



# Creating Sociological Knowledge and the Next Generation of Sociological Thinkers in Faculty-Directed Research with Undergraduate Research Assistants

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## Abstract

Undergraduate research in sociology departments provides opportunities for student engagement and faculty development. Although undergraduate research in the natural and physical sciences and graduate mentoring have been extensively studied, there are few systematic studies of the process of extracurricular undergraduate research in sociology from the perspective of both faculty and students. We carried out semi-structured qualitative interviews with 23 faculty and undergraduate research assistants (RAs). Our results outline the dynamics of faculty-directed research collaborations in sociology departments. We first detail the tasks regularly performed by undergraduate RAs and then describe the development of RA-faculty partnerships, including hiring and training. Faculty-RA teams work together on faculty-directed research through mechanisms of accountability, regular meetings, and communication. Finally, we describe how relationships transform and partnerships end. We find that faculty generally have one of two outlooks on undergraduate research: they either seek RAs as facilitators of their research or they aim to develop and mentor junior colleagues. We discuss the implications of these outlooks for student learning, professionalization, and holistic development.

**Keywords** Research assistants · Research training · Higher education · Teacher student relationship · Mentor · Faculty publishing

## Introduction

As scholars, we learn and we teach. We learn new things when we undertake a research project and discover new social knowledge; we teach the conclusions of this work to others in our journal articles and books. Faculty learn about new, unexpected

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connections between fields when an excited student comes to us with ideas; we teach students the traditional methods of our field that are used to uncover social realities.

Undergraduate research opportunities allow students to feel engaged in this inquiry-focused side of university life (Jenkins & Healey, 2005). Equally important, involvement in research allows for extracurricular learning and professional socialization for undergraduate sociology students (McKinney & Reed, 2007; McKinney et al., 1998; Pike et al., 2017). Active undergraduate research programs integrate faculty research, teaching, and mentoring activities (Jenkins & Healey, 2005; Kain, 2006) and facilitate positive educational experiences for undergraduate students (McKinney et al., 1998). Undergraduate research experiences are particularly important to the retention of underrepresented minorities in science, particularly women of color (Espinosa, 2011; Ong et al., 2011).

Faculty at over 2,000 U.S. institutions of higher education interact primarily with undergraduates (Slocum & Scholl, 2013). These primarily undergraduate institutions, which awarded nearly half of U.S. bachelor's degrees in 2010 (Slocum & Scholl, 2013), are crucial to integrating undergraduate students into research activities. While the importance of extracurricular research experiences for undergraduates is well-documented (e.g., King & Imai, 2023; McKinney et al., 1998), the process of how to engage sociology undergraduates in extracurricular research is not. Many have documented best practices for teaching methods to undergraduates in the classroom (e.g., Crull & Collins, 2004; Medley-Rath & Morgan, 2021; Pfeffer & Rogalin, 2012), but relationships between faculty and RAs are often more informal and may demand a different approach. Furthermore, we argue, undergraduates are undervalued as potential research collaborators in sociology at these institutions. By documenting approaches to developing and sustaining these research relationships, we hope to support the enterprise of this relatively untapped research resource.

Faculty-RA research relationships can take on many forms and be focused on many activities within the academy. Research topics and collaborations may arise from many sources. For example, faculty and students might pursue further development of research papers developed for a course. Students might approach faculty for mentorship on an undergraduate thesis or independent study topic. Faculty and students collaborate on academic enrichment events, such as putting on conferences or coordinating speakers. These types of research activities, however, may or may not be related to the faculty member's core research agenda. Here, we focus our study on extracurricular research experiences where undergraduate assistants are supporting faculty-directed research projects. Rather than measure concrete scholarly products as outcomes of these partnerships, faculty and student respondents identified their own benefits and challenges from the research experiences, published in another paper based on the same data. In summary, students develop practical research, interpersonal, and project management skills while developing relationships with faculty mentors and learning about career interests, and faculty enjoy assistance with research tasks as well as opportunities to mentor and develop pedagogical skills (King & Imai, 2023). These processes and benefits contribute to the development both of the next generation of sociologists and of scholarly knowledge grounded in faculty expertise.

In our study of faculty-student research assistant (RA) teams, we sought to answer the research question: what characterizes the processes of selection, training, accountability, communication, and relationship building within faculty-RA partnerships and teams in faculty-directed research? To answer this question, we describe the tasks, workflows, and communication patterns of a variety of extracurricular sociological research opportunities for undergraduate students as seen by both faculty and RAs. First, we outline the related literature on undergraduate RA-faculty research tasks and processes. Then, through interviews of both faculty and students in research teams, we explore what faculty-RA research relationships look like and how they function. In so doing, we hope to detail the day-to-day processes through which successful faculty-student research partnerships are enacted. We conclude with the implications of this research process for student development, faculty satisfaction, and institutional support.

## Literature

We begin by reviewing the existing literature on the processes studied: selection, training, accountability, communication, and relationship development between faculty and RAs. Most extant scholarship focuses either on training undergraduates in the natural and physical sciences or on training graduate students in the social sciences. Although a comprehensive review of this scholarship is outside the scope of this paper, we review the most relevant work on undergraduate RAs in the physical and natural sciences. Because the literature on undergraduate RAs in the social sciences is so limited, we also briefly review relevant work related to graduate students.

Swigert et al. describe lessons from a social science research center on aging at an undergraduate college, underlining that the project worked “educationally because of the collaboration of faculty and students in every phase of research – in survey design, interviewing, data preparation and analysis, and the writing of research reports” (1993, p. 303). However, the research does not outline any details about communication, meetings, or relationships, and the process is only described from the faculty point of view. Furthermore, the context of a setting in a research center is atypical for many faculty at primarily undergraduate universities and collaborative dynamics may have changed as a result of technology over the intervening thirty years.

We know relatively little about how social science faculty select undergraduate RAs. Psychology educators report recruiting student RAs by advertising positions in faculty-guided research, creating new research topics for interested students, or mentoring student-initiated projects (Landrum & Nelsen, 2002). However, these limited findings were open-ended responses to a quantitative survey of faculty, rather than the results of a systematic study, and no student perspectives were solicited. In the center on aging, students were recruited via nominations, invitations to majors, and personal encouragement (Swigert et al., 1993).

Most scholarship about training the next generation of researchers focuses on classroom practices. The scholarship of teaching and learning has documented best practices for teaching in graduate school and the process of learning research methods (Cordner et al., 2012; Freese & King, 2018; Shostak et al., 2010; Warren et al., 2016). Teaching research methods in a way that emphasizes honest dialogue between

faculty and students about the challenges of conducting research helps both groups (Pfeffer & Rogalin, 2012). Leaders in the field of sociology (i.e., sociologists who hold esteemed positions in sociological associations or have received American Sociological Association awards or National Science Foundation research funding) are more likely than other sociology instructors to actively involve students in research (Persell et al., 2008). However, methods training was a particular challenge for the project at the research center on aging, requiring enormous time investment by faculty (Swigert et al., 1993). One of the few papers to describe a sociology-specific undergraduate research program with undergraduates is over 30 years old and focuses on course-based research training that is supplemented with extracurricular research experience (Hartmann, 1990). This points to a need for more documentation of effective methods for informal methods training outside of the classroom.

The characteristics of the faculty-RA communication style and relationship are essential to the research experience (Brew & Mantai, 2017; Landrum & Nelsen, 2002). Faculty mentorship style was the key determinant of experience quality among science and engineering undergraduate researchers (Houser et al., 2013). Relatively little empirical research focuses on informal advising relationships at either the graduate or undergraduate levels (Leahey, 2006; Shulman & Silver, 2003). Interactions between sociology graduate students and mentors and research experiences shape trainees' research practices (Leahey, 2006). Undergraduate mentors may have greater influence over the tacit knowledge conveyed to students, as undergraduates have more limited research experience. Psychology instructors report several models for supervision and accountability, working with undergraduate students either one-on-one or in teams (Landrum & Nelsen, 2002). Other themes that define mentor relationships include autonomy, project clarity, feedback, assistance, challenging assignments, mentor contact, level of structure, and role modeling (Brew & Mantai, 2017; Hyatt & Good, 2017).

The research related to the processes of RA selection, training, accountability, communication, and relationships originates largely from the natural and physical sciences and psychology. While common in graduate school and among undergraduates in natural and physical science majors, participating in faculty members' research is less common in undergraduate sociology. It is even less well studied. Several mentorship guides provide general advice for faculty members on including undergraduates in their research (Temple et al., 2010; Vandermaas-Peeler et al., 2018), but not for sociology specifically. In her study of advisor-advisee influence in sociology graduate programs, Leahey (2006, p.106) suggests that qualitative studies might "be particularly suitable to shed light on the nuances of the advising process."

Here we take up this suggestion to qualitatively investigate the nuances of the processes that underpin undergraduate-faculty RA relationships. Given the broad findings established by researchers in other fields, we investigate the tasks and processes employed within research assistantships in sociology departments. We find that the tasks RAs carry out fall into four categories: qualitative research, quantitative research, literature reviews, or writing and publishing. RAs are recruited using a set of consistent methods, and some faculty try to personalize the experience. Most faculty expect to need to train RAs – and most RAs expect training in specific tasks. Many faculty compared this training experience to classroom teaching, noting that

the process is mutually informative. Accountability depends on flexibility, regular meetings, and clear communication. Many faculty and RAs develop multiplex relationships through working together in other roles as well. After presenting these results in more detail, we discuss the implications of this process for the development of students as junior colleagues. Socializing undergraduates into the norms of scholarly research is another way that faculty can harmonize the teacher-scholar identity.

## Methods

This research took place at three primarily undergraduate institutions: one mid-sized private religious university and two large public universities on the West coast. We sought interviews to gather holistic views of the process of working in a faculty-RA research relationship (Weiss, 1995). We interviewed 23 respondents: 13 undergraduate RAs who worked on a project with a sociology faculty member and 10 sociology faculty members who have worked with undergraduate RAs (see Table 1).<sup>1</sup>

Respondents were recruited through snowball sampling. RAs were recruited via their faculty supervisors, or in a few cases, by reaching out directly. When faculty referred us to their RAs, this could have disproportionately generated a sample of dyads with a positive relationship. Since we only interviewed those who engaged in a RA-faculty relationship and responded to our inquiry, we will naturally have perspectives from respondents whose approaches worked well enough for them to engage in the practice. Although this biases our sample, we felt this was the best way to understand the processes involved in working in faculty-RA relationships. We triangulated our findings with RAs and faculty whose respective advisee(s) or supervisor(s) were not interviewed. Similar recruitment approaches have been used for other studies of undergraduate research teams (e.g., Brew & Mantai, 2017).

Our positionality for this project is self-referential; we are studying teams of RAs and faculty members as a team consisting of the same. This informed our interview protocol and follow-up questions during interviews (Lofland et al., 2006), although we had to be aware of others' divergent experiences to avoid overlooking details different from our perspectives (Peshkin, 1988). We developed interview protocols to elicit reflection on the experience of working either as or with a research assistant, with question categories based on our interests (motivation to work as a research assistant, structure of research teams) or informed by the literature, including technical and interpersonal skills (Landrum & Nelsen, 2002), affect, cognitive competence, difficulty, and interest in sociological research methods (Wisecup, 2017). Full protocols for RAs and faculty can be found in our online supplementary materials (see Materials).

All interviews were conducted by the RA co-author over Zoom, transcribed initially using Zoom automatic transcription software, and then completed verbatim. An incentive of a \$15 gift card, donation to charity, or wage was offered to respondents. Transcripts were imported into Atlas.ti cloud software for qualitative data analysis.

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<sup>1</sup> This research was approved by the Institutional Review Board for the Protection of Human Subjects at the authors' institution.

**Table 1** Demographics of Interview Respondents

	Student RAs	Faculty
<b>Total</b>	13	10
<b>Institution type</b>		
Private	9	8
Public	4	2
<b>Gender</b>		
Women	11	7
Men	1	2
Non-binary	1	1
<b>Race</b>		
White	6	6
African American	1	
Asian	2	1
Mixed Race	2	2
No response	2	1
<b>Ethnicity</b>		
Hispanic/Chicano	4	2
Non-Hispanic	9	8
<b>Parental Educational Attainment</b>		
High school graduate/GED	3	2
4-year college graduate/Bachelor's	4	3
Postgraduate degree	6	4
No response		1
<b>Identify as Disabled</b>		
Yes		3
No	13	6
No response		1
<b>Age</b>		
Median	21	39
Range	20–24	31–55
No response		2

Our coding method was based on the three-step process outlined by Campbell et al. (2013). First, we established an initial set of codes and the level of unitization for our transcripts. Both authors coded three transcripts independently, employing the techniques of grounded theory (Glaser & Strauss, 1967), then merged similar codes to create a codebook (Lofland et al., 2006). We both coded all interviews, developed taxonomies, and analyzed codes in groupings to increase the reliability of our coding. The theoretical memos about emerging themes that we wrote during the coding process, including representative quotes, formed the basis for our analysis and, eventually, our findings (Lofland et al., 2006). Our results represent emergent findings from our coded transcripts on topics where we reached theoretical saturation (Glaser & Strauss, 1967).

**Table 2** Tasks reportedly assigned to undergraduate research assistants working with faculty

Category	Tasks
Qualitative research projects	<ul style="list-style-type: none"> <li>• Protocol development</li> <li>• Interviewing</li> <li>• Transcription</li> <li>• Coding</li> </ul>
Quantitative research projects	<ul style="list-style-type: none"> <li>• Data entry</li> <li>• Formatting tables for publication</li> <li>• Learning a statistical programming language</li> <li>• Data analysis</li> <li>• Data visualization</li> </ul>
Literature reviews	<ul style="list-style-type: none"> <li>• Academic database searches</li> <li>• Reference management</li> <li>• Reference list reviews / cross-checking in manuscripts</li> <li>• Literature reviews and summaries</li> </ul>
Writing & Publishing	<ul style="list-style-type: none"> <li>• Feedback on faculty work</li> <li>• Proofreading / editing</li> <li>• Summarizing</li> <li>• Outlining potential blog posts or short articles based on previous work</li> <li>• Co-authoring a paper</li> </ul>

## Results

Our results are presented in four parts. First, we outline the tasks that RAs undertake for faculty in undergraduate research experiences as a taxonomy of options for faculty seeking to work with RAs for the first time. Next, we describe our respondents' views on the core processes in the development of an RA-faculty relationship, including hiring and training. We then discuss how faculty and RAs work together on research through accountability mechanisms, regular meetings, and communication. Finally, we illustrate how these relationships can change over time.

### What Responsibilities Do RAs Assume in Faculty-Directed Research?

The tasks of an RA and the structure of an RA-faculty team vary widely concerning difficulty and repetitiveness, but can be classified into four categories: qualitative research, quantitative research, literature reviews, or writing and publishing (Table 2). One of our faculty respondents explained:

It's hard to describe what an RA is except to say that it depends a lot on the interactions that the faculty and the students develop. In some cases, the interaction is very task oriented. In other cases it is more, you know, a conversation, more like just having another colleague – getting opinions and respecting that opinion. But it depends a lot on the situation.

This situational variation is due to several factors, including differences in funding and pay structures, type and scope of the project, individual decisions by faculty, and a general lack of standardization for the process of working with undergraduate RAs. Students participated in tasks at all stages of research from idea formation to paper submission, with many working on more than one category. Most were assigned to one project.

One feature that contributed to differences in experiences is the degree to which faculty personalized the experience to the RA's interests and needs. Tasks assigned may play a role in a student's feelings of involvement in a project. One RA was drawn in through progressive involvement in the research process:

I was interested at the start, but then through the literature review, I got invested. I think also that was an early turning point for me because, at the start, I felt like I was working for [my faculty supervisor]'s project, and then once I got involved with the literature review, now I feel like I'm working, like- it's kind of cheesy, but I feel like I'm working for the project... I'm working with [her] and [her] guidance and vision is crucial, but I'm working for the project, because that's what I'm caring about more, and most.

We expected students who had a greater variety of and/or more cognitively demanding tasks to have a higher degree of commitment to their project. While this was often the case, there were also many examples of students who were assigned to only one repetitive or straightforward task and who were also very committed. Time investment did not seem to relate strongly with affective commitment to or depth of involvement with the project; the length of RA involvement with projects at the time of the interviews ranged from 10 weeks to one year.

On the other hand, several students reported feeling burnt out from their repetitive tasks (i.e., transcription and quantitative data cleaning). Faculty strategies for managing student burnout depended on other structural factors. One RA related that when she approached her faculty supervisor expressing fatigue with her current task, her mentor replied, "Okay, well if you're not getting a lot out of this experience of the transcriptions anymore, let's move on to something else, and I could give you another project." She and her faculty supervisor developed other tasks for her to still be productive in the project but also accommodate the student's need for variety and a change of pace. In this case, the faculty member had multiple students working on the project who were able and willing to pick up the transcription work.

Respondents' experiences also varied based on the research team structure. We interviewed students who had participated in teams of one faculty member and four RAs, one faculty member and two RAs, two faculty members and two RAs, and one-on-one partnerships. Similarly, most faculty members reported working in one-on-one relationships, although four reported currently or previously working with teams of two or more RAs. Another faculty member had multiple quantitative projects, each with a different RA who worked together to learn the R programming language.



## How Does an RA-Faculty Partnership Develop?

Creating a working relationship between an RA and faculty member requires a process in which both practical and relational dynamics are developed. Pragmatically, the collaboration begins with hiring and training, processes with notable variation among faculty. Finding ways to communicate, including accountability mechanisms such as team meetings, affect the efficiency of the work and contribute to the development of a meaningful relationship between student and faculty.

### Selection and Hiring

Faculty respondents recruited undergraduate student RAs in four ways:

1. Faculty approach students after noticing their aptitude in classroom interactions, particularly in methods classes;
2. Students approach faculty and indicate an interest in working with them;
3. Faculty ask other faculty for a recommendation for a student; and/or
4. Faculty post a job ad on a university website or message board or ask another faculty member to send an announcement to a particular course on their behalf.

Most faculty reached out to students based on previous interactions in the classroom, employing method (1). Several used methods (1) and (2). In one case, a faculty member reported having used all the methods.

Some of the characteristics faculty considered when recruiting students to work as RAs included the ability to work independently, communication skills, and level of research experience; a few faculty members preferred students who had worked as RAs before, while others favored students who might otherwise be less likely to have the opportunity to engage in research or were specifically interested in pursuing a postgraduate degree. In some cases, faculty hired students who had special skills that they needed for their project, such as bilingual students for interviewing or transcription or existing software skills for quantitative projects.

Part of this hiring process often involved a careful matching of students to tasks. For example, one faculty member reported using a three-step process to ensure the RAs she works with also get what they want from working with her. First, she interviews them informally to learn about their needs and goals. Second, she assigns tasks based on level of interest in sociology. Third, she holds mid-term check-in meetings with each student to revise research assignments because “sometimes [her] imagination is one side of the story, and their experience is a different side of the story.” A few other faculty members reported using similar strategies in communicating with their RAs about their interests and goals, including trying to match RAs with tasks that related to their career or graduate school aspirations.

Although several faculty expressed a specific interest in reaching out to minority and women students, we still note that some recruitment strategies (particularly 1–3) might produce inequitable hiring outcomes. Sociocultural biases may play a role in assessing aptitude in the classroom or in which students are more likely to

be recommended to a colleague (Eaton et al., 2020; Moss-Racusin et al., 2012). Some students may be more likely to approach faculty for RA positions, while others may be unaware of these opportunities or hesitant to seek them out. Of our student respondents, an unusually high proportion had parents with college or graduate degrees; if undergraduate research experiences are helping train the next generation of sociological thinkers, such biases may perpetuate class inequality.

## Training

We found that faculty must expect to train RAs and provide ongoing guidance, but given this expectation were usually pleased with the work their RAs produce. Successful faculty mentors planned for this training when hiring RAs:

No one is perfect in their research in the beginning of this mentoring relationship. And no one is perfect in research just in our lifetime, because doing research is such a complicated task... As a mentor, we need to accept the fact that undergrad research students may need a little bit of training, a little bit of help in the very beginning of that research process. And, we just accept it, and acknowledge it, and start to think about ways to improve — to provide them with more resources.

Many RAs reported learning research skills as a major goal of taking the position. RAs were eager to learn, even if they did not have the skills needed for the position when starting:

I think that I knew whatever [my faculty supervisor] was going to ask of me, I would be able to do with training. So I don't think I was worried about like, "Am I gonna be competent enough to do this thing?" I think I knew that with training I'd be fine to do it. But I don't know that I was like, "Oh I'm gonna be amazing" or whatever because again, I didn't have a good base of: what does this research even look like?

On the other hand, students often reported classes they had taken and previous jobs as being helpful preparation for being an RA: some were well prepared for the project-specific training they would need. This reflects positively on the training received in departmental courses in general, and on methodology training in particular.

The generally adequate preparation of RAs also stands in contrast to a stereotype several faculty had heard: that undergraduates were not capable of meaningful participation in faculty research.

I have heard from many people this kind of pessimistic belief that undergrads are too early in their career process to be able to get the more difficult tasks. I had heard that from a lot of people and I don't think it's true. I think that comes from people who think that you should be able to give someone a task and they should be able to do it without any training.

This faculty member's experience clashed with the warnings she had received because "how academics defined undergraduate research determined what they

thought was possible or desirable” (Brew & Mantai, 2017, p. 559). In her model of research, undergraduates are treated as members of the research community capable of producing publishable new knowledge (Brew & Mantai, 2017). With very few exceptions, our faculty respondents found that undergraduate RAs rose to the expectations of the position, particularly with appropriate training. It bears repeating that “if you want to work with undergrad RAs, and really if you want to work with anyone, you have to be willing to do that training.”

Some RAs did need additional quantitative skills training, particularly if the research required advanced methodology using R or Stata. One faculty mentor provided them online tutorials to learn fundamentals on their own and weekly meetings provided opportunities to ask questions and clarify material. These RAs began by helping with basic descriptive statistics and figures, but several progressed to more sophisticated modeling techniques with more intensive training. In all cases, this was facilitated by basic background coursework and understanding of statistics.

### Classroom Teaching Compared to RA Training

Many faculty view training RAs as a form of teaching, but one with unique challenges and rewards. There are several differences between how faculty handle training RAs and teaching students in a class. First, faculty can personalize their teaching strategy to the individual RA:

In teaching there is this overarching picture and there is a small customized component associated with this overarching picture. But in research, there is one very broad overarching picture, but there are multiple customized components that I need to adjust depending on what this particular undergrad research fellow wants to get from this relationship.

Another faculty respondent talks about directly training RAs by “banking” knowledge (Freire, 1970). They noted that this contrasted with their classroom models, which typically involved “crowdsourcing of knowledge.” However, the faculty member who used this approach expressed dissatisfaction and sought other models. In contrast, other faculty provide some guidance but shift the bulk of training to the RA in the form of independent learning:

With an RA, I’ll be like, “Okay, well, you know, poke around online, and if you can’t find the answer we’ll talk about it.” Which, I think a lot of students, that makes them really uncomfortable... I don’t know, it might make RAs uncomfortable at first too. But... if I had to walk through every tiny thing, that would be a lot.

This approach of offloading training onto RAs’ independent work is a time-saving strategy for faculty, and it may have pedagogical benefits, especially for those RAs interested in graduate school. While this helps students develop skills related to independent work, a minority of students saw this as a challenge and lack of guidance

from faculty. However, many RAs eventually embraced the learn-by-doing strategy, and some even found it an exciting aspect of the experience. One faculty member expressed the gratification she felt in supporting students through this process of dealing with the unexpected obstacles of research:

People know what it means [to do research] a little bit from class but class research is a very curated experience that is facilitated to be successful no matter what. Helping people through the process of encountering barriers and learning how to figure out how to overcome those barriers and problem solve on their own and become more independent researchers, and watching them grow through that is really satisfying.

Class experience is important and helps prepare students to be an RA, but it is not an accurate representation of the full experience of research with its many challenges and variations.

## How Do Faculty and RAs Work Together on Research?

### Accountability Mechanisms

Accountability was built around flexibility, clear communication, and regular check-in meetings. When asked about how RAs were held accountable, both faculty and RAs often paused to consider for a moment. This hidden quality of their accountability structures reflects the management strategy of our faculty respondents, most of whom had a fairly hands-off style, entrusting their students with substantial independent work. Students largely appreciated this flexibility and understanding.

When I was assigned work there was typically a deadline to try to send it in by. And [my faculty advisor] was really good. She would ask me, “Okay, is like two weeks enough time to get this done?” I’d be like, “Okay,” or I’d be like, “No. I’m really busy, can I get more time?” And she was really flexible, so that was nice... I think she had reasonable expectations, and I was good about communicating if I needed more time with things, which was good.

This flexibility helps them feel less stressed during busy parts of the term, but it also speaks to their responsibility; most are conscientious about their work, and faculty need few formal mechanisms to hold them accountable. Contributing to this modicum of strict accountability mechanisms is the presence of open communication between faculty and their RAs:

I do not have any particular strategy, that said, because I do not need any particular strategy. Most of the students who I’m working with are very accountable. Super accountable. They sometimes even follow up with me and say, “Oh, I’m just finishing up this transcript even faster than we expected, so what will be the next step?” ... So both of the undergrad research fellows that I’m currently working with are really good at communication.

When the faculty clearly communicate their expectations and provide feedback and the student communicates questions or notifies faculty when an assigned task will be late, everything runs smoothly. One reason faculty may be so flexible is that some avoided building their schedules – or their career outcomes – around the deliverables of the RAs:

My strategy has just been to give RAs things that I don't need by a deadline and to assume that if people haven't done something they said they would do that there's something else going on in their life... If I really need something by a deadline, which occasionally happens, [I try] to be very explicit about it. But otherwise... we're just workin' toward eventual publications on a like, probabilistic basis. So, it's fine, I'm chill, I'm not stressed.

Though some do assign deadlines to their RAs, most faculty prefer instead to view RA productivity as “a lagniappe, like this little extra that I wasn't expecting.” One potential downside of so much flexibility is that it places the time management responsibility on RAs who may struggle with this skill. For example, one RA working on a quantitative data analysis project found accountability and motivation challenging despite enjoying the flexibility and admitting it was a good growth experience. One way that some faculty strike a balance is by helping RAs set deadlines and plan times during the week to work on research, but not assigning time-sensitive tasks. Students reported that these interim goals were helpful motivators. Such defined goals and deadlines may be particularly helpful for students working on more technically challenging tasks and in teams.

### Team Meetings

One mechanism some faculty used to keep RAs accountable was a regular team meeting, generally held weekly or biweekly between an RA-faculty pair or a faculty member and a group of RAs. Email check-ins are also often used in-between meetings (or in some rare instances, instead of meetings). Team meetings are helpful because they act as soft deadlines for students to update their faculty mentors on what they have been working on. For example, even when she was very busy during school, one RA respondent said: “I think the weekly meeting is a way – like I tried to have something, anything, for that meeting... So I'll try to usually have one piece of something done, even if it only takes me 30 min to come up with anything.” For the most part, students wanted to live up to the expectations of their faculty and sometimes even their own (stronger) expectations for themselves:

I think that I've always been a pretty self-driven person and I've always also striven to try to please authority pretty easily. So when I know that like, “Oh, I have a meeting coming up,” I gotta make sure that I have everything done. I'm a very intrinsically motivated person. So knowing that if I don't do it, I know that I will be disappointed in myself. But also knowing that if I don't have everything done that I was aiming to get done, I know that [my faculty supervisor] is very understanding, but also knowing that I definitely want to. Since I am

being paid, and she's taking her time, I want to make sure that I am meeting her expectations as well.

Similarly, two other RAs expressed feeling guilty when they did not get as much done as they thought they should have, even though their faculty mentor was very understanding. This mutual accountability is even more important in teams when one person's work facilitates another's.

In addition to being the primary accountability structure used, team meetings are an important part of building good working relationships. At the beginning of the meeting, some faculty-RA teams check in with each other and talk about how their weeks are going.

I think a big thing is definitely the whole talk about your week at the beginning... Ours are 30 minute meetings, they're quick. So we're not like sitting down and having a deep dive about our week, but still having everyone sharing a little tidbit about their week... it just creates a light-hearted environment, and so then you feel more comfortable... I think that makes it less intimidating to be like, "Oh, actually, can we switch some stuff up? Like, can we try something different?" So yeah, I think, all of that cohesively is what creates community.

The first part of the meeting helps build RAs' relationships with both faculty and other RAs, making the students feel more comfortable expressing thoughts, concerns, and questions about the project.

Meetings then proceed with the business of research: sharing what RAs did since the last meeting, addressing barriers, and discussing plans to move forward. As mentioned previously, the latter part of the meeting functions to keep both students and faculty on track and accountable for their tasks. It also allows students to practice collaboration skills. Team meetings play an important role in both the social dynamics and productivity of research teams.

### **Communication is Key**

Not only is being communicative about research tasks and expectations important to both student and faculty productivity and satisfaction in the project, but having open and casual communication is important for creating a relationship that enhances the experience. Communication came up often as a challenge to or a facilitator of successful work.

One faculty respondent asks students to check in every time they have a question or problem to prevent later issues. However, depending on the task and the student's approach, this may hinder the independent assistance that many faculty are seeking. This was occasionally a source of anxiety for RAs as they sought to balance the demand for independent work with delivering exactly what the faculty members wanted from the task. One RA reported that her biggest challenge was "trying to make sure I understand what my mentor wants, trying to make sure I'm executing what he needs for the project, and not making extra work for him." For some students, this comes with a recognition that the faculty member has been working on the subject for "longer than we're even gonna be in college as undergraduates," and they are coming "into it with fresh eyes and it's like trying to understand years of

work in eight weeks.” The faculty member’s immersion in their own long-term project, combined with the student’s desire to please the mentor, can lead to important details being glossed over or omitted. Without a foundation of collegial comfortability that enables the RA to ask questions, students may take a while to seek clarification, doing so only after problems arise.

From the perspective of faculty, it is hard to know exactly what students need guidance on, especially if students are concerned with demonstrating their capability and afraid to admit if they are feeling overwhelmed. Faculty can help facilitate these conversations by modeling appropriate communication that includes discussion of uncertainty and concerns about the project. One RA explained how her faculty mentor set the example from the beginning for their team:

It was all new to me and I was so scared of sharing how I was actually feeling in the beginning. Cuz I was like, “oh no, I don’t want her to think the wrong way” and stuff like that. But she literally sat me down and was like, “I’m as new as you. Like, the more you tell me the better it is for us.” And she was also telling me her concerns and stuff like that. So I think just being more open about it was really helpful.

Keys to facilitating effective communication include regular meetings with informal check-ins, open and vulnerable discussions, and genuine concern. Open communication improves comfort in the relationship and facilitates research productivity.

## How Do RA-Faculty Relationships Change Over Time?

### Multiplex Relationships

The relationship that develops between RAs and their faculty supervisors often becomes multiplex and deepens throughout their time working together. In most cases, students had met their faculty supervisors before the assistantship, usually through classes. In a few cases, students had worked with faculty in different capacities previously.

During the assistantship, many respondents reported building a mentorship relationship, wherein the faculty member provided guidance on the project but also other areas, such as academic and career advice. In cases where these mentorships flourished, there was a mutuality of trust and respect, as well as good communication. Sometimes students sought to expand their relationship with the faculty member in other ways, for example by asking them to mentor senior projects.

Different faculty members had different ways of conceptualizing RAs’ roles. Some see them as assistants or facilitators of their work, whereas many described RAs as colleagues:

In my case, when I have a very good relationship with an RA, I like to treat that person as a colleague. I like to hear from that person... I would describe that to be my relationship with [my RA]. [She] is very responsible, she turns out very good work, so I oftentimes would ask her, “What do you think of this? What do

you think if we - if I - do this?" and I bounce ideas with her. So for me, the RA is not just someone who facilitates and participates in the research.

The result of these interactions in different capacities is a relationship with elements of collegial, teacher-student, and mentor-mentee dynamics. This form of multiplex relationship may be especially helpful in the later years of undergraduate education because students are moving toward applying their academics to their future.

### Relationship Endings

Faculty had more or less direct ways of approaching ending relationships with RAs. One faculty respondent reported an indirect approach, starting by hiring RAs for one quarter at a time; if the student's performance did not meet expectations, she switched RAs without indicating a reason. Another respondent explained her direct strategy if an RA was not completing work:

I just say "you know it looks like this opportunity to participate is not working for you," and "do you want to start participating?" And I do that with colleagues as well. So I treat students the way I treat colleagues. I'm respectfully saying, you know, "this doesn't look like it's working for you, it looks like this isn't a good time for you. Do you want to re-evaluate your participation?"

Another reported explicitly checking in with her RAs at the end of each term to ensure the research assistantship was still working for both parties. Several other respondents described approaches along this spectrum, reporting that relationships have ended when RAs stopped working consistently or when the project was completed. Given the short career of most undergraduate students, undergraduate RA positions end naturally when students graduate. Any collaboration beyond that point (which did occur in two cases) must be explicit and intentional.

### Discussion

Working with undergraduate RAs allows faculty to integrate research, mentoring, and teaching (Brew & Cahir, 2014). Once students are trained properly, RAs can facilitate more rapid progress on faculty-directed research by assisting with a variety of tasks. We find that the preconceptions that some faculty had about the competency of undergraduate RAs were inaccurate: undergraduates are capable researchers, although turnover and time investment are obstacles and faculty must be willing to train them. Here we lay out the processes that several faculty-RA pairs and teams use to work together on faculty-directed research. Regular team meetings help with accountability, and almost all respondents pointed to clear communication as fundamental in relationship-building and project productivity. Many relationships developed beyond the RA-supervisor capacity to be multiplex, rich connections meaningful to both. Through our analysis of perspectives of both faculty and student respondents, we describe in detail the processes of selection, training,



accountability, communication, and relationship building that characterize effective social science undergraduate faculty-RA partnerships and teams.

These results serve several purposes. Primarily, this study contributes to the scholarship of teaching and learning. While this scholarship typically focuses on studies of course-based learning, we know that much education also takes place outside the classroom (Kuh, 1993). By expanding the scholarship of teaching and learning to other formal and informal sites of training – including faculty-directed research – we can gain a better understanding of how learning takes place at the college level. Second, social science faculty can use these results to build effective and meaningful relationships with undergraduate RAs. For faculty who may never have involved undergraduates in their research, this can serve as a roadmap for the processes faculty will need to include in a robust faculty-student research collaboration.

One example of such a collaborative and productive working relationship is this research project, itself an example of a faculty-RA collaboration. Our team developed out of mutual interest when the student RA author approached the faculty author regarding her interest in engaging in extracurricular research. We agreed to work together and, during a summer research internship and several academic terms of extracurricular research, we completed the interviews and analysis and began writing the results. This manuscript is an example of the type of work that can result from collaborating with undergraduate researchers from project conception through the final product. From a faculty perspective, having an undergraduate RA involved in this project was invaluable. Not only did the RA coauthor serve as a collaborator to share ideas, she also brought another positionality to the research and did the interviewing and transcription work. From a student perspective, working with a faculty member provided important mentorship and professional development and an opportunity to learn about the research and publication process. The RA coauthor also cultivated research skills that have academic and professional applications.

Next, we contextualize these findings within the aim of socializing students into the norms of professional research. We discuss the potential obligations of faculty to the holistic development of undergraduate researchers as knowledge producers. Finally, we draw on our findings to make recommendations about how improving institutionalized training and support might enhance the capacity of faculty to facilitate research with undergraduate RAs.

Some faculty seek RAs as facilitators of their research, whereas others seek to develop and mentor junior colleagues. While not mutually exclusive, these outlooks have different practical implications for the training of individual students. Faculty who view assistantships more as a process of holistic student development may have additional ongoing dialogue with the RA about the student's learning and interest. This dialogue between faculty and RA shapes an iterative process of training, accountability, and communication about whether the process is fulfilling the student's learning goals. Faculty who concentrate on task completion may focus more on developing specific and focused skills, rather than on developing the student as a researcher more generally (Beckman & Hensel, 2009; Brew & Mantai, 2017). Further, these approaches may vary across institution types and institutional expectations for student mentoring as well as between qualitative and quantitative projects. For example, undergraduate assistantships at a large public university might look

different than those at a small liberal arts college. Although we did not find patterned variation in the nature of assistantships between our settings, future research could explore this as a primary research question. A survey or other quantitative study approach would be ideal for investigating the proportion of faculty who are task-oriented compared to learning-goal-focused and how these orientations might vary by institution type.

Faculty mindsets that undergraduates are insufficiently prepared to assist in advanced research depend on different definitions of what undergraduate research entails and what skills are necessary to undertake it (Beckman & Hensel, 2009; Brew & Mantai, 2017). Faculty expectations and needs may also vary between qualitative and quantitative research projects. Several of the RAs interviewed were gradually trained on more advanced quantitative methods in R and Stata, including multivariate regression, over the course of their research work with faculty. However, we acknowledge that the technical skills needed to do the parts of quantitative research that save faculty time and energy often require more specific training in advance. This may require faculty to invest that time and energy in the RA's skill development upfront. Individual faculty must decide for themselves the relative tradeoffs between the potential benefits of hiring an RA and the need to invest extra time in training (King & Imai, 2023). Future studies should investigate in more detail how faculty train and work with RAs on sophisticated quantitative projects, as most of our respondents were engaged in qualitative research. Sociology departments might also consider the need for more technical software training within major courses. If faculty feel undergraduate students are insufficiently prepared for inclusion in faculty research, regardless of methods, perhaps this warrants a second look at the departmental methods curriculum.

While there are promising benefits for both undergraduate RAs and faculty, a lack of institutional support, time, and money hinder further engagement of undergraduates in faculty-directed research (Brew & Jewell, 2012; Brew & Mantai, 2017; King & Imai, 2023). Institutionalized programs can support undergraduate research by promoting student preparation and awareness and incentivizing the involvement of faculty (Wayment & Dickson, 2008). Faculty development centers could provide training for faculty on best practices for incorporating undergraduate student research programs (Karukstis & Elgren, 2007). One respondent outlined her thoughts on what such programs might address:

I think that we need ongoing training and modeling in how we work across these sorts of status distinctions in a bureaucracy, in research. How do we do good team collaborations? How do we collaborate with graduate students, with undergraduate students, with administrators? ... We have different timelines, we have different accountability structures as do undergraduates.

Such training programs for faculty interested in including undergraduates in their research programs would facilitate the implementation of best practices since graduate education has not traditionally included training in the supervision or management of undergraduate researchers (González, 2001; Wilson et al., 2012). Institutional support would better facilitate the development of undergraduate RA programs that support both faculty research and positive outcomes for social science students.

Faculty interest in and approaches to assistantships may also change based on the project and their career stage. For example, one of our faculty respondents employed a number of RAs early in his tenure-track career for the specific task of assisting with interview transcription. Though faculty members often need specific things from RAs or hire them for particular tasks, they often personalize the experience to their RAs' interests. But in situations where a student RA is dissatisfied, the employer-employee and mentor-mentee elements of the relationship that are usually complementary come into conflict: is the faculty member obligated to find another task so that the student has a useful learning experience? By offering RAs another option, faculty mentors prioritize the student's development as a junior researcher. On the other hand, since the faculty member likely needs that specific task completed to move forward with their research, is it an appropriate response to ask the RA to quit and find another student? From the RA's perspective, is it more helpful for the faculty member to end the relationship or to offer an alternative? It may depend on the situation and power dynamics involved: the nature of the project and tasks, whether the RA is paid or receiving another form of credit, and the relationship between the supervisor and RA. In discussing a possible transition, honest and full communication is critical: the faculty member must clearly articulate what tasks need to be done and the options available to the student; the student must be honest about their interest, time available, and skill levels for the available tasks. Additional research is needed to better understand how faculty and RAs navigate these challenging transitions.

In addition to the obligation to student RAs once they have been hired on, it is important to consider faculty's ongoing obligation to developing the next generation of researchers. Faculty, in some cases drawing on their own experiences as students, expressed interest in and a feeling of responsibility towards working with students who were interested in going to graduate school, as well as an interest in "paying it forward": mentoring people who "maybe don't traditionally have access to- who don't traditionally look like scientists." In the process of building students' skills, resumes, and confidence as researchers, it is important to be attentive to equity in student recruitment and support. Upholding equality and diverse representation in current RA opportunities advances these characteristics in future scholarship. This should be kept in mind for the development of institutionalized research programs. While our research focused on the road map and dynamics involved in undergraduate research partnerships, future research should compare opportunities and outcomes for diverse student populations at all parts of the research process we have outlined here. For example, future studies might investigate whether sociology RAs from different backgrounds are more likely to pursue graduate school or whether securing an assistantship facilitates admission into graduate school compared to those who are interested in RA positions but unable to find one.

Whether they were working with faculty focused on holistic development or task completion, most RAs developed a better understanding of the research process as a whole (King & Imai, 2023). As a result, RAs were transformed from knowledge consumers into knowledge producers. Students reported pleasure and satisfaction when they found their skills improving and began to see research as a cumulative enterprise:

I like the idea of just being able to delve into any potentially interesting phenomenon that you happen upon... And so, with doing research in the future, I'm just really excited to take one particularly interesting nuance I may have in a previous project and then just delve into it. I think that's kind of it. I'm really excited for how all of the research that you do builds upon itself. You know, I know that all of my future research projects are gonna be informed in some capacity by this one...

This advanced undergraduate RA is beginning to see herself as an independent researcher and envisioning a future life of the mind. Students also began to see the world through the eyes of a researcher, viewing possible questions everywhere:

I think there's just always opportunities to learn and grow with research... [Y]ou can develop a research project out of literally anything because... we're humans and there's always new issues, especially in society that are coming up. So I feel like the opportunities with research are literally endless.

In addition to the pragmatic and relational benefits, faculty enjoyed sharing this piece of their profession with students:

[I]t was also nice to get a chance to work with students who were kind of eager to... learn about some of the material outside of the classroom, or to kind of get a chance [to] peek behind the curtain a bit, you know. Like, "So what are y'all doing when you're not, like, teaching, exactly?" So it was kind of cool to bring students into that a little bit, show 'em the process, and... teach them a little bit about conducting research and analyzing it.

In this way, students are socialized into the norms of scholarly research (Pike et al., 2017). In addition to professionalization, undergraduate RAs also learn how social science knowledge is created — and in many cases, become co-creators of that knowledge. Not considering “undergraduate students as active contributors to public sociological research” would be “a striking omission and a missed opportunity” (Greenberg et al., 2020, p. 14). While not a tangible skill that students can list on a resume, this tacit understanding goes beyond what can be taught or learned in a methods course. It is understood only through doing. Through the processes of selection, training, accountability, communication, and relationships, undergraduate RAs become facilitators of faculty research and, in many cases, junior colleagues. In looking behind the curtain, students learn how they, too, may pull the strings; participating in the research process both demystifies it and demonstrates its power for uncovering social knowledge. Through the process of engaging in undergraduate RA-faculty research, learners become teachers and teachers become learners.

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**Availability of Code** Not applicable.

## Declarations

**Ethics Approval** This research was approved by the Institutional Review Board for the Protection of Human Subjects at the authors' institution.

**Consent to Participate** Informed consent was obtained from all individual participants included in the study.

**Consent for Publication** Human research participants provided informed consent for publication of anonymized quotes.

**Conflicts of Interest** On behalf of all authors, the corresponding author states that there is no conflict of interest.

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