Making Visible the Invisible: Studying Latina STEM Scholars

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Abstract This chapter focuses on the experience of conducting collaborative, interview-based research on the career pathways of Latina STEM scholars in the United States. In addition to outlining our key findings, we address the process of conducting the research and explain why the Latina experience is crucial to understanding current discrimination practices. We discuss the theoretical foundations of our methodology and the importance of qualitative, in-depth interviews as a specific form of knowledge-production, as well as topics such as researcher ethics, positionality, confidentiality, emotional labor, and the advantages and challenges of interdisciplinary collaboration.

Keywords Latina · STEM scholars · Interview-based research · Methodology · Researcher positionality · Emotional labor

1 Introduction

The Social Science Research Initiative (SSRI) of the UC Davis ADVANCE program was tasked with conducting integrated, empirical studies of the experiences of Latina STEM scholars in the academy. The goal of the research is to inform the diversification efforts of STEM faculty, with a particular emphasis on Latinas and Hispanic

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L. F. Bisson et al. (eds.), *Uprooting Bias in the Academy*,
https://doi.org/10.1007/978-3-030-85668-7_8

women. An early emphasis of the initiative was an interview study of the career paths of both STEM and non-STEM Latina scholars, ranging from faculty recruitment through mid-career, who had participated in the University of California President's Postdoctoral Fellowship Program (PPFP). Given the limited numbers of Latinas in the PPFP pool, we expanded the recruitment to include Latina STEM scholars across the United States who were not recipients of that fellowship. In addition, we interviewed scholars participating in the Center for the Advancement of Multicultural Perspectives on Science (CAMPOS) at UC Davis. Interviews with women in all these groups explored the barriers the women encountered, as well as the cultural, familial, and institutional sources of support they received while pursuing careers in STEM. This information was then made available to the other ADVANCE grant initiatives to inform the development of CAMPOS programs along with general campus recruitment efforts.

As stated in the Chapter, "[Latinx Communities and Academic Trajectories](#)," Latinx are a young and growing population in the United States. However, because Latinx students face significant barriers and disadvantages in the educational pipeline, few pursue postgraduate studies, particularly in the sciences. Moreover, although there is increased interest in understanding the barriers to STEM careers for women generally, few studies have examined the barriers for Latinas and other women of color specifically (Zambrana et al. [2015] is an important exception). Therefore, we sought narratives from Latinas who had pursued STEM careers in order to understand their pathways, as described in their own words. Given our small sample and the limited information available on Latinas in STEM, we chose qualitative methods—specifically, semi-structured interviews—which covered a range of topics pertaining to the women's past and current experiences as well as future career aspirations.

Feminist scholars underscore the importance of examining the multiple, intersecting factors that can deter women from pursuing STEM fields (Flores, 2017; Moss-Racusin et al., 2015; Muhs Gutierrez et al., 2012) and have pointed especially to the ways in which social-identity categories such as gender, social class, and race or ethnicity can shape opportunities, both personal and structural. Likewise, scholars have identified the importance of formal support programs, along with less-formalized systems of support from teachers, peers, and even family members, as being protective factors and even bridges to success. Given the diversity of the Latinx population, an intersectional framework as described in Fig. 1 was critical to the development of our interview guide and the analysis of the data. In particular, we were interested in the role of *nativity*, or national origin, in the academic trajectory of the women: To what extent, we asked, did the experiences of immigrant women who came to the United States to pursue postgraduate education differ from those of Latinas who migrated here with family members seeking greater economic opportunities and from those of Chicanas or U.S.-born Latinas? And what effect did social class, geographical location, type of schooling received (public, parochial, private), and presence or absence of family support have on our subjects' choice to pursue a STEM career? Although ability, citizenship status, and sexual orientation are also potential intersectional factors to consider, they did not emerge as significant axes of difference in our project. That these factors did not arise is not necessarily an

Key Concept #1:

Feminist scholars underscore the importance of elucidating the multiple, intersecting factors that can deter women from pursuing STEM fields and have pointed especially to the ways in which social-identity categories such as gender, social class, and race/ethnicity can shape opportunities, both personal and structural.

Fig. 1 The first key concept

indicator that they weren't operating in our interviewees' lives. Among the Latinx community, both citizenship status and sexuality can be difficult to discuss, especially for aspiring professionals.

In the first years of the ADVANCE program's development, the SSRI team consisted of two advising members, Dr. Adela de la Torre and Dr. Mary Lou de Leon Siantz; six undergraduates; and the core team, composed of postdoctoral scholar Dr. Lisceth Brazil-Cruz and faculty members Dr. Laura Grindstaff and Dr. Yvette Flores. The team represented a diverse array of disciplines, including sociology, clinical psychology, education, Chicano/a studies, nursing, and economics. The core team, which conducted all but two of the interviews and did all the coding, analysis, and writing, hailed from education (Lisceth), sociology (Laura), and psychology (Yvette). We considered interdisciplinarity to be an essential element of the research, because each discipline brings a unique and enriched view to both the collection and the analysis of the data. It allowed us to consider various perspectives, develop nuanced analyses, and gain a more holistic view of the experiences shared by interviewees. Interdisciplinary approaches have become increasingly valued in academia while also posing some distinct challenges (Jones, 2010), some of which we discuss below.

The two core team faculty members traded off serving as directors of the SSRI initiative, and over the seven years of the grant (five years, plus two years' no-cost extension) they received two course releases each. A normal load for social science faculty is four courses per year (in addition to research and service obligations), so instead of teaching 28 courses over seven years, they taught 26. The postdoctoral scholar was employed at 50% time and in the last year of the grant was employed at 100%; she provided organization to the team and was in charge of Institutional Review Board (IRB) protocols and scheduling, in addition to collaborating with the faculty team members on all aspects of the research. She also supervised and mentored the undergraduate students working on the project, all of whom were in

STEM fields. Under Brazil-Cruz's guidance, the undergraduates summarized the demographic information of our interviewees and helped present the research at conferences. Each of the core team members took turns leading the development of manuscripts derived from the data.

2 Methods

2.1 *Developing the Interview Guide*

Before the interview guide was created, and to help generate ideas for it, we held three focus-group interviews on our campus—one interview with six Latina faculty in social science and STEM disciplines; and two focus-group interviews, each with five Latina graduate students in STEM). Given the small numbers, the interviews were conversational and purely exploratory. The main findings revealed participants' preponderant feelings (either current or past) of isolation in their graduate departments, the effect of "impostor syndrome," and problems with mentoring. Students cited the lack of adequate mentoring guidance to help them advance academically, while faculty noted the lack of adequate time or compensation for the mentoring efforts they expended. Some participants stated that it was the first time they were ever asked about their experience in graduate school. An unintended benefit for the graduate students of taking part in the focus groups was the sense of community the groups helped to create, as students were able to compare and validate their experiences and also connect with others on campus in similar situations.

To develop our interview guide, we reviewed a number of existing guides and consulted with Dr. Ruth Zambrana, an expert on race and gender inequality in academia from the University of Maryland. Dr. Zambrana shared a guide she had developed and gave us permission to edit it to better suit our purposes. The final document drew primarily from this guide along with one developed by a member of the core team (Laura) during a past project focused on women in STEM in the University of California system. It consists of questions related to personal background, current living situation, postdoctoral experience, career path after completion of doctorate and postdoctoral studies, current work environment, work-life balance, experiences of bias or discrimination, and the ideal partner for a STEM scholar. Once the interview guide was developed, we piloted it and began conducting the interviews, followed by transcription and coding.

2.2 *The Sample*

As mentioned, the focus of the study was to understand the educational paths of Latinas in academia. Accordingly, the first set of interviews was conducted with

Latinas who had participated in the President's Postdoctoral Fellowship Program funded by the University of California Office of the President, UCOP. The PFP was established in 1988 to encourage women and minority Ph.D. recipients to pursue academic careers at University of California campuses. This highly competitive program offers a variety of fellowships and faculty mentoring opportunities to those who are conducting research at one of the 10 UC campuses. We reasoned that a prestigious and longstanding minority program would be an ideal place to identify potential interviewees, given that our target population was small and geographically dispersed. When we began the study, the total sample size of the PFP fellows was 537. Of these, 58 fellows were Latina; 35 of the 58 were in non-STEM fields and 23 of the 58 were in STEM fields. We contacted all 23 and experienced non-response from eight; an additional six declined participation as they either lacked the time or preferred not to revisit their graduate school or subsequent employment experiences. We then interviewed 10 Latina STEM fellows from the PFP pool. Simultaneously, we sought to interview the CAMPOS faculty scholars who were being hired at UC Davis, as part of the ADVANCE Program's plan for institutional transformation. As mentioned, CAMPOS aims to create diverse and inclusive environments that are mentor-rooted and career-focused for Latina STEM scholars. CAMPOS aspires to model and originate a prototype for achieving excellence through diversity in each UC Davis STEM school and department, while at the same time raising the overall stature of the campus both nationally and globally. The goal was to hire four scholars per year over four years, for a total of 16.

Even with the combined participation of PFP fellows and CAMPOS scholars, we had a small sample, so we realized we needed to expand the pool. We conducted an online search of STEM department websites for universities and colleges both in California and across the country. We also reached out to professional organizations such as the Society for the Advancement of Chicanos/Hispanics and Native Americans (SACNAS) and placed advertisements in targeted social media. As time went on, the team attended various conferences attended by Latina STEM scholars with the goal of recruiting more participants. These conferences included the Latina Researchers Network (LRN), Society of Hispanic Professional Engineers (SHPE), and Understanding Interventions (UI). Initial contacts put us in touch with others in their own networks, in a strategy known as "snowball sampling." All potential participants were invited, via email, to be interviewed. In total we interviewed 36 women; 15 were immigrants while 21 were U.S.-born, of either Mexican or Puerto Rican origin. Only 22 of the 36 were scientists, the rest were social science scholars.

When possible, we conducted interviews in person, but the majority were conducted over the phone. Interviews lasted from one to two hours each, and were audio-recorded. We gave each woman a pseudonym to ensure anonymity. Since verbatim transcription of interviews is incredibly time-consuming, we outsourced that component to the extent possible. Initially, we relied on student researchers, but their pace was slow so we hired a professional service. Although faster, this introduced problems of its own (discussed below). Each interview yielded roughly 20 to 30 single-spaced pages of transcribed text.

2.3 Analysis—*The Grounded Theory Approach*

The limited information regarding Latinas' experiences in STEM fields and the factors that contributed to their interest in science led us to choose Grounded Theory as our analytic approach. Most traditional research entails collecting data in order to test hypotheses based on existing theory. Introduced by Glaser and Strauss in 1967 and developed by qualitative scholars such as Charmaz (2014) and Strauss and Corbin (1997), Grounded Theory is a research approach that uses data to *generate* theory. That is, the theory evolves from the data collected and is used to guide the further analysis of data, rather than simply providing a precondition for testing data. The team was fortunate to attend a workshop at the UC Davis Medical Center featuring a participatory seminar on the use of Grounded Theory Methods taught by Dr. Charmaz herself. Grounded Theory offers rigorous methods to code and analyze qualitative data—in our case, the interview transcripts.

To begin organizing and analyzing our transcripts, the core team had to develop a code book—a coding document, based initially on categories suggested by the interview guide but evolving to reflect varying subcategories and themes emerging from the transcripts themselves. We engaged in an iterative process of constant comparison, which entails moving back and forth between data collection and analysis. We began to code interviews even before we finished conducting interviews, and the ongoing coding helped us see and understand the content of interviews in new ways. In other words, the experience gained in the interviews helped refine the codebook, and this refinement continued throughout the coding process, as new thematic categories emerged or others were reconsidered or condensed.

The process of analyzing the data in this manner involves three levels, or types, of coding. The first is open coding, in which the researcher begins to divide the data into similar groupings and forms preliminary categories in relation to the phenomenon being examined (e.g., family values regarding education). This is followed by axial coding, in which the researcher starts to organize the categories that have been identified into broader groupings (e.g., early educational experiences). These groupings resemble themes and are generally new ways of seeing and understanding the phenomenon under study. Afterward, selective coding takes place in which a researcher organizes and integrates the categories and themes in a way that begins to articulate a coherent understanding or theory of the phenomenon of study (e.g., educational values are seen to be less consequential than social and cultural capital in shaping early educational experiences).

Given the length of our transcripts, coding was time intensive and continuous, lasting more than three years. During this time, we shared our preliminary findings, including themes emerging from the data, with other ADVANCE initiatives. These included the importance of early mentoring, the interconnection between mentoring and institutionalized support programs for minority scholars, the high incidence of narratives of persistence and resilience, significant class-based differences between international scholars and domestic minority scholars, the importance of family and community, and the critical role played by scholars' spouses and partners in either

furthering or hampering their careers. We also presented these findings at national conferences, including Association for Women in Science (AWIS), Understanding Interventions (UI), American Education Research Association (AERA), National Association for Chicana and Chicano Studies (NACCS), and internationally at the International Society of School Psychologists (ISSP) in Tokyo and AERA in Toronto.

3 Positionality and Research Ethics

In the context of research, positionality refers to the researcher's awareness of her social location, or *position*, in relation to the study and to the individual participants involved. Postcolonial feminist theorists pay particular attention to positionality in terms of culture, class, gender, age, religion, sexual orientation, and childhood lived experiences (Mohanty et al., 1991; Patai, 1983; Wolf, 2018). The positionality of the research team—how we understand the effects of our own social locations on our research process—affects every methodological decision. Of utmost importance, positionality, summarized in Fig. 2, also concerns the recognition of researchers' privilege in relation to that of participants. In this particular study, the research team was composed of academics interviewing other academics; on the one hand, this “flattened” certain power differences because we were all professional women, while on the other hand it revealed salient differences in class, culture, nationality, and immigration history, in addition to rank and disciplinary affiliation. The positionality of researchers vis-à-vis one another is no less important. To give a personal example, although all three of us are academics, we differ in rank and job security, we are multigenerational, and we represent various geographical and cultural

Key Concept #2:

Positionality refers to the awareness of the researcher's position in relation to the study and to the individual participants involved.

Fig. 2 The second key concept

backgrounds—all of which proved indispensable (positive) characteristics when we coded and analyzed the data.

By contrast, although four of the five members of the broader SSRI team were Latina, they differed in terms of nativity; three were immigrants, with two being Mexican-born and another originally from two Central American countries. One researcher was U.S.-born, of Mexican origin. The one non-Latina researcher also was an immigrant. Four of the researchers grew up speaking Spanish and experienced educational disparities. Among the three of us comprising the core team conducting the interviews and analysis, the Latina researchers (Yvette and Lisceth) were mindful not to assume common ground with interviewees based solely on a shared ethnic identity—especially because of class differences; none of us had the same economically privileged backgrounds enjoyed by some of the international scholars being interviewed. Thus, we were abundantly aware of the diversity of Latinas and took care to avoid presumptions of similarity. Likewise, we frequently engaged in side-conversations about unconscious bias. We read and reread transcripts carefully to examine how we asked questions and whether we were making unwarranted assumptions during the interview process.

Some of the women we interviewed were well-established academics who held administrative appointments; others were well-known scientists whose narratives could be identifiable; and many were junior faculty members whose academic careers were just beginning. Given the small numbers of Latina STEM scholars in the United States overall, participants asked several times about confidentiality. Even after reviewing the protocol and consent form approved by our Institutional Review Board (IRB), some participants expressed concern that other faculty or even the chairs of their departments could identify them by their responses. This was particularly concerning for women who had histories of difficulties with mentors, colleagues, or supervisors with whom they had worked previously, or who were experiencing challenging situations in their current position. As a result, confidentiality and anonymity were critical components of the research protocol. All the women wanted assurances that their information would be held in strict confidence. Confidentiality typically means that no one but the research team has access to the data and that data will not be shared in raw form unless legally subpoenaed (a highly unlikely scenario in research such as ours). Anonymity means de-identifying participants when summarizing, paraphrasing, or quoting aspects of their interviews.

To ensure anonymity, we assigned each interviewee a pseudonym; when publishing results, we withhold or change the names of institutions and fields of study; we also omit or alter personal details as necessary while retaining the integrity of the analysis. It helped that all of us on the core team were social scientists, not STEM scholars, because it reduced the likelihood we would know individuals in interviewee's departments, programs, or fields of study. However, the Latina academic community is small, and the paths of interviewers and interviewees might cross at conferences or on campus. And it did sometimes happen that one of us knew someone discussed by the interviewee. Thus, it was important to assure participants that their information would be protected to the fullest extent possible, in terms of both confidentiality and anonymity.

CAMPOS prides itself in providing a safe space for junior faculty to seek resources and support as they navigate academia. Therefore, to safeguard the scholars' privacy and confidentiality, they were interviewed in a location of their choosing. Most important, no one affiliated with the CAMPOS leadership conducted interviews with the scholars or had access to their audio files or transcripts; rather, the three of us conducted the interviews and coded all of the transcripts. Moreover, given the use of pseudonyms, we were unaware of whose transcript was being coded.

4 Challenges Encountered

The first major challenge we encountered was simply finding women to interview. Recall that of the 537 PFP scholars, only 23 were Latinas in STEM. Of these 23, fully one-third declined to interview because they either they felt too burdened by work or they simply did not wish to revisit their past experiences. The second major challenge was transcription, as mentioned earlier: We requested and received funds from the ADVANCE program to hire a professional transcriber in order to speed the process along, but the person chosen was not bilingual and proved unfamiliar with the target population. Several of our interviewees code-switched from English to Spanish or used Spanish language terms that were transcribed incorrectly; as a consequence, we had to go over large chunks of some interviews and make corrections. The transcriber also had difficulty with the accent of some of our interviewees and was unfamiliar with acronyms they regularly used, again requiring us to listen to the audio files and correct transcription errors. Obviously, this was time-consuming. A third challenge was the coding itself.

Initially, the three of us coded independently; over time, we realized that collaborative coding was critical so that we might understand cultural and linguistic nuances, verify meanings that were culturally embedded, and reach consensus over those meanings. Our interviewee responses often fit multiple categories (for example, "experiences of gender discrimination" and "motherhood penalty"). Thus, entries would need to be coded in multiple domains. We needed to agree on the "correct" domain before an interview response could be coded. The conversations we had while coding were helpful, as we explored emerging themes that could enrich the process of data analysis, but overall the coding was extremely time- and labor-intensive. Each transcript took roughly 10 hours to code and correct, and sometimes longer, depending on the number of transcription errors.

A fourth and more substantive challenge was understanding and negotiating our positionality vis-à-vis our participants. As mentioned previously, some of our interviewees were immigrants. The three of us were immigrants, as well, although from different countries and with different migration histories. This information was not initially known among us, but emerged during the coding process. We soon realized we had to carefully examine our coding decisions in order to avoid a presumption of similarity, particularly because several of our interviewees were South American immigrants from more-affluent backgrounds than any of us. We were conscious that

our class differences might influence our interpretations. Likewise, as demographic differences in the sample became more salient, the Latina/Mexicana members of the team (Yvette and Lisceth) were cautious not to assume greater similarity with the domestic STEM respondents. We wondered out loud: What difference did our differences make? Although the interviews themselves were conducted primarily with regard to availability (which member of the team was free when the interviewee herself was free), we wondered whether an immigrant Latina interviewee would be more comfortable with the immigrant Latina interviewer. Would a younger scholar be more comfortable sharing information with Lisceth, as a postdoctoral scholar, rather than Laura or Yvette, as senior faculty members? There was no way to know in advance, yet we engaged with these questions as we read the transcripts and continued coding. Most of our interviews were done over the phone, but some were done in person. Did that make a difference in quality and depth? In the early stages of analysis, it appeared that phone interviews were longer and more detailed, although we lack a sufficient number of in-person interviews to make a comparison.

A fifth challenge, and perhaps the largest one, was how to navigate the emotional demands of the interviewing process, both positive and negative. Since it was the first time that most of the interviewees were being asked questions related to career trajectories, it became evident that they felt thankful for the opportunity to share their experiences with us, and to learn that we actually cared about those experiences. When painful personal or professional information was shared, it was important for participants to know that Yvette, a clinical psychologist, was available to them should they need to debrief or get support. Although the interviews were informative and rewarding, for interviewers and interviewees alike, they were also sometimes painful, as we listened and learned about experiences ranging from discrimination, sacrifice, and disappointment to persistence, resilience, and ultimately success. As interviewers, we realized we could personally relate to the experiences of the women we interviewed, particularly their narratives about gender discrimination in academia. In addition, Yvette and Lisceth could personally identify with some of the narratives of racial and ethnic discrimination.

Arlie Hochschild has described the often-invisible, emotional work that women do as “feeling management,” and called the appropriation of that feeling management by employers in the workplace “emotional labor” (Hochschild, 1983). For the three of us on the core team, a significant aspect of our emotional labor was the creation of a safe space where Latinas could talk about their lives, their academic trajectory, their struggles, and also their achievements. As we listened to their stories, their narratives often resonated with our own painful academic journeys. As interviewers, part of our emotional labor was hearing about upsetting, triggering, or painful narratives; for instance, hearing women say they avoided having children because early in their education they were told that they had to choose between being a scientist and a parent—a forced choice men typically are not expected to make. It was painful to hear about the “second shift,” in which women must do domestic work at home after long days of paid work; it was upsetting to hear of childhood experiences of racism at school, or of sexist comments from colleagues or advisors at work; we sympathized with their efforts to honor family commitments while putting in long hours at the

lab, with their feelings of isolation and not “fitting in,” with the burden of being the financial safety net for extended kin. Yet if we were triggered by their struggles, we were also inspired by their resilience. As we heard their stories, we aspired to listen compassionately and objectively, holding our own feelings in check. It was important, we thought, to separate their narratives of emotional labor from our own. As a result, we often needed to debrief with each other.

Another dimension of our emotional labor occurred as a result of our being social scientists working within a STEM-dominated initiative. It became increasingly clear that we needed to voice our experiences within the larger ADVANCE project, otherwise we would be colluding with the academic systems of oppression that silence and render invisible the emotional labor of women. Consequently, we often had to explain the importance of qualitative methods, as we felt marginalized by some colleagues unfamiliar with these methods. More difficult still was that, time and time again, we had to explain why we chose to study Latinas, even to members of the campus ADVANCE team, despite the fact that the grant proposal itself had foregrounded this focus. Being the researchers in the thick of actually conducting research, we often felt isolated, sensed that our methods were being questioned, and came to realize that the laborious nature of coding and data analysis was not well understood. We were asked often what we were “doing,” which felt like an accusation that we were not “doing enough”—ironically, an experience shared by some of our interviewees. This is an aspect of “inclusion” not often discussed—the fact that qualitative, interpretive research of the sort we conduct may be devalued by scientists, not considered “real” research at all. This view marginalizes the humanities and qualitative social sciences in higher education, including ethnic and gender studies programs, ironically the very spaces on our campus with the most diverse faculty and student demographics.

Our interviewees’ narratives, in combination with our own experiences, made visible that, for some of us, the academy can be a source of trauma, as reiterated in Fig. 3. Given the privilege that an academic position also brings, a final insight is that academics generally do not discuss the psychological costs of that privilege. Instead, they often internalize the criticisms, microaggressions, and erasures. Realizing this, we chose to ask our interview participants how they sought balance and maintained well-being in their life and work. Some said they seek therapy; others practice yoga and mindfulness, exercise, and share their experiences with a few trusted colleagues or friends. A few of the women disclosed that “things got much worse for them” whenever they complained or called attention to injustices.

To summarize, our in-depth interviews helped us understand the personal, familial, and institutional factors that have both helped and hindered Latina STEM scholars’ professional and educational careers. The methodological approach we took has enabled us to comprehend the complex processes involved in forging these careers. We also identified important differences in the trajectories of domestic “URM” (underrepresented minority) scholars versus international STEM scholars. Drawing on our findings and experience in conducting the interviews, we conclude this chapter by offering some best practices for universities seeking to recruit Latinas in STEM.

Key Concept #3:

As we began to hear their stories, their narratives often resonated with our own painful academic journeys.

Fig. 3 The third key concept

5 Best Practices When Seeking Excellence Through Institutional Diversity

Our interviewees spoke freely of the importance of academic support programs they experienced throughout college and in their postdoctoral training. They commented that the role played by mentors, both official and unofficial, in learning to negotiate higher education or eventually an academic job, was critical, particularly for URM and first-generation scholars. Furthermore, for URM scholars, peer mentors also were important. Several of the URM women described how peers who came from more privileged backgrounds encouraged their graduate school attendance, helped with applications, and provided emotional support. Likewise, many of the interviewees described family mentors who encouraged their interest in science. One Latina, for example, recounted that her grandfather (who worked as a gardener) bought her a microscope at a flea market when she was a child so she could see the inside of leaves, which fascinated her; she credited this experience with her ultimate choice of becoming a biologist. Another first-generation scholar credited a high school teacher who encouraged her by noting that she wrote well.

As discussed previously, in our interviews we strove to create a safe space where the women could talk freely about the barriers they had encountered. Many had difficult family situations, but prevailed because of their focus on and interest in school. They also found at least one family member, or perhaps a teacher, who encouraged and supported their interest in science. Unfortunately, most of the women got the message early on that being a scientist was incompatible with motherhood. Some of the Latinas in the sample who were parents bore their children as adolescents or while in graduate school. As summarized in Fig. 4, among the CAMPOS scholars, several said they had chosen the UC Davis campus over other options in part because of its policies regarding work-life balance and positive attitude toward mothering.

Key Concept #4:

Several CAMPOS scholars said they had chosen our campus over other options because of our policies regarding work-life balance and positive attitude toward childcare.

Fig. 4 The fourth key concept

The women's narratives regarding gender, racial, or ethnic discrimination referenced issues that manifested throughout their lives. The women who reported experiences of discrimination demonstrated great resilience in persevering despite microaggressions, feelings of inadequacy ("imposter syndrome"), and general presumptions of incompetence. Some struggled with lab supervisors, mentors, and/or colleagues who were blatantly racist or sexist. Others, by contrast, described positive work experiences in their current positions, particularly if they were part of diverse work environments, or if they felt supported by their department chairs or more-senior faculty. Our CAMPOS scholars stated that they were eager for the opportunity to build community and network with other Latina STEM scholars on campus; they appreciated that such collaboration was a central goal of the ADVANCE initiative in general and the CAMPOS program in particular.

For the research team, it was essential for us to debrief after the interviews; as discussed, we often found interviewees' accounts triggering, as they mirrored some of our own experiences in the academy. Lisceth, as the team member responsible for mentoring our undergraduate assistants, was especially concerned that reading through the interviews might adversely affect the undergraduates, all young Latinas aspiring to STEM careers. She thus took time to discuss with them the myriad ways in which the women interviewed had resisted and persisted throughout their lives.

We found that collaborative coding enabled the team both to identify immediate areas of intervention and to provide feedback to other ADVANCE grant initiatives and the ADVANCE leadership. For example, one of the scholars on our campus shared that she was having to set up and maintain her own lab space, as she had received little help from her department. The interviewer on our team, with the interviewee's permission, informed a senior member of ADVANCE and the situation was quickly corrected. Another noted how, despite her understanding of her contract, she was having to teach during her first quarter on campus. This also was reported to senior management. We found it rewarding to be real-time advocates for some of our interviewees.

As the core team comprising the SSRI, we were encouraged to present at national as well as international conferences, experiences we found highly rewarding. Our engagement with STEM scholars and social scientists at conferences became a critical aspect of our work. Conference participants always expressed a great deal of interest in our findings, as they seem to have found scant information about Latina STEM scholars in other diversity, equity, and inclusion (DEI) initiatives. These academic exchanges also helped us debrief further and build community with other social scientists engaged in qualitative research.

6 Conclusion: Institutional Transformation—It Takes a Village

Overall, the Latina STEM scholars who shared their stories with our team demonstrated great resilience. They showed how it does indeed take a village for women who love science to pursue and succeed in STEM careers, as stated in Fig. 5. Family encouragement, interested and supportive teachers, academic support programs, and institutions willing to change their culture become generative factors for women, including Latinas—all are essential to the recruitment, advancement, and retention of women scientists. Institutional transformation efforts in the academy must respond to the gender, socioeconomic, racial/ethnic, sexual identity, and ability characteristics of all faculty. At the same time, Latinas already laboring in STEM fields also must recognize the diversity inherent in the label “Latina” and be mindful of the needs that different immigrant populations may have, as well as the difficulties endured by U. S.-born Latinas and Chicanas who have been uniquely marginalized in higher education.

Key Concept #5:

The Latina STEM scholars who shared their time and narratives demonstrated great resilience; they showed how it does indeed take a village for women who love science to succeed and pursue STEM careers.

Fig. 5 The fifth key concept

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