PURM
Perspectives on Undergraduate Research & Mentoring

Undergraduate Research in the Humanities, Arts, and Social Sciences: Alumni Personal Development and Professional Outcomes

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Introduction

Undergraduate research is an evidence-based high-impact practice that supports student learning and engagement, and it has been associated with a wide range of skill development for students, including critical thinking and a better understanding of research procedures and methods (Brownell et al., 2012; Kistner et al., 2021; Kuh, 2008; Linn et al., 2015; Lopatto et al., 2010). Guided research experiences also promote persistence in undergraduate majors (Craney et al., 2011) and interest and entry into graduate school (Wilson et al., 2018), particularly for students from underrepresented groups who have often been excluded from these types of immersive learning experiences (Estrada et al., 2018; Hernandez et al., 2018). Recommendations for colleges to expand undergraduate research exposure and opportunities for students have been made by the American Association of Colleges and Universities (Kuh, 2008) and the current Boyer 2030 Commission Report (2022).

However, most research on and assessment of these experiences has been focused on students in science, technology, engineering, and math (STEM) fields (e.g., Eagan et al., 2013; Estrada et al., 2018; Hernandez et al., 2018; Rodenbusch et al., 2016) and has documented the experiences of students participating in traditional apprentice-style learning in lab and clinical settings (Carter et al., 2009; Laursen et al., 2010). Although a growing body of student outcomes research also shows positive benefits from non-traditional undergraduate research experiences, such as course-based undergraduate research experiences (CUREs) (Auchincloss et al., 2014; Dolan, 2016; Mahatmya et al., 2018), this research too is largely derived from STEM fields. A recent systematic review of undergraduate research experience models confirms that the literature continues to be overwhelmingly STEM-focused (Ahmad & Al-Thani, 2022). However, Ruth et al.'s (2023) study of CUREs in social science classrooms demonstrates growing attention to non-STEM contexts, though such studies remain comparatively rare and less is known about the experiences and particular needs of students in humanities, arts, and social sciences (HASS) fields (Haeger et al., 2020). In contrast to students in STEM fields, students who conduct research in HASS fields are often engaged in student-initiated projects and work more independently on projects sponsored by a single faculty member (Craney et al., 2011; Davis & Wagner, 2019; Toven-Lindsey et al., 2024). Based on the

difference in their experiences, students conducting research in HASS fields may also have different priorities and learning outcomes (Craney et al., 2011).

This study focuses on the experiences of alumni of undergraduate research programs in the humanities, arts, and social sciences. We use survey and interview responses from alumni of two undergraduate research programs, the Undergraduate Research Fellows Program (URFP) and Undergraduate Research Scholars Program (URSP), hereafter referred to as URP, at the University of California, Los Angeles (UCLA), a large public research university in the western United States. Alumni who graduated between 2001-2021 were included in the sample set. URP is led by the campus Undergraduate Research Center for the Humanities, Arts, and Social Sciences, hereafter referred to as URC, and provides structure and financial support for students doing a multi-quarter research or creative projects under the mentorship of a faculty member on campus. (Students in the two-quarter program currently receive a $3,000 scholarship. For the three-quarter program, juniors receive a $4,500 and seniors receive a $6,000 scholarship. Scholarships for both programs are provided by donors). By drawing from interviews and survey data from this set of alumni, we can speak to outcomes and experiences across a range of fields and research topics in the humanities, arts, and social sciences. Though students in URP have had varying degrees of support and structure through their individual mentors or mentor networks, as well as departmental programs (such as honors or capstone programs), we can assume all students in the sample had a baseline level of support and structure through URP.

In this paper, we consider how participating in URP in the humanities, arts, or social sciences supported alumni in gaining needed skills and professional networks for their chosen careers. Additionally, we engage with recent studies on researcher identities and demonstrate how students developed and employed aspects of these identities in diverse professional settings.

Undergraduate research and preparation for a broad range of careers

While outcome and impact studies of undergraduate research have largely focused on student learning outcomes, institutional goals such as retention, or psychosocial benefits such as feelings of confidence and inclusion, fewer studies directly address the career-related outcomes of undergraduate research experiences. Of those that do address career paths, the focus is primarily on undergraduate research as preparation for traditional careers in academic research and science. For instance, studies have found that participating in undergraduate research helps students build important knowledge and expertise about disciplinary norms and the ways of thinking and practices of a particular field (Barker, 2009; Hunter et al., 2007). It is less known whether: 1) the often-differing contexts of undergraduate researchers in the humanities, arts, and social sciences similarly translate to adequate preparation for graduate education and traditional careers in research and the professoriate; and 2) to what extent students pursuing undergraduate research experiences gain knowledge, skills, and dispositions relevant to a range of possible career tracks.

Among studies drawing attention to the latter concern it has been found that, upon completion of undergraduate research experiences in the sciences, students have expressed gains in several career-readiness competencies, including those outlined by the National Association of Colleges and Employers (NACE). This includes skills in critical thinking, communication (oral and written), collaboration, professional work habits, and leadership (Killion et al., 2021; Seymour et al., 2004). These undergraduate research gains and their positive associations with career preparedness were further corroborated in studies of STEM undergraduate research alumni by Balke et al. (2021) and Newell & Ulrich (2022). These studies also found undergraduate research experiences correlated with positive psychological benefits for the student researchers themselves, which could translate to later career success and personal satisfaction. In studies drawing specifically on the experiences of student researchers from traditionally underrepresented groups, undergraduate research experience

corresponded with higher career aspirations and self-efficacy (Carpi et al., 2017; Pender et al., 2010; Robnett et al., 2015).

Yet despite these reported gains in career relevant professional skills and personal dispositions in student and alumni self-reporting, other studies have noted that undergraduate researchers may actually fail to perceive the full extent of their growth and the broadly transferable value of such competencies in relation to their employability (Carpenter et al., 2022; McClure-Brenchley et al., 2020). They argue, and we agree, that undergraduate institutions should foreground undergraduate research experiences with career-readiness goals and make these outcomes apparent to students. This could be especially valuable for students in the humanities, arts, and social sciences who are regularly questioned by popular media and news outlets about the relevance of their majors for their careers (Heller, 2023).

Prior work (Kistner et al., 2021) has looked at the career readiness of undergraduate researchers exclusively in the humanities, arts, and social sciences and in comparison to a quasi-control sample of similarly matched students in those fields who did not pursue mentored undergraduate research. At their time of graduation, students who pursued mentored research opportunities in the humanities, arts, or social sciences reported statistically significant higher levels of NACE career competencies in critical thinking, oral and written communication, and professionalism than those who did not pursue undergraduate research. However, because that work assessed students' self-reported outcomes at the time of graduation, one cannot discern: 1) if the student researchers' self-evaluated higher rankings in career-relevant skills would translate to self-perceived greater success in their future careers or continued educational pursuits; 2) if students who pursued undergraduate research were simply predisposed to higher levels of those skills and dispositions from the outset, or if the undergraduate research experience and mentorship influenced their development; and 3) the extent, role, and potential impact of continued mentor-mentee relationships after graduation.

In the current study we incorporate qualitative and quantitative data through a survey and interviews of URP alumni across humanities, arts, and social sciences fields to address these questions. We also consider whether the associated outcomes differed in extent or form for students from traditionally underrepresented groups and those who entered the university as transfer students versus as freshmen. Additionally, our qualitative findings illuminate a potential causal mechanism, a "researcher identity," expressed by many of our subjects as animating their professional and personal understanding of themselves well after graduation.

Researcher Identity

In addition to the numerous outcomes previously outlined, participation in undergraduate research has been shown to support students' identity development (Palmer et al., 2018; Robnet et al., 2015) and sense of belonging on campus (Miller et al., 2019). Extensive scholarship has explored the concept of "science identity" and how it relates to undergraduate research for students. Science identity development has been shown to support STEM degrees persistence and commitment to careers in science (Chemers et al., 2011), particularly for students from underrepresented groups (Chang et al., 2011; Stets et al., 2017) and for those who are first in their family to complete a college degree (Verdin & Godwin, 2015). These studies aim to uncover the factors that contribute to student interest and persistence in pursuing scientific careers. The development of a scientific or researcher identity is thus treated as an independent variable of relevance.

Other research, generally from studies of graduate students across a wider range of disciplines, considers how the researcher identity develops. In their systematic review, Castelló et al. (2021) provide a useful framework for understanding the concept of researcher identity by examining four dimensions and key characteristics used to define this term. Specifically, researcher identity is often

placed on a number of continua: (1) individual to socially constructed, (2) stable to dynamic, (3) singular to multiple, and (4) thinking to action oriented. Despite the lack of a shared and cohesive definition of researcher identity, our use of the term will emphasize dimensions largely on the latter side of those continua - i.e., researcher identity as socially constructed, dynamic, and existing alongside multiple other identities. This usage is thus broadly applicable to a diverse range of students and across a variety of research fields, as well as transferable to contexts outside of traditional scholarly practice.

For undergraduate students who are learning new skills and engaging in the research community in different ways, it makes sense that the strength and centrality of their identities as researchers would shift over time. Studies of graduate students have found that developing researchers are continually examining and questioning their role as researchers (Hockey & Allen-Collison, 2005; Mittapalli & Samaras, 2008). Even as they come to inhabit a researcher identity, it is not static or all-encompassing. Individuals continually interact and reflect upon their position within different social contexts (Rayner et al., 2015; Remich et al., 2016). At the same time, identity is often characterized as a personal and agentive process with individuals negotiating their personal identity in the context of multiple influences and communities (Gardner & Willey, 2018; Inouye & McAlpine, 2017).

The fourth dimension that Castelló et al. (2021) identified is the continuum of thinking like a researcher and engaging in the activities of a researcher. Some studies have found that the ways that individuals internalize and perceive their experiences and activities as a researcher can be even more important to identity development than engaging in research activities (Alexander et al., 2014; Leibowitz et al., 2014). Other studies were more oriented toward action, indicating that engaging in the norms and activities of a researcher is instrumental in shaping and defining an individual's self-identity as a researcher (e.g., Merolla & Serpe, 2013; Wegener et al., 2016).

Although the development of researcher identity is commonly used as a factor through which students become attuned to scientific careers, a scientific or academic career is not a predetermined outcome. The research suggests that, as individuals reconcile their researcher identities with multiple other identities and aspirations, it can manifest in and support a variety of career tracks.

Methods

Research setting

Our research setting is a highly selective research university in the western United States that enrolls about 6,500 new first year students each year. The university's URC offers research scholarship programs, courses, workshops, research-related advising, and other resources to support and promote student undergraduate research – including campus-wide events for students to present their work. The university is rare in that it has a URC division to focus solely on non-STEM disciplines, which allows it to offer programming attuned to the distinct needs of students pursuing research in HASS fields. As such, it is also well-positioned to gather data and assess the outcomes of undergraduate research in and across HASS disciplines.

Undergraduate Research Programs

The URPs consist of a three-quarter program (the Undergraduate Research Scholars Program) and a two-quarter program (the Undergraduate Research Fellows Program). They are among the most applied-to programs offered by the URC. This is likely because these programs have few restrictions on students' eligibility. Program 1's participants must be juniors or seniors and have at least a 3.25 GPA at the time of application, and program 2 applicants must have at least a 2.5 GPA, but there are otherwise no restrictions according to a student's research topic, career ambitions, citizenship,

residency, race or ethnicity, or financial need. Students apply directly to the programs and are selected through a competitive evaluation process by faculty. The selected participants receive a scholarship, but the programs provide no direct payments or reimbursements for student expenses related to their research project. Students in both programs enroll in a research contract for credit with their faculty mentors, meet regularly with program directors and graduate student mentors, and present their work at program colloquia and an annual campus-wide undergraduate research event. Students in program 2 also enroll in a research and professional development course taught by faculty in URC.

Previous research on URP found that students who participated in these programs were graduating with skills and dispositions in high demand by today's employers. Students reported gains in critical thinking, a desire to learn, and written and oral communication skills, at higher rates than a quasi-control group of the university's undergraduates who did not participate in any known faculty-mentored research experiences (Kistner et al., 2021). Students appreciated the structure, accountability, mentorship, and community offered by URP, and they reported significant gains in their sense of connection to the research community and feelings of agency in designing research projects aligned with their own interests (Toven-Lindsey et al., 2024). The current study builds on these findings to examine how undergraduates' research experiences influenced their transitions to careers after college, as well as how these experiences contributed to and shaped their identities.

Data collection

This study draws on data from a survey of URP alumni administered during the 2018-2019 and the 2020-2021 academic years. Data collection procedures for this study were approved by the university's IRB process (#18-001292). All individuals who participated in URP and who graduated from the university with a bachelor's degree between 2000 and 2021 were invited to complete an online survey (N=1440). Survey questions covered a range of topics including graduate school enrollment, professional roles, and career aspirations. The survey also asked respondents to reflect on their undergraduate research experiences and to what extent these experiences influenced their post-graduate trajectories, skills and knowledge, and professional networks and relationships. The final survey question asked respondents if they would be willing to participate in a follow-up interview to further discuss these topics.

Survey responses were received from 213 program alumni. These were combined with pre-existing demographic data on each respondent, including gender, race/ethnicity, and transfer status. Approximately 38% of respondents (N=78) were recent graduates, defined as those who completed their degree between 2017 and 2021. About a third (N=67) graduated between 2012 and 2016, and the remaining 29% graduated between 2000 and 2011 (see Table 1).

Ten survey respondents were randomly selected to participate in a follow-up interview conducted by two researchers during the 2020-2021 academic year. All interviews took place using Zoom web conferencing software and were recorded with permission. Questions mirrored those in the survey and allowed participants to reflect and elaborate on their undergraduate experiences, peer networks and mentor relationships, work and academic pursuits after college, and the self-reported impact of their research participation on their post-graduation experiences.

Table 1. *Overview of alumni survey respondents. 213 total responses*

	N	Percent		N	Percent
Graduation years (n=205)			**Reported Race/Ethnicity (n=169)**		
2000-2011	60	29%	Native American	2	1%
2012-2016	67	33%	Asian	47	28%
2017-2021	78	38%	Black	15	9%
			Hispanic	40	24%
Gender (n=184)			White	65	39%
Female	131	71%			
Male	53	29%	**Division (n=213)**		
			Art	14	7%
Transfer status (n=180)			Humanities	54	25%
Transfer	71	39%	Psychology	52	24%
Freshman Admit	109	61%	Social Sci (including History)	93	44%

Data analysis

Statistical analysis of survey responses was conducted using Microsoft Excel statistical tools to generate descriptive statistics, including frequencies and cross group comparisons. Because the survey outcomes analyzed in this study were primarily categorical: academic division, racial and ethnic background, admission type (freshman or transfer admit), and those who pursued academic career tracks or non-academic career tracks, we used chi square tests of independence to examine whether the distribution of responses differed significantly across respondent groups. This approach was appropriate for assessing proportional differences rather than mean differences, given the structure of the survey items.

Four academic division categorizations were used (humanities, arts, social sciences, psychology) and were based on the respondents' major department and grouped according to the official academic divisions of the university [https://www.college.ucla.edu/academics]. Survey respondents' racial and ethnic backgrounds (based on student self-reporting at the time of admission), were divided into two categories: domestic students from racial or ethnic backgrounds recognized by the university as traditionally underrepresented in higher education (Black/African American, Latino/a, Pacific Islander, and Native American), and non-underrepresented students including Asian and white domestic students. (While these racial and ethnic categorizations and groupings are commonly used in higher education research, we recognize these categories do not represent homogenous cultural and socio-economic groups. The experiences of minoritization can also persist regardless of one's categorization within an underrepresented or non-underrepresented group). In addition, open-ended responses to a survey question inviting respondents to share any specific examples of how their undergraduate research experience helped in their later career or graduate studies (n=108) were coded by two members of the research team for major themes, including gaining disciplinary and research skills, building networks, and preparation for graduate school.

Interview data were analyzed by three members of the research team using Dedoose qualitative coding software to extend on and corroborate the findings from the survey data (Maxwell, 2013; Saldaña, 2013). Coding was guided by a priori codes aligned with survey topics and interview questions such as the extent to which undergraduate research made a difference in career planning and maintenance of relationships with faculty mentors and peers from URP after graduation. Coding also revealed common emergent themes from the interviews not directly measured in the survey. These themes included reflections on imposter feelings, experiencing independence and self-reliance, personal connections to the undergraduate research topic, and identity development.

Results

Undergraduate research and students' career paths

Survey findings indicate that students who participated in undergraduate research pursued a wide range of professional careers after graduation. While about 35% pursued careers in academia or were currently enrolled in doctoral programs, the majority (65%) were engaged in careers across diverse fields, including management, law, non-profit and healthcare (Table 2).

Table 2. *Career track categories (n=207)*

	Count	Percent	Sample job titles from respondents
Careers in academia	**72**	**35%**	
College/University academic career	31	15%	Assistant Professor, Lecturer, Postdoctoral Scholar
Academic graduate program in progress (coded as academic)	41	20%	Ph.D. student
Careers outside of academia	**135**	**65%**	
Art or museum professional	6	3%	Curator, Playhouse Manager, Public Programs Coordinator
Government professional	8	4%	Policy Analyst, Public Health Project Coordinator, Advisor to the Commissioner
Healthcare professional	7	3%	Occupational Therapist, Marriage and Family Therapist, Anesthesiologist
Legal professional or law student	16	8%	Law school student, Law Clerk, Attorney
Nonprofit professional	11	5%	Field Organizer, Grant Writer, Director of Development
Research professional (outside higher education)	22	11%	Data Analyst, Applied Anthropologist, Statistician
Teaching and advising professional	25	12%	High School Teacher, Outdoors Educator, Academic Advisor
Other professional	40	19%	Creative Director, Podcast Producer, Brand Manager, Founder/CEO, Project Manager, Technical Writer

When asked about the extent to which their experiences in conducting undergraduate research and participating in URP influenced their career goals, 47% of respondents reported that it "made a big difference" (e.g., changed career or helped to narrow focus), and another 38% reported that it "made a little difference" (e.g., slightly changed career track or increased certainty about track). Only 15% reported that it "made no difference" in their career plans.

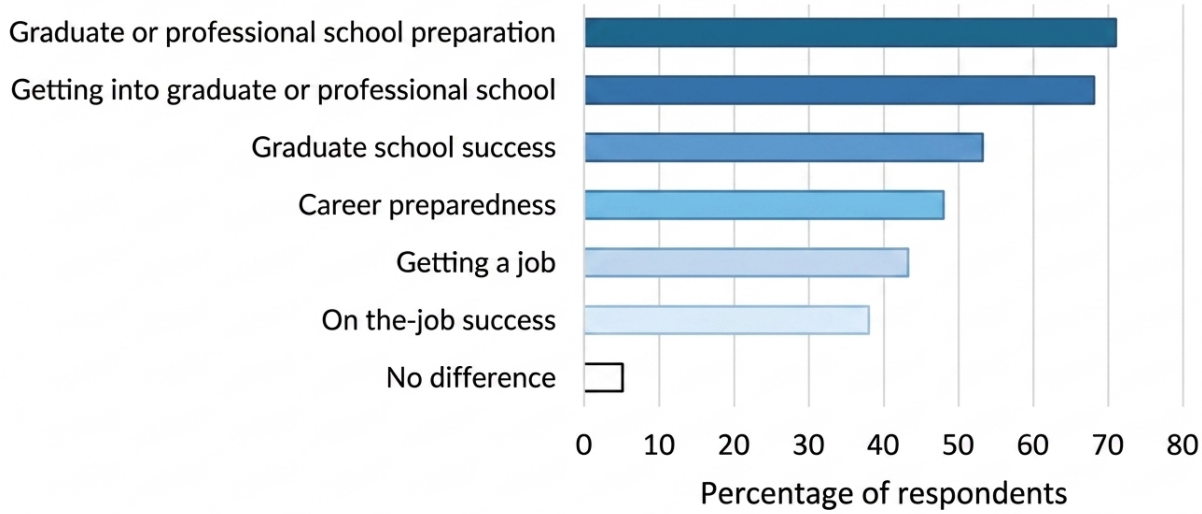
These results underscore the transformative potential of undergraduate research experiences and may correspond with a shift in students' self-perception or identity through the research experience. Moreover, our chi-square tests of independence found that transfer students were statistically significantly more likely than students admitted as freshmen to report that their research experience "made a big difference" in their career goals, $\chi^2(2, N = 175) = 7$, $p = 0.03$. Additionally, alumni who pursued academic careers were also statistically significantly more likely than those in non-academic careers to respond that their undergraduate research experience "made a big difference" in their chosen career path, $\chi^2(2, N = 202) = 13$, $p = 0.002$. This suggests that undergraduate research in the humanities, arts, and social sciences is not necessarily a pursuit of those already planning and preparing for academic careers, but rather a gateway through which students are introduced to and able to envision themselves in academic work.

Alumni comments during the follow-up interviews further illustrate how undergraduate research experiences influenced the respondents' academic and professional trajectories after college. As one participant who transferred to the university and graduated in 2016 with a degree in comparative literature commented: "I had very little research skill when I went in. When I left though, it completely changed the course of my life. I had no idea that I was going to be applying to a graduate program, a PhD program." Another participant who graduated in 2013 with a double major of anthropology and political science said: "I found where I belonged. I realized that there were other things other than being a doctor, lawyer, and teacher that I could do and that I was really good at." For these individuals, participating in undergraduate research opened their eyes to new professional opportunities that they otherwise would not have pursued after graduation.

Undergraduate research reported as instrumental in graduate school and career preparation, especially for underrepresented students

The survey asked respondents to reflect on whether their undergraduate research experiences were "instrumental" in a range of outcomes, such as "getting into graduate and professional school" and "getting a job." Students were able to select multiple categories. As Figure 1 indicates, more than 70% of respondents felt that the URP experience was instrumental in preparing for graduate or professional school (N=138), and more than half reported that it was instrumental in their graduate school success (N=107). More than 40% of respondents also reported that undergraduate research was instrumental in "getting a job" and 38% indicated that it was important to their "job success." Only about 5% of the respondents (N=9) claimed their URP experience made "no difference" to their post-graduate career or continued educational success.

Figure 1. *Percentage of respondents who agree or strongly agree that undergraduate research was instrumental to success in following areas (N=195)*



It is especially noteworthy that, according to our chi-square tests of independence, alumni respondents who identified as members of traditionally underrepresented racial or ethnic groups in higher education were statistically significantly more likely to indicate that their undergraduate research experiences in HASS fields were instrumental to getting a job after college, compared to their peers who identify as members of majority groups ($\chi^2 = 5.16$, N = 168, d.f. = 1, p = 0.023).

Relationships with faculty mentors and peers persist after graduation

To better understand social support networks resulting from undergraduate research experiences, survey respondents were asked about their ongoing communication with peers and faculty mentors

after graduation. Nearly three quarters (74%) of respondents maintained contact with the faculty mentor(s) from their undergraduate research, and more than half (51%) stayed in contact with peers from their undergraduate research programs. Ongoing faculty connections were most likely to consist of an alum asking for letters of recommendation (53% of respondents) and graduate school advice (47%), while ongoing peer connections were most often reported as offering emotional support (28%).

Undergraduate research participants perceive gains in skills and dispositions relevant to career and graduate school success

In addition to post-graduate academic and career pursuits, the survey and interviews sought to gauge the lasting influence of undergraduate research experiences (including measures of sustained social support and skills gained or leveraged in career pursuits) and how undergraduate research experiences influenced respondents' personal development and dispositions. A strong majority of respondents reported that they acquired content knowledge (75%) or directly relevant skills (70%) through their experiences with undergraduate research that contributed to their success.

Table 3 provides a summary of the skills that respondents indicated contributed to their career successes. Nearly 90% reported gains in communicating effectively in writing, nearly 80% reported gains in finding and evaluating sources of information, and 75% reported gains in effective verbal communication. Respondents reported gains in identifying needs or problems (58%), analyzing quantitative data (46%), and gaining experience in using specific software programs (38%).

Table 3. *Top reported undergraduate research skills contributing to later career successes [Check all that apply.] (n=142)*

Skill	%	Count
Communicating effectively in writing	89	127
Synthesizing information	85	120
Finding and evaluating sources	79	112
Communicating effectively verbally	75	107
Collecting data	75	106
Experience speaking to large groups	64	91
Analyzing qualitative data	58	83
Identifying needs or problems	58	82
Analyzing quantitative data	46	65
Interviewing others	43	61
Experience using a particular software program	38	54
Using foreign language skills	18	25
Other	5	7

Undergraduate researchers develop and employ a researcher identity

The majority (70%, n=76) of responses to an open-ended question asking for specific examples of how participants' undergraduate research experiences helped in later career or graduate school were focused on the disciplinary research skills they gained. As one program alum put it, "This program helped me choose a career path. As a transfer student who, at times in my studies, felt behind the curve, I cannot overstate how important this was to me. I got a job in social scientific research three months after graduating. The skills in research and writing that I gained in this program were instrumental both in my ability to get the job and in my later success in my work." Another said, "My undergraduate research experience began the foundation of my career as a psychologist. I learned practical skills like the nuts and bolts of data collection, database maintenance, and interviewing research participants."

As these examples indicate, program alumni learned disciplinary norms and research skills during their undergraduate years that contributed to subsequent career pursuits.

Interview data provides additional context for understanding how program alumni used the skills they gained from undergraduate research experiences across a range of academic and professional settings. Nine alumni (90%) addressed how they applied research skills in their professional careers. For instance, one interview participant, who was a psychology major and pursued a career as a user experience researcher in the tech industry, recalled their experience presenting research at a poster session. They noted how those skills translated to their career, stating, "[I]t's something that I do even now in my everyday work; I figure out how to present my research in a meaningful and concise way… to have a sense-making conversation and try to get feedback from people."

Similarly, several interview respondents equated teaching as an extension of their research experience and an important component of their professional role and identity. For instance, an alum who works in business consulting stated, "[T]hese days, I really do consider myself a teacher with an anthropology background…I gather information and reteach it." Another alum commented, "[A]s the recent founder of a small cooking school, my experience in culinary anthropology research informs and inspires the classes that I teach, and how I train other instructors to compose their courses." An alum who went into K-12 education commented, "[R]esearch is my secondary thing that illuminates my teaching." These statements suggest that we should not overlook teaching skills or, more abstractly, communicating one's learning, among the widely transferable skills students obtain as they take on a researcher identity.

In addition to directly relevant professional skills and subject matter knowledge, the alumni survey and interview respondents were also asked: "[I]n general, do you feel there were other positive outcomes from your undergraduate research experience that may or may not be directly related to your academic or career trajectory?" Their responses included several soft skills and dispositions related to research work, but also broadly relevant to personal and professional growth, resiliency, resourcefulness, and satisfaction (Table 4).

Table 4. *Alumni-reported soft skills and personal development outcomes from undergraduate HASS research experiences (n=197)*

Soft Skill	Percent of respondents
More confidence in myself and my abilities	79%
Development of intellectual curiosity	79%
Ability to acquire information on my own	78%
Ability to understand scholarly findings	78%
Ability to solve problems independently	75%
Ability to think logically about complex material	70%
More self-discipline and time-management skills	70%

Nearly 80% of respondents indicated that they had "more confidence" in themselves and their abilities, that they had developed "intellectual curiosity," that they had the "ability to acquire information on their own," and that they had the "ability to understand scholarly findings." Some alumni in the interviews described their experiences of feeling more self-assured as a scholar. For instance, a 2017 graduate in communications and art history discussed "interrogating sources as opposed to just reading them," as an "eye opener," and coming to realize that "not everything you read you have to agree with, just because an authority said it." She continued: "[W]hen I went into it, I wasn't thinking I had something to contribute, and then as I was writing and researching, I was like,

wait a minute, this needs to be said, I have something to offer, and just kind of that confidence that what I had to say was important."

Several URP alumni commented on the ways in which their undergraduate research experiences were fundamental to their status as leaders and changemakers in their careers. An alum who majored in psychology noted, "[Conducting research] made me an overall better human, such that it made me develop critical thinking skills to challenge policies and advocate for social justice." Another said, "[R]esearch is a skill; it's the skill of asking questions and learning how to answer them for yourself in a way that can then be condensed and told to somebody in a way to make meaningful change." These comments point to the many ways that researcher identity can manifest in diverse professional careers.

Discussion

In extending prior research, which found that students with faculty-mentored URP experiences showed higher levels of self-reported career competencies at the time of graduation compared to peers without any faculty-mentored research experiences (Kistner et al., 2021), this study finds that those skills may continue to positively impact alumni in their daily work and continued education after graduation, and that most alumni (95%) directly attribute their post-graduate career or academic successes at least in part to their URP experience.

Additionally, as prior work showed that the skills developed in undergraduate research experiences are relevant and in demand (according to NACE surveys of employers) across a wide range of careers, this study showed that most alumni respondents (65%) did go into careers outside of academia, further demonstrating the broad career applicability of undergraduate research experiences in the humanities, arts, and social sciences.

Transformative learning and the researcher identity

Our survey and interview results further suggest that the contributions of undergraduate research experiences in the humanities, arts, and social sciences are not just additive, but transformative, as students develop career clarity, the internalization of academic norms and research skills, confidence, perseverance, and an action orientation associated with a researcher identity. Our interview respondents reflected on their research experiences in ways that demonstrate the dynamic and sometimes fraught process through which students come to internalize a researcher identity. These alumni came to value the researcher component of their multifaceted personal identities and recognized that it had valuable applications across a variety of career contexts. Whether undergraduate research led alumni to careers in or outside of academia, we see that URP alumni's researcher identities were integral to their career development and success.

Limitations

This study is limited in that it did not offer a control group and that responses are based on self-reporting. Participation in the survey or interviews may be subject to self-selection bias, in that alumni with positive undergraduate research and post-graduate experiences may have been more likely to respond to the survey or agree to be interviewed. Furthermore, although our study focused largely on the students' experiences with their faculty mentors, by limiting the sample to alumni who participated in URP, the alumni in the sample had scholarships and a baseline of support through their undergraduate research experience (Toven-Lindsey et al., 2024). This made it easier to balance out differences across students' departmental or mentor support throughout the undergraduate research process, but it cannot be determined from the present study whether students without financial resources, or students in other types of research experiences, such as CUREs, would have had similar outcomes. It is also uncertain to what extent the students competitively selected to URP were predisposed to or better situated for the outcomes seen here.

Additionally, our determination of alumni career outcomes, whether academic or non-academic, is static, though actual career trajectories are not necessarily on a singular track.

Conclusions

Much more research remains to be done on the immediate and long-term outcomes of undergraduate research experiences on students in the humanities, arts, and social sciences. Further research would contribute valuable knowledge and have practical implications for students making decisions about their fields of study and co-curricular pursuits, for the academic advisors and career counselors providing them with guidance, and for academic departments and administrators designing curriculum requirements and making hiring and promotion decisions.

This exploratory study suggests that students can find personal growth, long-lasting mentorship, skill development, and career value by pursuing undergraduate research in the humanities, arts, and social sciences. Whether or not they are seeking a career in academia, undergraduate research experiences are transformative for students and play a major role in shaping their career aspirations. Further, the development of a researcher identity shapes how undergraduate research alumni understand themselves within a professional environment as well as how they approach their day-to-day work. Finally, our research shows the potential long-term value and outcomes of faculty research mentors on alumni of undergraduate research programs. Our findings suggest these outcomes may be especially pronounced for alumni who were transfer students or from underrepresented groups.

Through our work with our university's URC, we have seen how, even in top research universities, the academic and emotional labor of undergraduate research mentorship is under-recognized and under-rewarded, especially in the tenure and promotion process. This is especially true for faculty in the humanities, arts, and social sciences, for whom mentoring students typically means providing guidance on a student-initiated project, rather than a faculty-initiated project, which is more common in STEM fields. More incentives and recognition are needed to encourage faculty in the humanities, arts, and social sciences to mentor undergraduate researchers or to develop innovative curricular opportunities (such as CUREs) that engage students in active research. The benefits of undergraduate research have been proven significant time and time again, and faculty mentors should be recognized for their contribution to this important form of career development.

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