasting three hours) and were audio-recorded. We obtained informed consent and assured each interviewee of confidentiality and anonymity– meaning only the research team would have access to the data, the data would not be shared in raw form unless legally subpoenaed, and participants would be de-identified when paraphrased or quoted in the research, either through the use of a pseudonym or a generic title ("a tenured engineer at large university in the Midwest"). Still, the Latina academic community is small, especially in STEM. Some participants– those who had experienced difficulties with mentors, colleagues, or supervisors– worried they could be identified by their responses. It was a legitimate concern and as a team we worked hard to ensure anonymity by omitting or altering key details of events while preserving

the meaning and integrity of their experiences. We are grateful to the women for trusting us to do this. It also helped that we ourselves were social scientists and not STEM scholars, because it decreased the likelihood of knowing specific individuals in participants' professional circles.

We made two initial assumptions about interviewing that proved unwarranted. First, we assumed that talking in-person was preferable to talking over the phone, since the (pre-pandemic) literature on qualitative methods generally takes for granted face-to-face encounters. Yet, if anything, our telephone conversations were richer, more detailed, and generally longer lasting. To be sure, the scholars we interviewed in-person were either newly affiliated with our own campus or had positions at nearby institutions, so our shared institutional/geographical setting may have inhibited candor. Yet, this doesn't explain why phone interviews with local scholars were also longer and richer than face-to-face interviews with local scholars. What does explain the difference is the observation that phone interviews, as virtual spaces of communication, may afford a greater sense of intimacy, security, anonymity, and/or privacy, particularly for sensitive or difficult topics (Opdenakker, 2007; Irvine, 2010). There is also the added benefit of convenience and affordability of virtual interviews: once we expanded our target population beyond California, the requirement to meet face-to-face would have posed an insurmountable barrier to the research.[2]

The second erroneous assumption we held (although we didn't have the luxury of acting on it) was that "identity matching" between researchers and research participants would produce superior interviews because matching was key to achieving rapport with participants. By identity matching we mean sharing identity characteristics such as race/ethnicity, class, gender, age,

[2] We conducted our research well before the COVID-19 pandemic made virtual interviewing by telephone, Skype, Zoom, and other online tools a necessity rather than an option. Our impression is that Zoom, in particular, because of its prominence in online teaching, has become the vehicle of choice for research interviews.

nationality, immigration status, etc. Much has been written about the pros and cons of "matching" in the research process, racial matching in particular. The concept is part of the broader conversation about researcher positionality already mentioned. As sociologist France Winddance Twine (2000) notes, the racial matching model grew out of the charged political context of the 1960s and was a response to both the racism and the overwhelming whiteness of the social scientific community; the model not only posited, quite reasonably, that minority scholars were better qualified to conduct research in minority communities because of shared histories and perspectives, it also sought to democratize the social sciences themselves by opening it up to scholars of color as researchers (p. 6-8). A central premise of racial matching is that racial subordinates share a particular worldview that only researchers of the same race—racial "insiders"—will understand and be trusted to accurately represent. This premise is often well-founded, and the concept of racial matching has contributed much in conceptualizing power relations between researchers and those they study (see Blauner & Wellman, 1998).

At the same time, the racial matching model has limitations. According to Twine (2000) and others, a key one is that race may not be the only relevant identity category because the meaning and impact of race is complicated by other, intersecting axes of difference (see Aguilar, 1981; Rhodes, 1994; Phoenix, 1994). Relatedly, race is not a fixed "essence" and racial identities and experiences are not uniform across individuals or communities– there is no singular "black experience," for example (Wilson, 1974), or singular "Latino/a" experience (Hurtado, 1984). Thus, "epistemologies of insiderness" (Reinharz, 1992) captured by common-sense adages such as "it takes one to know one" or "skin folk are kin folk" risk essentialism and discourage intersectional analysis (see also Hurston 1942; Williams, 2000).

Consequently, it can be difficult to predict the impact of race, and the power relations it mobilizes, within any given research project. Indeed, scholars have found that their status as racial "insider" may be contested by research participants not only because of differences in gender, age, and class but also because of accent and marital status (Beoku-Betts, 1994), education level and feminist political ideals (Zavella, 1991), language use and phenotype (Hurtado, 1994), or local traditions of racial classification (Twine, 2000). In other words, one cannot always predict what difference a particular difference will make. Moreover, racial/ethnic insiderness can generate its own barriers – needing to be accountable to "your people" (Baca Zinn, 1979), or the requirement that women follow patriarchal customs that limit where they can go or who they can talk to (Facio, 1993; see also Papanek, 1964). Conversely, an outsider status may enable researchers to breach local customs or norms, and/or ask "naïve" questions that make explicit what is otherwise taken-for-granted (Fonow & Cook, 1991).

Finally, carried to their logical conclusion, paradigms of racial matching that suggest researchers can only legitimately study their "own kind," (a) risk further marginalizing scholars of color by limiting their topics of interest and (b) don't account for the special purchase minority-group scholars may have in studying dominant groups. More than a century ago, Black sociologist W. E. B. DuBois coined the term "double consciousness" to indicate the persistent awareness of the "two-ness" of being black in a white society – having to know and navigate both the dominant culture and one's subordinate culture simultaneously, in contrast to Whites who need know little or nothing about blacks because white perspectives are the ones structuring public life (DuBois, 1903). The implication for research is that scholars from marginalized groups may be positioned to see and understand *more* than their dominant-group counterparts. Decades later, feminist standpoint theory developed this insight, arguing that research focused on

power relations should begin with the standpoint of the oppressed because of their unique position as "outsiders within" (Collins, 1986; see also Harding, 2004; Alcoff & Potter, 1993).[3]

Aware of the debates over racial matching and their offshoots, we nevertheless had little choice but to arrange interviews based on less lofty considerations – primarily, availability. That is, busy schedules and a myriad of obligations (our own as well as those of our participants) precluded the option of matching interviewer and interviewee along race/ethnicity or any other dimension. Instead, who interviewed who was determined randomly by which of us on the team was available at the time preferred by the participant. Sometimes this resulted in racial matching but often it did not. Sometimes this resulted in a shared immigration history—or a shared class origin, professional title, age, or career stage—but often it did not. Given that we were social scientists interviewing scientists, always there were differences in disciplinary knowledge and training.

Our lack of flexibility in who interviewed who proved largely inconsequential as far as we can tell: interviews conducted by different members of the team yielded similarly rich, detailed narratives – participants typically said the experience had been rewarding and gratifying, if also sometimes emotionally difficult or painful. More relevant than identity matching in our study was knowledge of the topic, belief in the value of the research, and a commitment to working with each other and our interviewees openly and transparently. This is *not* to suggest that considerations of race—or any other axis of difference/identification—are unimportant in composing a research team or navigating power relations between researchers and research

[3] Bowell (2020) usefully summarizes the main tenants of feminist standpoint theory: "(1) Knowledge is socially situated; (2) Marginalized groups are socially situated in ways that make it more possible for them to be aware of things and ask questions than it is for the non-marginalized; (3) Research, particularly that focused on power relations, should begin with the lives of the marginalized" (para 1).

participants. They are. Rather, our experience underscores two key insights relevant to debates about racial matching and the broader conversation about researcher positionally.

First is the importance of distinguishing between the more formal/organizational dimensions of a research project and its interpersonal ones. It is quite possible that identity matching was not critical to conducting successful interviews at an interpersonal level because a certain degree of "matching" already characterized the ADVANCE effort at the organizational (campus) level. As mentioned above, Latinx scholars played key roles on the ADVANCE leadership team as well on the program's internal and external advisory boards. There is also little doubt that the presence of two Latina scholars on the SSRI research team mattered to interviewees' perception of our study's legitimacy. Consequently, we had "buy in" from the target community independent of whether the specific identities of interviewer and interviewee aligned in any given interaction, which freed us up to prioritize availability over other concerns.

This was fortunate not only because it spread the work of interviewing among members of the research team but also because it spread the "emotional labor" (Hochschild, 1983) necessitated by listening to difficult or painful stories. Coined by sociologist Arlie Hochschild nearly 40 years ago, "emotional labor" as we use it here refers to the effort of managing one's own and others' emotions in order to facilitate social interaction. It was especially important for the Latina members of the team to get a break from this labor, because a shared racial/ethnic identity is often forged through shared marginalizing as well as affirming experiences, which can be difficult to hear and revisit. Increased emotional labor for scholars of color studying communities of color is an outcome of the racial matching model largely unexplored in the literature.

Second, because our target population was STEM scholars, many of them highly accomplished academics, our (more or less) "matched" professional statuses helped mediate other differences and framed our relationship with interviewees in horizontal rather than hierarchical terms. This is significant given the history of ethnographic and other qualitative research approaches. Historically, anthropologists have "studied down," meaning they have studied people of other cultures with less power, privilege, and status than themselves – typically in far-away "exotic" or "primitive" locales (Nadar, 1972). The same is true for many sociologists, although they typically study down in their own societies. Just as racial matching models emerged in the 1960s, so too did calls for anthropologists and sociologists to study up instead of down – that is, to study economic, political, and cultural elites (Nadar, 1972; Gusterson, 1997). After all, elites are responsible for the systemic inequalities that produce marginalization in the first place and their "way of life" is critical to sustaining their power. Yet both the private and professional lives of elites are largely protected from public scrutiny, creating challenges of access and rapport for ethnographers seeking to observe behavior and/or conduct in-depth interviews.[4]

In our case, the "direction" of study was neither down nor up but rather "sideways" (lateral) insofar as we were scholars in the academy focused on other scholars in the academy. Indeed, given the greater prestige generally accorded scientists over social scientists, it could be argued we were studying up. Of course, in any qualitative project access to research participants has to be negotiated, rapport established, and trust earned no matter the direction of study– up,

[4] It might appear that exhortations to "study up" are at odds with the tenants of feminist standpoint theory discussed earlier, in that standpoint theory prioritizes the experiences of the marginalized in understanding structural inequality. But studying up and standpoint theory are actually compatible interventions: standpoint theory doesn't require one to study oppressed groups, rather, it asks us to take their experience of the world as *a point of departure* for theorizing how power works. It is entirely possible to "study up" while understanding power relations from the standpoint of those most disadvantaged by them.

down, or sidewise. the broader point is that our professional status alignment with our participants likely muted or "flattened" other differences, making those other differences less significant. Talking by phone no doubt helped here, too, not only creating a sense of intimacy, as mentioned above, but also removing visual cues related to ethnicity and/or age.

Adventures In Coding: Being Grounded and Staying Curious- Together

Once conducted, the interviews had to be transcribed and coded. Given the tedious and time-consuming nature of transcription, we hired much of this out. Unfortunately, the professional transcriber hired was not conversant in Spanish nor particularly knowledgeable about academia/science, and so made many errors that we had to correct by returning to the original audio recordings. This proved beneficial in one key respect: transcription is an important, if often over-looked, opportunity to relive the interview and hear things you might have missed the first time around, or to hear things in a new way. It is challenging to listen deeply during an interview itself since one's attention is divided between following the guide, asking follow-up questions as necessary, recording, and taking notes in case the technology fails. Transcription enables listening, not simply hearing, thus initiating the beginning of reflection and analysis. Having to check passages and correct errors gave us this opportunity, and because we discovered the errors while coding as a team, we worked though unclear or difficult passages together.

The next major phase was coding– making sense of the transcripts in terms of identifying patterns and themes. Although early impressions of the data inevitably arise during transcription (and even prior to that, during interviews), and although coding overlapped somewhat with interviewing and transcription, coding emerged as a distinct phase of the research process, one

that took nearly three years to complete; often, everyone's input was important to settle on the "right" way to code certain passages. We recognized this only after a major false start.

We spent considerable time and energy learning to use and then ultimately abandoning N-Vivo, a software package designed to facilitate coding and analysis of qualitative data. I had used N-Vivo for a prior project, and had some familiarity with it, but it was new to everyone else. There was pressure to rely on software for two reasons: first, it was perceived by the ADVANCE leadership as more rigorous and "scientific" (systematic, objective) than coding by hand and was therefore a legitimate expense of grant money. Second, those of us on the SSRI research team wanted to get undergraduate Latina STEM students involved in our research process and N-Vivo promised to both standardize coding across multiple researchers and provide students with valuable research mentorship. We were approved to hire six undergraduates part-time for two academic quarters, along with one graduate student researcher (GSR) with N-Vivo expertise to help coordinate the effort. Software licenses were purchased and the core team, along with the GSR, developed an initial draft codebook– a document that identifies early themes and sub-themes emerging from the data, as well as derived from the interview guide and the initial impressions of the interviewers. A codebook is understood to be a "living" document that changes and gets refined as coding progresses.

After much trial and error, we reluctantly concluded this approach was unfeasible, although it might have worked well for a different team and a different project. The stumbling blocks were many and varied. Some were technical. For example, the server we relied on for security was difficult for everyone to access because it was housed in one particular campus college but we were an interdisciplinary, multi-college group, Student licenses for the software differed from faculty licenses, creating problems for file-sharing. The licenses for faculty had

different capabilities because Mac-compatible software differed from PC-compatible software. Upgrades to our computers' operating systems required upgrades to the licenses, which the software company did not willingly provide. Another, related, obstacle was varying comfort-levels with using the software. Not everyone was equally comfortable with or invested in learning N-Vivo. On the rare occasion we could code together as an entire group while projecting the data on a screen (a Herculean effort in itself, given our busy and varied schedules), we made slow progress. Yet, as soon as team members dispersed to undertake coding on their own, the process broke down. A final obstacle, and perhaps the most significant one, was the transcripts themselves, or rather the narratives that the transcripts encoded, which were long, detailed, and complex. Consequently, their meaning was not always obvious or transparent and so the coder had to be an interpreter as much as a scribe.

Unfamiliarity and discomfort with the technology coupled with the complexity of the narratives and the impracticality of getting a dozen coders together at the same time, and frequently enough to get everyone trained, meant that knowledge of how to use the software remained uneven even after months of effort. All of these factors contributed to a critical problem we could not resolve: lack of inter-coder reliability, meaning lack of consensus among coders on how to apply the codes to the data.

The three of us comprising the core research team made the painful decision to jettison N-Vivo and start over, limiting the coding to a more low-tech, collaborative approach among the core team. Employment for the GSR shifted to a different SRRI project, and the undergraduate students were tasked with creating a database of interviewee’s demographic information. They also worked closely with Lisceth to learn more about educational pipeline challenges facing Latinx scholars, and subsequently took part in workshops and conference proceedings focused

on this topic. As for the coding itself, we had a draft codebook and a realistic sense of how to proceed. We also had the good fortune to attend, as a team, a day-long qualitative methods workshop in Sacramento hosted by Dr. Kathy Charmaz, arguably the world's leading expert in grounded theory methods. Although we were familiar with her approach and were anticipating using it in our own coding process, the in-person workshop proved invaluable for putting us in touch with a larger community of scholars facing similar challenges and affording us a renewed sense of purpose. We met weekly, and sometimes biweekly, for three-hour sessions in order to code each interview together, line by line. Sometimes this meant joining by phone from a different country or time zone or while at home tending a sick child.

It was slow going, especially given over-loaded schedules of teaching, research, and service. Each transcript averaged 30 single-spaced pages, and, as noted, the narratives were layered and complex. Yet, these were precisely the qualities that made them amenable to grounded theory analysis. Grounded theory, as applied to qualitative data, starts from a different set of assumptions than traditional quantitative research design. As Charmaz (2001) writes, "the inductive nature of these methods assumes an openness and flexibility of approach. Thus, you follow leads gained from your view of the data, not from the careful and exhaustive literature review of the traditional research design. *A fundamental premise of grounded theory is to let the key issues emerge rather than to force them into preconceived categories* (p. 351) [emphasis ours]. The quality of data drives the selection of this method. Fieldnotes, interview transcripts, diaries, letters, etc. may all produce rich, detailed data, and, in the words of Charmaz (2001), "rich data afford views of human experience that etiquette, social conventions, and inaccessibility hide or minimize in ordinary discourse. Hence, rich data reveal thoughts, feelings, and actions as well as context and structure" (p. 338).

We used a shared google-document to organize the text of the transcripts into codes, first employing a process known as "line by line coding," followed by "focused coding," which allowed us to cluster codes under broader categories or themes. For example, the codes "motherhood," "partner/spouse," "home division of labor," and "familial support," themselves derived from concrete descriptions of everyday life, eventually clustered under the broader theme "work-life balance." According to Charmaz (2001) "whereas line-by-line coding gives you leads to pursue, focused coding refers to identifying the earlier codes that continually reappear in your data and to create and try out categories that capture those patterns … when you raise a code to the level of a category, you treat it more conceptually and analytically" (p. 344). The result, after nearly two years of weekly sessions, was an 80-page single-spaced document arranged thematically by codes that helped us see patterns (as well as exceptions to patterns) across interviews.

Importantly, "coding is the pivotal link between collecting data and developing an emergent theory to explain these data" (Charmaz, 2001, p. 341). In our example, "work-life balance" is not a theory per se, nor was it a phrase much invoked by participants themselves; rather, it references an idealized or aspirational state of equilibrium between paid work in the labor force and unpaid life/home/family obligations — more specifically, the ability to satisfy both without sacrificing either. The theoretical significance of the concept lies in its gendered origins and implications: if maintaining the "life" aspect of the "work-life" equation did not fall disproportionately to women and if historic and current definitions of "work" did not disproportionately privilege men, the call for "balance," as it currently exists, would be unnecessary. It is a product of the deeply gendered nature of both paid and unpaid labor, and the privileging of the former (associated with masculinity) over the latter (associated with

femininity, especially non-black femininity). The double bind of being a working woman, and especially a working mother, is amplified for Latinas for whom community expectations linking femininity with family/domesticity may be especially salient, and for whom societal stereotypes function to reinforce the linkage. Developing and sustaining a professional commitment to science under such circumstances is labor indeed. More than most professions, science is seen as incompatible with motherhood not only because it demands long hours, but also because, underlying the gendered association of men with paid work and women with domesticity, is a deeply rooted association of masculinity with reason/logic/objectivity and femininity with emotion/intuition/subjectivity (see Fox Keller, 1985; Harding, 1986; Hubbard, 1990; Martin, 2001; Fausto-Sterling, 2000/2020; Alcoff & Potter, 2013).

As Charmaz (2001) argues, rich data provide a window on the empirical world under study; they enable grounded theorists to discern how research participants define their experiences in ways that may not exactly match the disciplinary concepts of researchers. Interpretation must begin from participants' points of view — what Emerson et al. (2011) call "members' meanings" — not the meanings researchers impose via disciplinary jargon. Although interpretation is inevitably shaped by the perspectives that researchers bring with them by virtue of their training, their perspectives need not be taken as unalterable truths. They may prove fruitful, but only if applied reflexively. Charmaz (2001) puts it this way: "look for your respondents' understanding of their situations before you judge their attitudes and actions through the assumptions of your perspective. If afterward you still invoke previously held perspectives as codes, then you will use them more consciously rather than merely automatically" (p. 342). "Staying curious" about your data is another way of characterizing this advice (Charmaz, 2001).

Such advice was invaluable in our case because pre-existing scholarly concepts were plentiful: not only "work-life balance," but also "resilience," "persistence," "microaggressions," "diversity," "inclusion," and "intersectionality." Simply imposing a-priori labels on the women's narratives would not only over-simplify them but miss the opportunity to build theory by seeing where the concepts fall short or need to be modified (see Burawoy, 1998). Researchers with different disciplinary training will see different things in the data, to be sure. This is not something to ignore or attempt to minimize but rather to exploit for richer conceptualization. Consistent with research showing diverse groups are better problem-solvers than homogenous ones in both corporate and academic settings (Page, 2007), our different backgrounds, training, and perspectives were key to making sense of the interview transcripts, especially during the advanced stages of coding.

We cannot emphasize enough the importance of our interdisciplinary collaboration: discussing, debating, and working through each transcript together. It was not a matter of uncovering pre-existing meanings embedded in the narratives but of coming to collective agreement about the meaning of what we were seeing on the page. Just as the initial interview was a co-production of sorts between interviewer and interviewee and not simply a passive transfer of knowledge from the latter to the former, our making sense of the transcripts entailed active, collaborative meaning-making. Disciplinary concepts and jargon did not disappear in these conversations, but we used them as opportunities to open up rather than close down discussion. Our most significant discoveries emerged from this dialogue: (a) the importance of a supportive life partner to career success, (b) the challenge of developing and sustaining a scientific identity for Latinas who were mothers; (c) the fact that diversity programs don't just impart skills, they build community; (d) the centrality of an intersectional lens to understanding

the women's experiences, as reflected by the inseparability of gender, class, and ethnicity in their stories; and, (e) related to this last point, the consistent ways that international status mapped onto class privilege, creating a minority within a minority for U.S.-origin Latinas.

Our feminist identities and commitments were an important component of this meaning-making process and they shaped our perspectives, but we did not presume a unified experience of gender among us. As discussed earlier, assumptions of "unity" on the basis of one identity can mask inequalities on the basis of other identities (see also Mohanty et al., 1991). One of these inequalities was the greater degree of emotional labor exacted from Yvette and Lisceth during this long stage of data analysis, as a result of revisiting experiences of ethnic marginalization shared by study participants. Feeling isolated or tokenized, being overburdened with service obligations, having one's expertise questioned or challenged, and feeling the need to work harder than others for lesser rewards are all forms of race- and gender-based workplace discrimination to which women of color are particularly vulnerable (Gutiérrez y Muhs et al., 2012). In addition, the Latina members of the team could relate, either personally or via extended family and friendship networks, to a range of additional challenges voiced in the transcripts: immigrating to a foreign country, maintaining transnational family ties, learning English as a second language, navigating hostile mainstream institutions, and deflecting (or acquiescing to) pressure from kin and community to pursue school and work close to home, thus limiting career options. Fortunately — and this is yet another benefit of collaboration — our team approach to coding meant we had opportunities to debrief together about these affinities and talk through the emotions they evoked.

Power Dynamics at Home

At the time of this writing, we are drafting disciplinary-appropriate research papers to share the substantive findings of our research, alternating as lead author. It has been a long time coming. The process we have outlined above may best be described as a journey in which intellectual and emotional elements were inextricably conjoined. Yet, the ADVANCE program leadership on campus remained largely unaware of the complex nature of this journey. We did our best to explain its contours. While there was much support for the idea of including social science research in the overall ADVANCE effort, very early on we felt enormous pressure to discuss "results" without adequate time to produce them. Results could only ever be characterized as impressionistic until the long phase of coding was complete.

Beginning in the second year of the grant, and in alignment with its reporting requirements, we presented our work-in-progress at numerous campus workshops and symposia. We also attended external conferences, organized by relevant professional associations, because conference participation was a recognized contribution to the research process that the ADVANCE program readily funded. Many thousands of dollars of grant funding were dedicated to these events. The conferences were important mentorship opportunities for the undergraduate Latina students initially assigned to the team who sometimes accompanied us on our trips, and they also helped us crystallize a public narrative about the importance of the interview project. The travel did not afford us the time we needed to focus more concertedly on data analysis itself, however. In fact, after a point, such trips clearly delayed and prolonged the coding.

The years of effort devoted to coding was due partly to the false start with the software, the nature of the data we collected, and the goals we had for the research, as detailed above. But the delay was also due to our own failure to recognize and advocate for the type of support we

most needed to advance the research given our other campus responsibilities and obligations. We got considerable support: a half-time post-doctoral position, a temporary GSR position, temporary part-time undergraduate research assistance, coding software, and funding for conference travel. Although all this makes sense in the context of STEM research or quantitative social science research, what our qualitative project needed was full-time employment for Lisceth, the post-doctoral member of the research team, and consistent course release for Yvette and me, the two faculty members. Because her position was part-time, Lisceth had to take a second job; she also had two small children at home. Yvette and I, as senior scholars, shouldered heavy service burdens and even heavier teaching loads in our respective departments.

Over the six years that it took to institutionalize the ADVANCE grant at our institution, Yvette and I taught 24 courses each (48 between us)—mostly large-enrollment, writing-intensive courses with minimal teaching assistance. In both Sociology and Chicana/o Studies, faculty receive one teaching assistant per 90 students. We were the only faculty members involved in the ADVANCE effort with this burden, as STEM faculty typically teach only one or two courses per year. The rationale is that scientists spend more time writing grants. This is true, but it masks and reinforces research inequalities between STEM and non-STEM academic fields apart from large salary differentials. Time spent grant-writing, whether or not the grant is funded, is time spent thinking and writing about research, which furthers the research process. Writing grants and conducting research are part of the same intellectual project. Teaching can function that way if classes are small and students are highly motivated (as are graduate students), but it does not function that way in large-enrollment undergraduate courses in a public university context. For most scholars in the humanities and social sciences at UC Davis, the more time spent teaching, the less time for thinking about, and working on, research.

A parallel situation exists with regard to advising/supervising graduate students. In the context of a research lab or "shop," supervising graduate students is labor-intensive but also increases research productivity because students contribute to faculty projects For humanities and qualitative social science faculty, supervising graduate students may be intellectually rewarding but, at the same time curtails research productivity because students, in order to be competitive on the academic job market, have to establish themselves as independent scholars. Faculty advisors provide extensive guidance and feedback at all stages of a thesis or dissertation project, from initial conceptualization to final copyediting. However, our names never appear on the work. This certainly describes my situation as a qualitative sociologist, and it set me apart from all others involved in the ADVANCE effort at UC Davis. Yet, all faculty across fields are evaluated, promoted, and paid primarily on the basis of research productivity.

Although the ADVANCE program did not create these inequalities and could have done little about advising arrangements, Yvette and I could and should have been more proactive in requesting consistent course release. In hindsight, this would have been a vastly superior use of the funds allocated to the SRRI, given that publishing was the ultimate goal. We did eventually make the ask, but too late in the game (one course each over six years). Tellingly, the interviews themselves helped us see more clearly our own positioning vis à vis our STEM colleagues. While some interviewees struggled at teaching-intensive institutions (typically community colleges or state schools) with insufficient resources, those who landed jobs at our own institution or at peer institutions typically had enviable levels of support for conducting research, most notably freedom from teaching.

The mismatch between the support we needed and what we had was in no way the result of ill-will on the part of the ADVANCE leadership on campus. It was a function of the different

research cultures we inhabited, coupled with poor communication between these cultures and the fact that, as qualitative social scientists, we were a small minority within the larger group, with less power and visibility. Our minority status made it difficult to see and voice our concerns. It also made commitment to the overall ADVANCE effort difficult to sustain at times. Others' understanding of our research process was cloudy at best. Although the SRRI had been incorporated into the original NSF grant proposal, none of the proposal's authors were qualitative social scientists. Nor was there anyone representing this research tradition on the ADVANCE leadership team. Meanwhile, scientific assumptions of how research should unfold were the unspoken norm. This norm, coupled with the pressure to produce results quickly, was a key reason we were initially optimistic about using N-Vivo and persisted so long in our efforts to make it work. We hoped it would speed up the research process by bringing more "hands on deck." We also recognized that it lent an aura of scientific legitimacy to the project. The prevailing assumption in the sciences, and social sciences alike, is that software will systematize data analysis and make qualitative research not only "go faster" but also be "more objective" and "rigorous."

The upshot of all this was a certain irony: at the same time, we were studying the marginalization of Latinas in STEM fields, we were experiencing a parallel sort of marginalization ourselves. In effect, we faced some of the same disadvantages associated with tokenism in the workplace as identified in the diversity literature, including: a sense of exclusion and isolation, feeling pressure to educate majority-group members about our minority-group status (i.e., as feminist qualitative researchers), and experiencing performance anxiety because failure would reflect on feminist qualitative scholars as a whole, not just us (see Laws, 1975; Kanter, 1977; Yoder, 1991; Niemann, 1999; Grey, 2006).

Tokenism was the first of two ironies that gradually crystalized for us over the course of our research. The second is likely not unique to our campus but characterizes diversity and inclusion efforts in research-intensive academic institutions more broadly. As considerable resources are channeled into diversifying STEM through hiring initiatives, training programs, and the creation of "diversity offices" (the model for which originates in the corporate world, not higher education), the fields which are already relatively diverse and focused on social inequality (e.g., ethnic studies, gender studies, sociology) remain underfunded and devalued. In other words, the most diverse fields are the least resourced, which is no less a problem for equity and inclusion than the lack of diversity in STEM. Moreover, on our own campus, there is little attempt to draw upon the expertise of gender and ethnic studies faculty or integrate their research into campus diversity programs in any systematic way (the SRRI being an exception). As representatives of "that side" of campus, our team felt this contradiction acutely.

Coda

We share these "tales from the field" out of a commitment to institutional transformation that is broad, holistic, and ecumenical. Humanities and qualitative social-science faculty are sometimes critical of diversity and inclusion efforts because of their origins in corporate/managerial contexts (see Vaughn, 2007) and because they tend to prioritize individual-level behavioral and cognitive understandings of social inequality over deeply structural ones. But the individual and the social inevitably come together and touch down in different ways in a variety of settings, including academic STEM fields. We recognize that initiatives such as ADVANCE are strategic and necessarily limited interventions that typically target the organizational culture of STEM. They are not broad social justice projects designed to eliminate

racial and gender inequality in higher education, let alone society writ large. As such, leadership must necessarily come from within the STEM community, not imposed from outside.

At the same time, it is primarily non-STEM research and scholarship that helps us understand how and why social institutions reproduce inequality such that diversity and inclusion efforts become necessary in the first place. The inequalities responsible for the persistent whiteness and maleness of STEM are not unrelated to the inequalities ensuring the lesser status of those disciplines where white women and people of color are better represented. “Thicker” collaboration and communication across this divide is a much needed but as yet neglected intervention.

We end this journey by encouraging all scholars invested in institutional transformation to “stay curious,” which includes being attuned to different kinds of power relations, not just between researchers and those they study, but also between different communities of researchers engaged in the common pursuit of achieving a more inclusive, and equitable, academy.

Laura Grindstaff is Professor of Sociology at the University of California, Davis and a faculty affiliate in Gender, Sexuality, and Women's Studies. A feminist ethnographer by training, her research and teaching focus on the cultural dimensions of sex/gender, race, and class inequality with a particular emphasis on US popular culture. She is the author of The Money Shot: Trash, Class, and the Making of TV Talk Shows (University of Chicago Press) as well as numerous essays on topics ranging from cheerleading to intersectional hashtag feminism. Dr. Grindstaff serves as Co-Director of the Social Science Research Initiative, a component of the UC Davis ADVANCE Program conducting research on the career pathways of Latinas in STEM.

Yvette G. Flores is Professor of Chicana/o Studies at UC Davis and a community-clinical psychologist. Her research focuses on substance abuse treatment outcomes, women's mental health, intimate partner violence, and the mental health of immigrant men. Dr. Flores' publications reflect her life's work of bridging community and clinical psychology and Chicano/Latino studies. Her most recent book, Cultura y Corazón: A Decolonial Methodology for Community Engaged Research, was published by the University of Arizona Press in 2020. Dr. Flores serves as Co-Director of the Social Science Research Initiative, a component of the UC Davis ADVANCE Program conducting research on the career pathways of Latinas in STEM.

Lisceth Brazil-Cruz is an interdisciplinary researcher who studies the predictive and protective factors that promote women of color in STEM fields. Additionally, her research addresses access to education and health resources for underserved populations, with a particular focus on Latinx communities. Her interests include educational and pipeline/pathways issues affecting disenfranchised, underserved, and vulnerable student populations as well as issues of equity

among communities of color. Dr. Brazil-Cruz holds a PhD in Educational Policy and School Organization from the University of California, Davis and currently serves as Dean of Student Services & Institutional Effectiveness at Woodland Community College.

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