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College-Workforce Transitions

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The Alignment Between Internship, College Major, & Career Plan:

Differential Experiences Across Gender, Race, & Major Groups

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Abstract

This study proposes a novel tripartite alignment framework for internship studies to investigate alignment among student internship experiences, academic training in major programs, and career plans. Utilizing data from the College Internship Study, we examine demographic and programmatic factors associated with internship-major and internship-career alignment, and how these factors interact to affect overall internship satisfaction. While most students perceive their internships as relevant to their academic programs and career plans, a non-negligible group of students experience internship-major and internship-career misalignment, and the levels of misalignment vary across gender, race, major programs as well as their intersections. In particular, women engaged in paid internships report a lower level of internship-major alignment than women in unpaid internships, while this adverse effect is not found for men, indicating a potentially gendered trade-off between financial gains and academic training when making internship decisions. Moreover, while White students in health majors experience relatively higher internship-major alignment than business students, the same does not hold for Black and Latinx students, highlighting potential disparities in accessing quality internship programs in health sectors. Analyses further demonstrate that internship-major and internship-career alignment are positively associated with overall internship satisfaction. These findings provide preliminary insights into the tripartite internship-major-career alignment and its implications for students' internship experiences, informing potential strategies for diversifying the workforce and enhancing school-to-work transitions. We discuss future research directions adopting this novel framework.

Keywords: Internship, horizontal match, career development, school-to-work transition

Key Findings

- This study develops a novel tripartite framework to investigate the internship-major-career alignment in internship programs.

- Majority of students perceive their internships as highly relevant to both their academic programs and career aspirations.

- However, notable misalignment exists and varies across academic major programs.

  o In Social Sciences & Education, Social Services, and Health programs, over 10% of students perceive their internships as minimally or not related to their major.

  o In Social Sciences & Education and STEM majors, over 10% feel their internships provided minimal or no relevant skills for their aspired careers.

- Women in paid internships reported lower internship-major alignment than women in unpaid internships, while this adverse effect is not found among men, indicating a potentially gendered trade-off between financial gains and academic training that may disadvantage women.

- White students in health majors reported higher internship-major alignment than business students. This trend was not observed for Black and Latinx students, suggesting potential racial inequities in accessing quality internships for academic training in health sectors.

- Internship-major and internship-career alignment are positively associated with overall internship satisfaction.

  o These two alignment variables help explain why students in Biological Sciences, Agriculture & Natural resources have a higher level of internship satisfaction than Business majors.

Introduction

Despite the substantial progress in the educational attainment of women and racial/ethnic minorities, persistent and even expanding disparities in wages across gender and racial groups are still evident among highly educated workers (Tomaskovic-Devey et al. 2005; Goldin et al. 2017). The predominant body of scholarly work seeks to elucidate these disparities by examining both educational and occupational components, but the transitional phase from school to employment, such as internships and work-based learning programs, has often been overlooked in this discourse (Lu & Li 2021). Due to systemic inequalities and discriminatory practices in the labor market, women and racial/ethnic minorities are often disadvantaged during this critical phase, as they may be relegated to positions that fail to optimally leverage the skills they gained through formal education, incurring penalties associated with this mismatch.

A particular form of this dissonance, denoted as the "horizontal mismatch", occurs when individuals find employment in sectors that do not match well with their academic specializations (Robst 2007; Somers et al. 2019; Werfhorst 2002). Another form of misalignment can occur when individuals find themselves in roles that diverge from their career aspirations or plans. These roles may fail to offer opportunities for meaningful career skill development and growth, thereby constraining one's potential for future advancement and higher wages in the labor market. These two forms of misalignment may consequently diminish job satisfaction, limit network opportunities, and create barriers to future career development. Hence, the multi-faceted forms of misalignment that may affect women and racial/ethnic minorities not only affects immediate employment prospects but also has a lasting impact on long-term career trajectories.

Investigating the alignment between academic training, career plan, and actual position in the labor market can offer a novel lens to further explore potential inequalities in the transition from school to employment. While research has started to shed light on the prevalence and impacts of horizontal mismatch within the formal labor market, significant knowledge gaps remain in understanding the degree of alignment between forms of WBL such as student *internships* and academic training or career aspirations. Furthermore, the question remains whether gender or racial disparities permeate this (mis)alignment. Internships often serve as vital bridges to formal employment, offering practical experience and networking opportunities, and misalignment at this juncture could reverberate through future career trajectories and entrench existing inequalities.

Utilizing data from the College Internship Study, we provide a snapshot of the alignment among student internship, college major, and career plans. We further investigate how internship-major alignment and internship-career alignment varies across gender, racial, and major groups. In addition, we examine whether these two forms of alignment are related to the overall satisfaction with students' internship experiences. Specifically, four research questions are investigated:

- *RQ1: Among students who have internship experiences, how do internship-major alignment, internship-career alignment, and overall internship satisfaction vary across gender, race, and academic major groups?*

- *RQ2: Do gender, race, and academic major interact with each other to form differential patterns in internship-major alignment, internship-career alignment, and overall internship satisfaction?*
- *RQ3: How are internship-major alignment and internship-career alignment associated with overall internship satisfaction?*
- *RQ4: Are there gender and racial differences in these associations?*

Background

Horizontal Mismatch and the Internship-Major-Career Alignment

Our focus on the internship-major alignment is inspired by the horizontal mismatch literature. In the context of education-occupation alignment, a large body of research has primarily focused on the concept of *vertical mismatch* in describing a situation where a person's level of education is either above or below what their job position requires (Groot and Maassen van den Brink 2000; Lu and Li 2021). Another form of discrepancy that has begun to attract scholarly attention is *horizontal mismatch*, wherein a misalignment arises between the skills developed through educational programs and those necessitated by their occupational field (Bol et al. 2019; Somers et al. 2019; Robst 2007). Scholars have found negative implications in the labor market associated with horizontal mismatch, as empirical studies observed adverse effects on aspects like wages, job satisfaction, and occupational status (Wolbers 2003; Bender and Roche 2013; Kucel and Vilalta-Bufí 2013).

However, whether the horizontal mismatch is undesirable or not may depend on individual preferences and the reasons for accepting a mismatched position. Robst (2007) identified two distinct causes for this mismatch: one linked to supply and the other to demand. When the labor market lacks sufficient job opportunities matching an individual's skills, demand-related mismatch arises, compelling individuals to grudgingly accept unsuitable positions to avoid unemployment. On the contrary, supply-related mismatch may occur when individuals intentionally opt for positions that do not align with their qualifications, often with the aim of broadening career prospects or seeking career changes. Intriguingly, such proactive job seekers may experience a wage premium as their deliberate pursuit of mismatched roles can be perceived as a strategic career development move (Robst 2007). Therefore, the outcomes of educational-occupational mismatch can be quite varied, potentially leading to notable disparities across different sociodemographic groups.

Sociodemographic Disparities in Horizontal Mismatch

Under the persistent discriminatory practices and structural inequality present in the labor market (Kornrich 2009; Petersen and Saporta 2004; Pager and Shepherd 2008), women and racial/ethnic minorities tend to face increased unemployment risk, limited matching job opportunities, and reduced occupational mobility. As a result, these groups are more inclined to reluctantly accept and retain mismatched roles. Existing research on gender and racial disparities in the context of horizontal match/mismatch is rather scarce. Self-reported measures have shown that while men frequently accept mismatched roles for career development reasons such as prospects of better remuneration and promotional opportunities or the desire to shift

careers, women often accept mismatched roles owing to family-related reasons, job location preferences, or specific working conditions (Robst 2007; Bender and Heywood 2011). Interestingly, some US-based studies indicated a larger wage penalty for men than for women in instances of horizontal mismatch (Robst 2007; Nordin et al. 2010; Rios-Avila and Saavedra-Caballero 2019).

Concerning racial/ethnic disparities, limited data from the US suggests that White workers are less likely to experience horizontal mismatch than Black workers, also experiencing less severe wage penalties in such cases (Rios-Avila and Saavedra-Caballero 2019). Conversely, Black employees are more likely to face mismatch due to the scarcity of suitable opportunities, while being less likely to voluntarily change careers compared to their White counterparts (Robst 2007; Bender and Roche 2013). However, there remains a knowledge gap regarding other racial/ethnic groups such as Hispanic and Asian workers.

Another important factor regarding horizontal match is a student's major, in particular the specificity of the major field. A recent study from Germany revealed that individuals with qualifications specific to a particular occupation experience greater wage penalties from job mismatches (Geven and Spörlein 2022). Extensive literature also shows that women, Black, and Hispanic workers are disproportionately filtered out of lucrative STEM fields at various stages, including during the transition from school to work (Glass et al. 2013; Sassler et al. 2017). These studies hint at the possibility of increased disparities in horizontal mismatch for those with highly specialized degrees and greater penalties when women and minorities are excluded from their fields of study. Therefore, understanding the role of educational field is critical for devising targeted strategies to mitigate potential inequalities in school-to-work transitions and to diversify the STEM workforce.

The Tripartite Alignment Framework

Figure 1. The Tripartite Alignment Framework of Internship, Major, & Career Aspiration
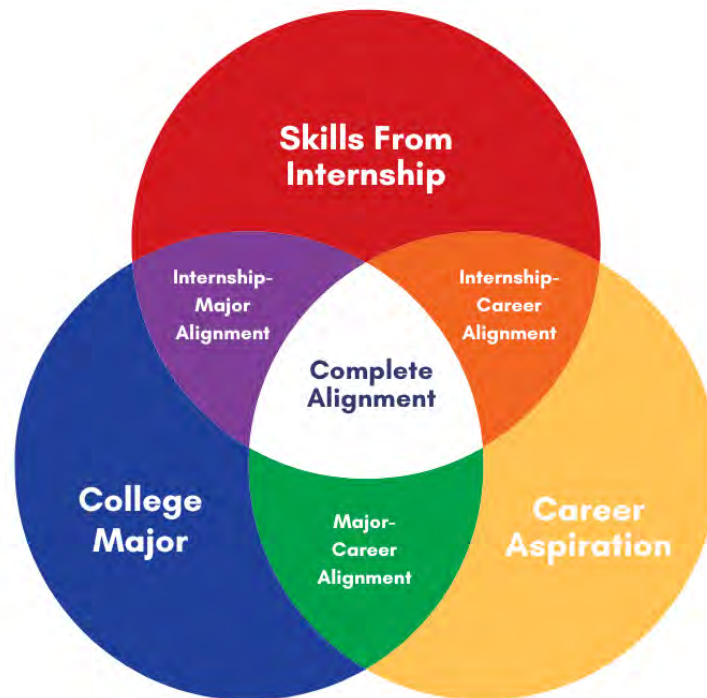
While most studies so far on the education-occupation alignment focus on formal full-time positions, there is a noticeable gap in the literature regarding how student internships are matched with one's education and career aspirations. Internships can serve as a crucial bridge between academic education and employment, offering students the invaluable opportunity to apply their classroom learning to real-world settings, cultivate essential professional skills, and make informed career decisions. It is thus of vital importance to explore the education-occupation alignment in the context of student internships.

In light of the preceding discussion, the evaluation of education-occupation alignment in student internships should involve three factors: the internship experiences, the academic training through a student's major program, and their career aspirations/plans. To better capture the complexities in this alignment matrix, we propose a tripartite typological framework in Figure 1, which encompasses five possible scenarios based on the degree of alignment among these three elements:

Complete alignment: This scenario represents the ideal situation where a student's college major, career plan, and internship align seamlessly. Here, the student's academic training, career aspirations, and practical internship experiences are all in harmony, likely fostering effective skill development and career progression.

Internship-major alignment only: In this scenario, the student's college major and internship align, but diverge from their career aspirations. While this may allow students to leverage their academic training in the internship effectively, it potentially restricts the applicability of their practical experience toward their long-term career goals.

Internship-career alignment only: This scenario occurs when the student's internship and career plan align, but their college major diverges. This could happen when a student enrolls in a major program that does not fit their career aspiration in the first place, or when they develop alternative career plans after getting into a major program. Here, the internship serves as a pivot, enabling a potential "track change" away from the academic major toward the career plan. Despite a discordance with the college major, the internship may yield valuable opportunities and skills relevant to future career development.

Major-career alignment only: In this case, the student's college major and career plan align, but the internship falls out of this alignment. This scenario implies that, while the academic training is in sync with career aspirations, the practical experience gained from the internship may not make the best use of the academic training nor contribute optimally to the career path envisioned by the student.

Complete misalignment: This scenario is the least ideal, characterized by a complete mismatch across the college major, career plan, and internship. Here, the student experiences a disjunction between their academic training, career aspirations, and the practical experience gained from the internship, which may seriously hamper effective skill development and career advancement.

These five scenarios illustrate the intricate interplay between the academic training, career aspirations, and internship experiences of students. While it points to new directions for more complicated analyses, this study focuses on internship experiences only and offers a very preliminary snapshot of two measures: internship-major alignment, and internship-career alignment. We next discuss our data and methods.

Data and Methods

Data

We use data from the College Internship study, a mixed-methods longitudinal study of college internships in thirteen institutions in the US. Schools self-selected into the study and the sample comprises five predominantly white institutions, six historically Black colleges and universities, and two Hispanic-serving institutions. Eleven of the institutions are four-year universities, while two are two-year vocational colleges. We use the first wave of the study, which corresponds to an online survey administered between Spring 2018 and Spring 2020. A total of 3,808 students responded to the survey, of which 30.3% (n=1,154) had participated or were participating in an internship in the past 12 months at the moment they responded. After accounting for missing values in our interest variables, the final analytical sample totaled 1,118 students.

Variables

We explore students' perceptions of their internship experiences in three aspects: *internship-major alignment*, *internship-career alignment,* and *overall satisfaction with the internship*. These comprise our three dependent variables. For the degree of *internship-major alignment*, students answered the question: "How related do you feel your internship was to your academic program?" on a 5-point scale ranging from "Not at all related" to "Extremely related". For *internship-career alignment*, students reported the degree to which they agreed with the following statement: "This internship provided me with important skills relevant to my chosen career," using a 5-point scale ranging from "None" to "A great deal"[1]. Finally, *overall satisfaction* was measured using students' response to the question "How satisfied were you with your internship experience?" in a 5-point scale ranging from "Not at all satisfied" to "Extremely satisfied". We keep these responses on their original 5-point scale and treat them as continuous variables in our models.

To account for students' academic programs, we re-group the major categories used by the National Survey of Student Engagement (NSSE) into 8 program groups: (1) STEM, which includes physical sciences, mathematics, computer science, and engineering; (2) Biological Sciences, Agriculture & Natural Resources; (3) Health; (4) Business; (5) Social Sciences and Education; (6) Arts & Humanities; (7) Social Services; and (8) Others. Figure 1 shows the total number of students from the unrestricted sample (n=3,808) in each category, while Figure 2 shows the number of students who participated in internships (n=1,154) in each category. Given that Business is the largest category in the unrestricted sample, we use this group as a reference category in our analytical models.

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[1] Phrasing of question and categories varied slightly. Institutions who implemented the survey in Spring 2020 used the question: "This internship provided me with important skills relevant to my chosen career" with options 'None', 'A little', 'Some', 'Quite a bit', and 'A great deal'. Institutions who implemented in Spring 2019 asked: "The skills I learned at this internship are important for my career development" with the same response options. Finally, institutions who implemented during Spring 2018 used "How important were the skills or knowledge you learned at this internship for your career development?" with options 'Not at all', 'A little', 'Somewhat', 'Very' and 'Extremely'.

Figure 2. Number of Students by Major Group (full sample and restricted sample)
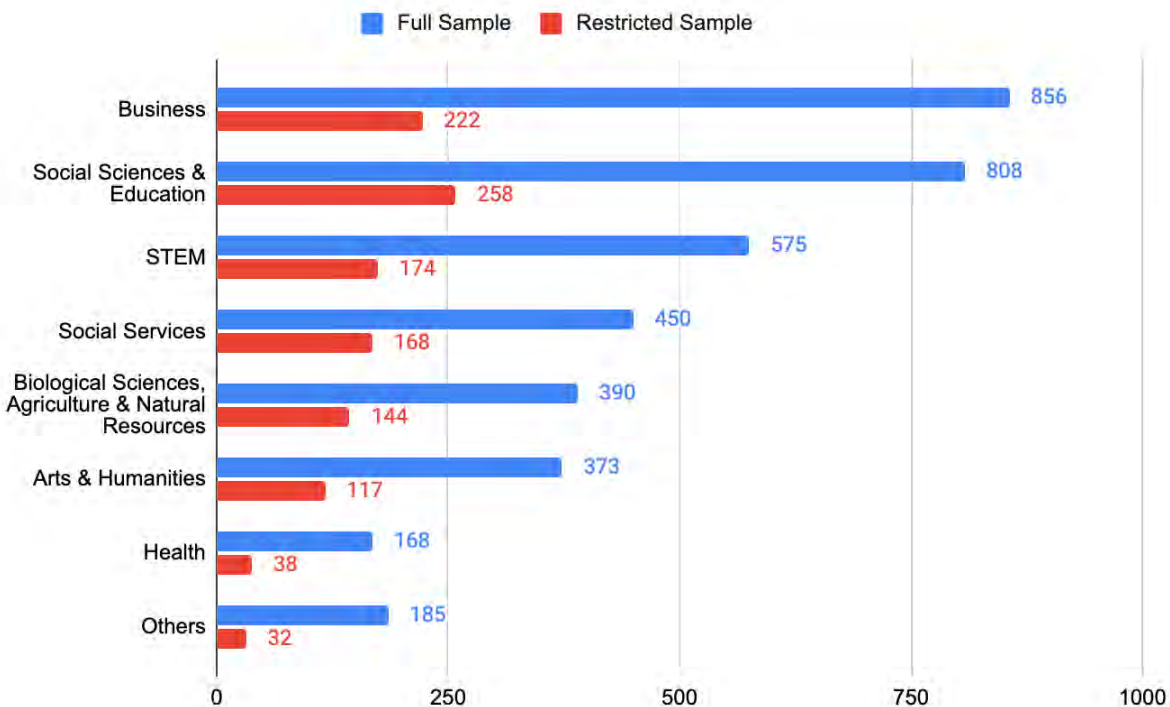
We also include sociodemographic factors, specifically *gender*, *race*, *age*, whether a student is *first generation*, and *family income*. Due to inconsistencies in how income categories were grouped in the survey for different institutions, we converted responses to a binary variable that took the value of 1 if students reported their parents' income to be above $100,000. Finally, we include other controls that capture internship and enrollment characteristics: whether the internship is paid, whether it is required by their academic program to complete their degree, whether the student is enrolled part-time, and whether they are completing an associate degree.

Table 1. Respondent Demographic Characteristics

	N	Mean/ Percentage	S.D.
Internship-major alignment	**1,153**	**3.91**	**1.05**
Internship-career alignment	**1,154**	**4.07**	**1.04**
Overall satisfaction	**1,154**	**4.00**	**1.00**
Major Group	**1,153**		
STEM		15.09%	-
Biological Sciences, Agriculture & Natural Resources		12.49%	-
Health		3.30%	-
Business		19.25%	-
Social Sciences & Education		22.38%	-
Arts & Humanities		10.15%	-
Social Services		14.57%	-
Others		2.78%	-
Gender	**1,154**		
Man		29.98%	-
Woman		68.37%	-
Other		1.65%	-
Race	**1,153**		
White		33.22%	-
Asian		3.82%	-
Black		44.58%	-
Latinx		10.41%	-
Other		7.98%	-
Age		**25.05**	**6.67**
First Generation		41.13%	-
Paid internship		**56.93%**	**-**
Required Internship		50.09%	-
Parent's income over 100k		**24.36%**	**-**
Associate degree		14.82%	-
Part time student		**15.60%**	**-**

Table 1 shows descriptive statistics for the variables included in our models. Students reported an average of 3.91 (out of 5) in terms of the match between internship and major, while the average for internship-career alignment was 4.07, and the average satisfaction level was 4.00. In terms of majors, the largest major group in the sample was social sciences and education (22.38%), followed by business (19.25%). Health students (3.30%) and other ungrouped majors (2.78%) had the least number of students. More students in the sample identified as women (68.37%) than men (29.98%), while 1.65% of students identified as non-binary. The largest racial group was Black (44.58%), followed by White students (33.22%).

Students had an average age of twenty-five, with a median of 23.41. Around 13% of students were first-generation college students, and a fourth of the students (24.36%) reported that their parents' annual income was above 100,000 dollars. Over half of the students reported that an internship was required to finish their degree (50.09%), and over half were participating or had

participated in a paid internship (56.93%). Finally, 14.82% of students were pursuing an associate degree, and 15.60% were part-time students.

Analytical Strategies

We estimate the following models:

$$y_{ij} = \beta_0 + B_1\,Major_{ij} + B_2\,Gender_{ij} + B_3 Race_{ij} + B_4 X' + \lambda_j + \varepsilon_{ij} \qquad (1)$$

$$Sat_{ij} = \beta_0 + B_1\,Major_{ij} + B_2\,Gender_{ij} + B_3 Race_{ij} + B_4 X'$$
$$+\beta_5\,Rel_{ij} + \beta_6\,Skill_{ij} + \lambda_j + \varepsilon_{ij} \quad (2)$$

Where y_{ij} is one of three outcomes (internship-major alignment, internship-career alignment, and satisfaction) for each student i in institution j. β_0 is the intercept. B_1 represents a vector of coefficients that correspond to dummy-coded major groupings, using business as the reference category. B_2 is a vector of two coefficients, one for female-identifying students and another for non-binary-identifying students. B_3 is a vector of coefficients for each racial group: Asian, Black, Latinx, and Other, where White is the reference category. B_4 is a vector of coefficients for each of the X' independent variables (age, first generation, parent's income, paid internship, required internship, associate degree, and part-time enrollment). Sat_{ij} is the overall satisfaction with the internship experience for each i student in institution j, Rel_{ij} is the reported relation to major (i.e., internship-major alignment), and $Skill_{ij}$ is the reported relevance of skill development during the internship for career development (i.e., internship-career alignment). λ_j are institution-fixed effects.

We estimate equation (1) as a baseline model. Additionally, we estimate it separately by gender and racial groups to assess the potentially differential patterns. We then estimate equation (2) to evaluate to what extent internship-major and internship-career alignments are associated with overall internship satisfaction. We also estimate model (2) separately for each gender and racial group.

Results

Descriptive Figures

First, we explore how each of our dependent variables varies by major. This descriptive analysis is shown in Figures 3-5. For each major group, 15% or less of students report that the internship is not related to their declared majors, with the highest proportion of unrelated internships taking place in social sciences & education (15%), health (14%), and social services (11%). While most students report that their internship is very or extremely related to their major, the largest proportion of students who do so are in arts and humanities (78%) and health (76%).

Figure 3. Internship-Major Alignment, by Major Group
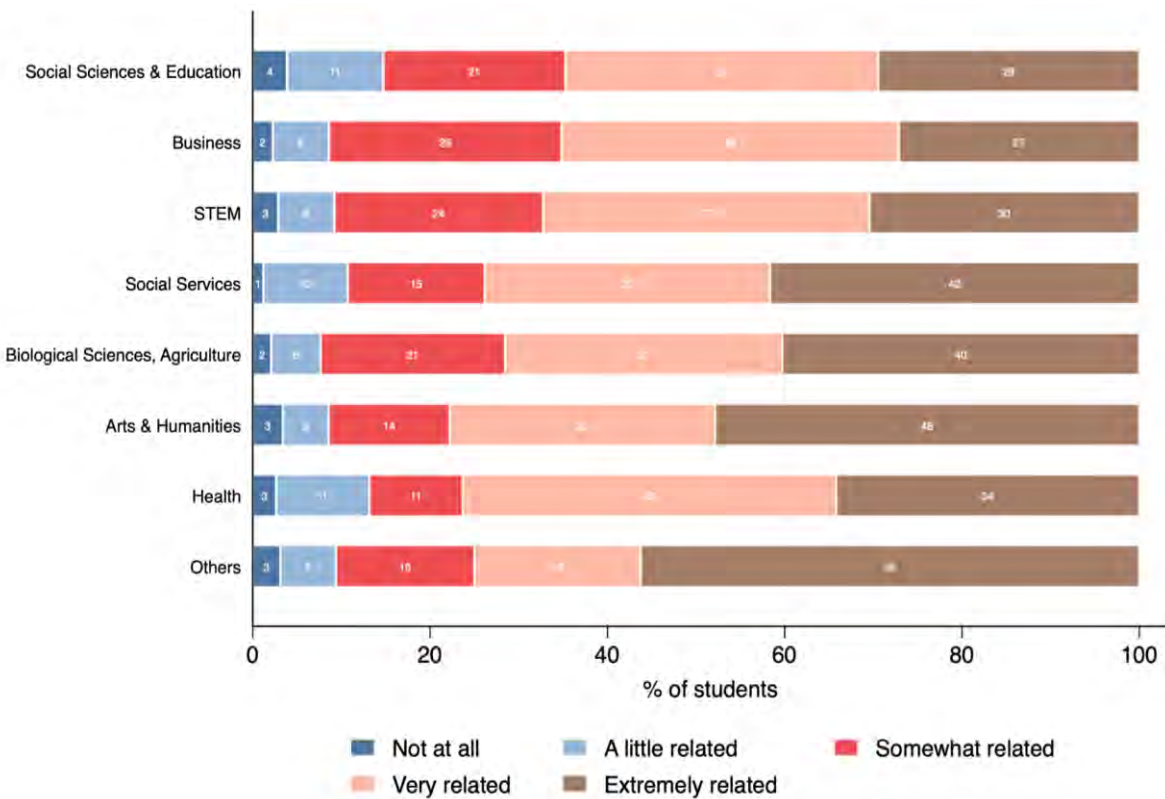
Note: Internship-major alignment is measured by the question ""How related do you feel your internship was to your academic program?"

Figure 4. Internship-Career Alignment, by Major Group
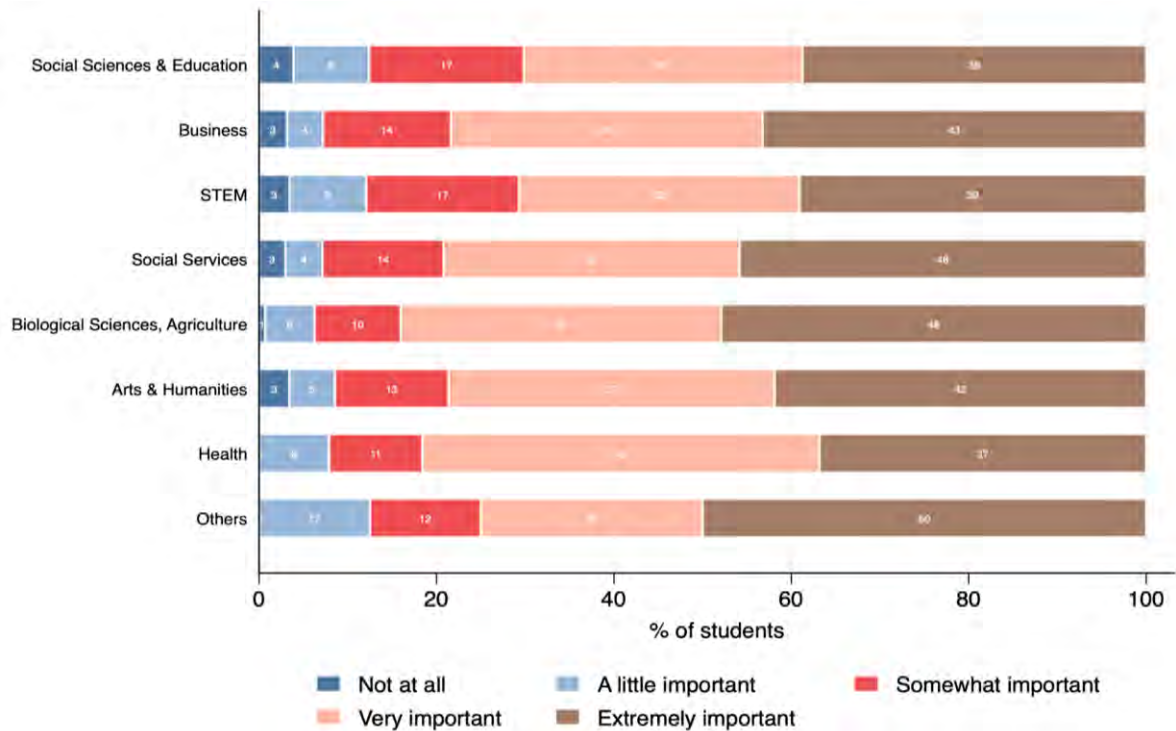
Note: Internship-career alignment is measured by the question "This internship provided me with important skills relevant to my chosen career".

Biological sciences and agriculture stand out as the group with the largest proportion of students who claim their internship developed important skills that fit their career plans (84%), followed by health students (82%). Besides the "Other" group, social sciences & education and STEM students have the highest proportion of students who do not consider their internships as helping to develop career-plan-relevant skills (13% and 12%, respectively).

Figure 5. Overall Satisfaction with Internship, by Major Group
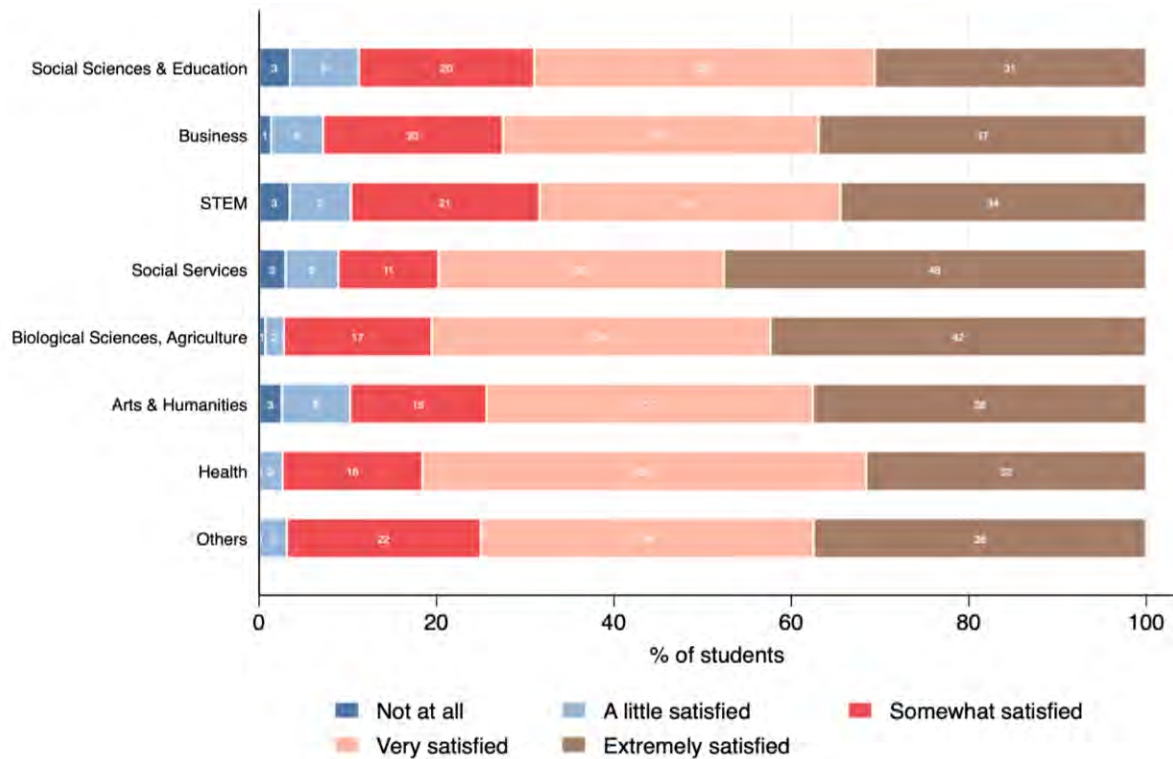
In terms of satisfaction with their overall internship experiences, most students report being either very or extremely satisfied with their experiences, ranging from 71% (Social Sciences & Education) to 82% (Health). The highest percentage of somewhat satisfied students is found in the varied majors ("Other"), followed by STEM (21%), Business (20%), and Social Sciences (20%). The largest proportion of unsatisfied students is 11%, in both Arts & Humanities and Social Sciences & Education.

Baseline Models Predicting Internship Outcomes

We next turn to evaluate which factors contribute to variation in each of our three dependent variables. These results are shown in Table 2, which corresponds to equation (1) in the analytical strategy.

Table 2. Baseline Linear Regression Model Predicting Internship Outcomes

	(1) Internship-Major Alignment	(2) Internship-Career Alignment	(3) Overall Satisfaction
Major (Reference=Business)			
STEM	0.062	-0.086	-0.091
	(0.110)	(0.122)	(0.116)
Biological Sciences, Agriculture & Natural Resources	0.279*	0.150	0.222*
	(0.112)	(0.106)	(0.102)
Health	0.061	-0.047	0.138
	(0.184)	(0.166)	(0.149)
Social Sciences & Education	-0.051	-0.189+	-0.145
	(0.110)	(0.105)	(0.101)
Arts & Humanities	0.243*	-0.046	0.028
	(0.122)	(0.124)	(0.123)
Social Services	0.007	-0.041	0.194
	(0.123)	(0.122)	(0.124)
Others	0.206	0.003	0.064
	(0.210)	(0.205)	(0.179)
Gender, Woman	-0.033	0.118	-0.007
	(0.072)	(0.074)	(0.068)
Gender, Other	-0.262	0.082	-0.210
	(0.328)	(0.316)	(0.307)
Race (Reference = White)			
Asian	-0.183	0.010	0.086
	(0.154)	(0.153)	(0.150)
Black	-0.063	0.024	0.036
	(0.114)	(0.114)	(0.124)
Latinx	-0.176	-0.043	0.022
	(0.117)	(0.128)	(0.126)
Other racial identity	-0.094	-0.062	-0.015
	(0.144)	(0.142)	(0.150)
Age	**0.009+**	**0.004**	**0.011***
	(0.005)	**(0.005)**	**(0.005)**
First Gen	0.070	0.022	-0.007
	(0.065)	(0.067)	(0.065)
Paid Internship	**-0.162***	**-0.070**	**0.026**
	(0.080)	**(0.077)**	**(0.076)**
Required Internship for degree	0.110	0.119+	0.066
	(0.071)	(0.071)	(0.068)
Parent's income over 100k	**-0.005**	**0.075**	**0.087**
	(0.079)	**(0.080)**	**(0.076)**
Associate Degree	0.112	0.693*	0.455+
	(0.270)	(0.324)	(0.276)
Part Time Student	**-0.116**	**-0.099**	**-0.114**
	(0.096)	**(0.103)**	**(0.102)**
Observations	1,118	1,118	1,118
R-squared	0.064	0.044	0.040

*Note: Robust standard errors in parenthesis. ** p<0.01, * p<0.05, + p<0.1. Institution fixed effects are included in all models but omitted from the table for simplicity.*

Results indicate that students in Biological Sciences, Agriculture and Natural Resources majors report that their internships are significantly more related to their major than business students (b=0.279, SE=0.112), as well as a higher satisfaction with their internship experience (b=0.222, SE=0.102). Interestingly, students in Arts & Humanities majors report a higher level of internship-major alignment than business students (b=0.243, SE=0.122). On the other hand, students in Social Sciences & Education report a significantly lower level of internship-career alignment (b=-0.189, SE=0.105). We do not observe other significant differences across major groups.

When it comes to sociodemographic variables, although small in magnitude, an additional year of age is associated with a higher level of internship-major alignment (b=0.009, SE=0.005) and internship satisfaction (b=0.011, SE=0.005). Students who participated in a paid internship report a lower level of internship-major alignment, indicating a possible exchange between the alignment and payment of an internship (b=-0.162, SE=0.080). Students whose academic programs require them to participate in an internship report a higher level of internship-career alignment (b=0.119, SE=0.071). Finally, students pursuing an associate degree as opposed to a bachelor's degree report a higher level of internship-career alignment (b=0.693, SE=0.324), and higher overall satisfaction (b=0.455, SE=0.276).

Differential Patterns by Gender

Table 3 shows the moderation analysis for this model based on gender. Columns (1), (2), (4), (5), (7), and (8) show the estimation of the model for each of the dependent variables for male and female students, separately. Columns (3), (6), and (9) show whether the difference in coefficients for male and female models is statistically significant, based on a full interaction model.

Table 3. Linear Regression Model Predicting Internship Outcomes by Gender Group

	Internship-Major Alignment			Internship-Career Alignment			Overall Satisfaction		
	(1) Men	(2) Women	(3) Diff	(4) Men	(5) Women	(6) Diff	(7) Men	(8) Women	(9) Diff
Major (Ref=Business)									
STEM	0.008 (0.162)	0.087 (0.166)		-0.184 (0.193)	0.011 (0.167)		-0.297 (0.185)	0.212 (0.145)	*
Biological Sciences, Agriculture & Natural Resources	0.375+ (0.209)	0.273* (0.135)		0.148 (0.256)	0.102 (0.119)		-0.035 (0.216)	0.262* (0.120)	
Health	0.107 (0.262)	0.015 (0.225)		-0.221 (0.312)	-0.069 (0.201)		0.002 (0.286)	0.167 (0.171)	
Social Sciences & Education	-0.270 (0.219)	0.022 (0.132)		-0.117 (0.233)	-0.207* (0.121)		0.112 (0.185)	-0.206* (0.125)	*
Arts & Humanities	0.404* (0.220)	0.186 (0.151)		0.153 (0.219)	-0.177 (0.154)		0.257 (0.193)	-0.112 (0.155)	
Social Services	0.157 (0.264)	0.027 (0.147)		0.292 (0.257)	-0.123 (0.146)		0.711** (0.217)	0.088 (0.154)	
Others	0.220 (0.366)	0.264 (0.258)		-0.045 (0.382)	0.051 (0.244)		-0.140 (0.367)	0.177 (0.194)	
Race (Ref=White)									
Asian	-0.300 (0.271)	-0.182 (0.199)		0.256 (0.295)	-0.116 (0.185)		0.451+ (0.248)	-0.100 (0.175)	+
Black	-0.074 (0.204)	-0.118 (0.141)		-0.019 (0.233)	-0.046 (0.132)		-0.293 (0.223)	0.139 (0.149)	
Latinx	-0.059 (0.180)	-0.241 (0.151)		0.041 (0.199)	-0.017 (0.151)		-0.008 (0.195)	0.136 (0.160)	
Other racial identity	-0.242 (0.270)	-0.151 (0.173)		-0.128 (0.260)	-0.086 (0.173)		-0.285 (0.241)	0.136 (0.184)	
Age	**0.010 (0.011)**	**0.011* (0.005)**		**0.006 (0.010)**	**0.004 (0.006)**		**0.010 (0.009)**	**0.011* (0.006)**	
First Gen	**-0.001 (0.115)**	**0.095 (0.080)**		**-0.028 (0.130)**	**0.056 (0.078)**		**-0.066 (0.120)**	**0.043 (0.079)**	
Paid Internship	**0.072 (0.149)**	**-0.238* (0.099)**	**	**0.081 (0.156)**	**-0.127 (0.094)**	**	**0.179 (0.132)**	**-0.049 (0.093)**	**
Required Internship for degree	**0.238+ (0.140)**	**0.054 (0.086)**		**0.048 (0.154)**	**0.146+ (0.082)**		**-0.162 (0.135)**	**0.137+ (0.079)**	+
Parent's income over 100k	**-0.207 (0.144)**	**0.072 (0.098)**		**0.036 (0.153)**	**0.071 (0.093)**		**-0.147 (0.132)**	**0.204* (0.092)**	*
Associate Degree	**0.274 (0.555)**	**-0.219 (0.300)**		**0.351 (0.468)**	**0.678 (0.446)**		**1.043** (0.381)**	**0.043 (0.339)**	+
Part Time Student	**-0.153 (0.181)**	**-0.096 (0.114)**		**0.107 (0.212)**	**-0.102 (0.116)**		**-0.035 (0.190)**	**-0.142 (0.123)**	
Observations	334	765		334	765		334	765	
R-squared	0.134	0.069		0.066	0.057		0.121	0.061	

*Note: Robust standard errors in parenthesis. ** p<0.01, * p<0.05, + p<0.1. Institution fixed effects are included in all models but omitted from the table for simplicity. Columns (3), (6) and (9) show whether the difference in coefficients for male and female models is statistically significant, based on a full interaction model.*

Although some of the academic program coefficients differ between men and women in the case of our first two dependent variables on alignments, most of these differences are not

statistically significant, which may be due to the relatively small sample size and resulting large standard errors. For instance, men in Social Sciences & Education majors report a lower level of internship-major alignment than men in business (b=-0.270, SE=0.219), while women report the opposite (b=0.022, SE=0.132). However, as column (3) does not show a significant interaction, this difference in coefficients is not statistically significant.

In the case of satisfaction with internships, we do see some significant moderation effects by gender. Specifically, we see that men in STEM majors are less satisfied with their internships than men in business majors (b=-0.297, SE=0.185), whereas women in STEM fields are more satisfied with their internships than girls in business (b=0.212, SE=0.145), and this difference is statistically significant (p<0.05). This is also true for Social Sciences & Education, where men in that group report a higher level of internship satisfaction (b=0.112, SE=0.185), while women in that group report the opposite (b=-0.206, SE=0.125).

Another gender difference emerges when it comes to the effect of paid internship. The association with paid internship varies by gender in all three dependent variables, where men in paid internships report higher internship-major alignment, higher internship-career alignment, and higher satisfaction, while women in paid internships report lower values for all three outcomes. This may indicate that women are more likely to take a paid internship for the financial returns while sacrificing its alignment with their academic training and career aspirations. In addition, when an internship is required for the degree, men report a lower level of satisfaction while women report the opposite. It is also interesting that having a parent's income over 100k relates to higher internship satisfaction for women, but not for men. Last, men pursuing an associate degree report a higher level of internship satisfaction than men pursuing a bachelor's degree, while this difference is not observed among women.

Differential Patterns by Race

Table 4 presents the results of a moderation analysis by race. We also ran full interaction models to compare the coefficients of Asian, Black, and Latinx students to White students. These interaction terms are not included in the table but will be discussed throughout the text.

Table 4. Linear Regression Model Predicting Internship Outcomes by Race

	Internship-Major Alignment				Internship-Career Alignment				Overall Satisfaction			
	(1) White	(2) Asian	(3) Black	(4) Latinx	(5) White	(6) Asian	(7) Black	(8) Latinx	(9) White	(10) Asian	(11) Black	(12) Latinx
Major (Ref=Business)												
STEM	0.000	0.517	0.107	-0.195	-0.151	-0.429	0.097	-0.082	-0.051	-0.371	-0.026	0.214
	(0.205)	(0.545)	(0.173)	(0.383)	(0.250)	(0.508)	(0.186)	(0.362)	(0.220)	(0.479)	(0.173)	(0.306)
Biological Sciences, Agricult., & Natural Resources	0.291	-0.396	0.269	0.256	0.309+	-0.515	0.116	0.236	0.476*	-0.548	0.056	0.304
	(0.207)	(0.978)	(0.166)	(0.395)	(0.174)	(0.697)	(0.167)	(0.396)	(0.192)	(0.508)	(0.149)	(0.351)
Health	0.711**	0.512	-0.506	-0.319	0.220	0.292	-0.479	-0.014	0.619**	1.014	-0.064	-0.157
	(0.249)	(0.640)	(0.346)	(0.454)	(0.276)	(0.807)	(0.318)	(0.410)	(0.238)	(0.601)	(0.276)	(0.311)
Social Sciences & Education	-0.166	-1.194	-0.037	-0.261	-0.124	-1.207	-0.169	-0.093	-0.051	-0.484	-0.201	0.123
	(0.213)	(1.159)	(0.154)	(0.448)	(0.187)	(0.932)	(0.153)	(0.478)	(0.193)	(0.718)	(0.142)	(0.360)
Arts & Humanities	0.376*	0.165	0.018	0.137	0.160	-0.883	-0.014	-0.150	0.239	-1.041+	-0.129	0.201
	(0.181)	(0.701)	(0.230)	(0.504)	(0.184)	(0.856)	(0.216)	(0.444)	(0.188)	(0.575)	(0.227)	(0.306)
Social Services	0.105	-1.014	-0.064	-0.125	0.029	-1.083	-0.086	0.050	0.261	-0.965	0.236	0.042
	(0.201)	(0.971)	(0.189)	(0.536)	(0.183)	(0.998)	(0.217)	(0.528)	(0.220)	(0.727)	(0.193)	(0.443)
Others	0.290	-0.087	0.031	0.458	-0.470	0.518	0.273	0.561	0.129	-0.797	0.018	0.640+
	(0.362)	(0.986)	(0.367)	(0.484)	(0.375)	(1.034)	(0.303)	(0.532)	(0.295)	(0.748)	(0.310)	(0.376)
Gender, Woman	0.020	1.180	-0.151	0.001	0.171	0.412	0.046	0.344	0.023	-0.439	0.009	0.083
	(0.119)	(0.768)	(0.115)	(0.241)	(0.119)	(0.614)	(0.124)	(0.232)	(0.111)	(0.386)	(0.112)	(0.182)
Gender, Other	-0.610		0.114	-0.685	-0.128		0.882**	0.231	-0.130		0.144	-0.825
	(0.805)		(0.421)	(0.805)	(0.572)		(0.232)	(0.798)	(0.467)		(0.218)	(0.863)
Age	0.002	0.124	0.014	0.014	0.002	0.023	0.012	-0.015	0.016*	-0.028	0.017*	-0.026
	(0.007)	(0.075)	(0.009)	(0.026)	(0.007)	(0.092)	(0.008)	(0.029)	(0.007)	(0.071)	(0.008)	(0.024)
First Gen	0.156	-0.823	0.058	0.156	0.128	-0.039	0.069	-0.128	0.049	-0.054	-0.021	-0.159
	(0.112)	(0.650)	(0.099)	(0.232)	(0.115)	(0.611)	(0.103)	(0.196)	(0.124)	(0.382)	(0.094)	(0.178)
Paid Internship	-0.261+	-1.186+	-0.143	-0.245	-0.101	-0.114	-0.095	-0.082	0.091	-0.602	0.000	0.055
	(0.144)	(0.603)	(0.120)	(0.306)	(0.131)	(0.645)	(0.126)	(0.257)	(0.145)	(0.453)	(0.113)	(0.236)
Required Internship for degree	0.080	1.167	0.167	0.079	0.189	-0.220	0.169	-0.210	0.036	-0.690	0.116	0.232
	(0.125)	(0.880)	(0.108)	(0.306)	(0.117)	(0.699)	(0.110)	(0.308)	(0.120)	(0.563)	(0.100)	(0.254)
Parental income over 100k	-0.089	0.411	-0.015	0.310	0.082	-0.722	0.065	0.048	0.134	-0.928	0.126	-0.312
	(0.124)	(0.823)	(0.126)	(0.305)	(0.123)	(1.379)	(0.123)	(0.256)	(0.122)	(0.734)	(0.119)	(0.286)
Associate Degree	0.198	0.698	1.410**	-0.153	0.613	-1.027	0.842**	-0.184	0.532	-1.783	0.398	-0.119
	(0.384)	(1.068)	(0.171)	(0.529)	(0.506)	(1.118)	(0.288)	(0.425)	(0.447)	(1.094)	(0.529)	(0.354)
Part Time Student	-0.188	-1.615**	-0.140	0.406	-0.203	-1.251	0.049	0.373	-0.235	-0.902+	-0.305	0.148
	(0.146)	(0.544)	(0.225)	(0.300)	(0.151)	(0.756)	(0.227)	(0.286)	(0.154)	(0.438)	(0.232)	(0.254)
Observations	368	43	501	119	368	43	501	119	368	43	501	119
R-squared	0.119	0.589	0.069	0.149	0.080	0.502	0.062	0.157	0.075	0.668	0.053	0.198

*Note: Robust standard errors in parenthesis. ** p<0.01, * p<0.05, + p<0.1. Institution fixed effects hidden for simplicity.*

For our first dependent variable, internship-major alignment, we found some significant differences between racial groups. Specifically, while being in a health major is associated with a higher level of internship-major alignment than being in a business major for White students (b=0.711, SE=0.249), this association is negative and not statistically significant for both Black (b=-0.506, SE=0.346) and Latinx (b=-0.319, SE=0.454) students, indicating that those two groups may be disproportionately relegated to internships that do not match their academic training. Additionally, Asian students who are enrolled part-time report a lower level of internship-major alignment than full-time students (b=-1.615, SE=0.544) while this effect is not statistically significant among White students (b=-0.188, SE=0.146).

For our second dependent variable, internship-career alignment, we found little evidence of a racial moderation effect. However, we observe significant racial patterns for our third dependent variable, internship satisfaction, particularly in the Biological Sciences, Agriculture & Natural Resources academic programs. Asian students evidenced a negative yet non-significant association between being in this major group and overall internship satisfaction (b=-0.548, SE=0.508), compared to a positive association for White students (b=0.476, SE=0.192). Black students also evidenced a positive association but to a much lesser extent (b=0.056, SE=0.149). The interaction between Asian students and being in this major group was significant at the 99% level, while the one for Black students was significant at the 90% level. Latinx and Black students also faced a different association between being in a Health major and internship satisfaction: while White students experienced a positive association (b=0.619, SE=0.238), Latinx (b=-0.157, SE=0.311, p<0.05 for interaction test) and Black students (b=-0.064, SE=0.276, p<0.10 for interaction) faced a negative one. We also found evidence of differential effects for Asian students in Arts and Humanities majors (p<0.01) and Social Services (p<0.05) compared to White students: Asian students in these two majors report a lower level of satisfaction than those in business majors, while White students show a non-significant, positive effect.

Predicting Internship Satisfaction with Alignment Measures

Table 5. Linear Regression Models Predicting Internship Satisfaction with Match to Major and Skill Attainment

	(1) Overall	(2) Men	(3) Women	(4) Diff	(5) White	(6) Asian	(7) Black	(8) Latinx
Internship-Major Alignment	0.104**	0.062	0.122**		0.103+	-0.019	0.112*	0.157
	(0.035)	(0.057)	(0.042)		(0.057)	(0.211)	(0.052)	(0.132)
Internship-Career Alignment	0.480**	0.509**	0.461**		0.562**	0.230	0.433**	0.387**
	(0.035)	(0.057)	(0.042)		(0.065)	(0.251)	(0.050)	(0.123)
Major (Ref=Business)								
STEM	-0.056	-0.203	0.196	*	0.034	-0.262	-0.080	0.277
	(0.094)	(0.147)	(0.127)		(0.163)	(0.523)	(0.148)	(0.222)
Biological Sciences, Agric. & Nat. Resources	0.121	-0.133	0.181		0.272	-0.437	-0.024	0.173
	(0.093)	(0.198)	(0.112)		(0.184)	(0.431)	(0.134)	(0.262)
Health	0.155	0.108	0.197		0.422*	0.957	0.200	-0.101
	(0.134)	(0.257)	(0.161)		(0.189)	(0.582)	(0.267)	(0.272)
Social Sciences & Education	-0.049	0.189	-0.113		0.036	-0.228	-0.123	0.200
	(0.087)	(0.148)	(0.109)		(0.156)	(0.651)	(0.124)	(0.324)
Arts & Humanities	0.025	0.154	-0.052		0.110	-0.834	-0.125	0.238
	(0.109)	(0.175)	(0.132)		(0.148)	(0.708)	(0.204)	(0.389)
Social Services	0.214*	0.552**	0.141	+	0.234	-0.734	0.280+	0.043
	(0.103)	(0.196)	(0.126)		(0.183)	(0.733)	(0.153)	(0.348)
Others	0.042	-0.131	0.122		0.364	-0.918	-0.103	0.351
	(0.159)	(0.343)	(0.159)		(0.276)	(0.924)	(0.251)	(0.283)
Gender, Woman	-0.060				-0.075	-0.512	0.006	-0.050
	(0.057)				(0.089)	(0.462)	(0.095)	(0.155)
Gender, Other	-0.222				0.005		-0.251	-0.807
	(0.260)				(0.527)		(0.270)	(0.819)
Race (Ref=White)								
Asian	0.101	0.339	-0.024					
	(0.129)	(0.235)	(0.152)					
Black	0.031	-0.279	0.175	*				
	(0.104)	(0.193)	(0.128)					
Latinx	0.061	-0.025	0.174					
	(0.101)	(0.154)	(0.132)					
Other racial identity	0.024	-0.205	0.194					
	(0.130)	(0.192)	(0.168)					
Age	0.008*	0.006	0.007		0.015*	-0.031	0.011	-0.023
	(0.004)	(0.007)	(0.005)		(0.006)	(0.083)	(0.007)	(0.018)
First Gen	-0.024	-0.052	0.006		-0.039	-0.061	-0.058	-0.134
	(0.054)	(0.091)	(0.068)		(0.101)	(0.420)	(0.077)	(0.176)
Paid Internship	0.076	0.134	0.039	**	0.175	-0.598	0.057	0.125
	(0.063)	(0.109)	(0.077)		(0.118)	(0.564)	(0.093)	(0.227)
Required Internship for degree	-0.003	-0.201+	0.063	*	-0.078	-0.617	0.024	0.301
	(0.058)	(0.106)	(0.070)		(0.103)	(0.681)	(0.085)	(0.229)
Parent's income over 100k	0.051	-0.153	0.162*	*	0.097	-0.754	0.100	-0.379
	(0.062)	(0.104)	(0.075)		(0.094)	(0.575)	(0.103)	(0.266)
Associate Degree	0.111	0.847**	-0.243	*	0.167	-1.533	-0.124	-0.024
	(0.269)	(0.292)	(0.331)		(0.304)	(1.265)	(0.604)	(0.346)
Part Time Student	-0.054	-0.080	-0.083		-0.101	-0.645	-0.310	-0.060
	(0.082)	(0.133)	(0.105)		(0.118)	(0.551)	(0.217)	(0.200)
Observations	1,118	334	765		368	43	501	119
R-squared	0.342	0.444	0.342		0.429	0.693	0.319	0.460

*Note: Robust standard errors in parenthesis. ** p<0.01, * p<0.05, + p<0.1. Institution fixed effects are included in all models but omitted from the table for simplicity.*

Table 5 presents the results of further analysis where internship-major and internship-career alignment measures become explanatory variables for internship satisfaction. Column (1) presents the results for the full model, while columns (2) and (3) present results for a moderation model by gender, whereas column (4) shows whether the difference in coefficients is significant. Columns (5) through (8) show the results of the race moderation model, and the significance of the difference between Asian, Black, and Latinx and White coefficients will be commented on in the text.

Column 1 shows that overall, students who found their internships to be more related to their majors are significantly more satisfied with their internship experiences (b=0.104, SE=0.035). Similarly, students who report a higher level of alignment between the internship and their career plans are more satisfied with their internships (b=0.480, SE=0.035). These strong effects confirm that students are more satisfied when their internships align well with student academic training and future career plans.

When looking at race moderation, we observe that for Asian students, the effect of internship-career alignment on internship satisfaction (b=0.230, SE=0.251) is smaller than that among White students (b=0.562, SE=0.065). This difference is statistically significant as tested in a full interaction model. Furthermore, when the two alignment variables are included, being in Biological Sciences, Agriculture & Natural resources is no longer significantly associated with a higher level of internship satisfaction (as shown in Table 2), indicating that the advantage of this major group in internship satisfaction may be fully explained by the two alignment measures.

When it comes to the gender moderation, although we observe a greater positive effect of internship-major alignment on internship satisfaction for women (b=0.122, SE=0.042) than men (b=0.062, SE=0.057), this gender difference is not statistically significant. Similarly, the effect of internship-career alignment on internship satisfaction is not significantly different between men and women. It is worth noting that after including the two alignment measures into the model, we still observe gender differences in the effects of major groups: men in STEM fields report a lower level of satisfaction with their internships than men in business majors (b=-0.203, SE=0.147), while women in STEM report a higher level of satisfaction than women in business (b=0.196, SE=0.127). In the case of Social Services, both groups experience a positive association with internship satisfaction, although men to a higher extent (b=0.552, SE=0.196) than women (b=0.141, SE=0.126). These gendered patterns are largely consistent with results shown in Table 3, indicating that internship-major and internship-career alignment could not explain away these gender differences in internship satisfaction across major groups.

Discussion

Adapting the concept of horizontal match between educational and occupational fields from the labor market studies, this study develops a novel tripartite framework to scrutinize the internship-major-career alignment in internship programs. Utilizing the first wave of the College Internship Survey data, this study offers a preliminary examination of factors associated with student internship-major alignment and internship-career alignment and how these two forms of alignment are associated with overall internship satisfaction. Moreover, this study contributes to the literature by investigating how demographic and programmatic factors (such as major programs) are linked to internship-major-career alignment measures, and how these variables interact to impact overall internship satisfaction. Specifically, several findings are highlighted.

First, most students, regardless of majors, perceived their internships to be relevant to their academic programs. They also reported a significant degree of skill development through their internships that is relevant to their career plans. This observation aligns with the broader academic discourse stressing the instrumental role internships play in translating theoretical knowledge into practical competencies, which subsequently enhances career readiness (Knouse and Fontenot 2008). However, it is still worth noting that a certain level of misalignment exists, and it varies across academic major programs. Notably, in Social Sciences & Education, Social Services, and Health programs, over 10% of students say their internships are only "a little related" or "not at all related" to their major programs. When it comes to internship-career alignment, in Social Sciences & Education and STEM major groups, over 10% of students say the internship only provided them with "a little important" skills relevant to their chosen career or failed to provide any relevant skills at all. These results indicate a nonnegligible group of students experiencing internship-major and internship-career misalignment, which is worth further investigation as such misalignments may diminish the effectiveness of these internships in incorporating academic training and preparing students for their chosen careers.

Second, this study reveals gender differences concerning the association between paid internships and their alignment with students' academic pursuits and career goals. Notably, women engaged in paid internships reported a lower level of alignment of their internships with their academic majors. The same adverse effect is not found among men; instead, we observe a positive, although non-significant, effect of paid internship for men on all three outcomes. This observed gender disparity raises critical questions about potential structural inequalities faced by women in the paid internship landscape. It appears that women participating in paid internships might be in a disadvantaged position when it comes to the relevance of their internships to their academic and career trajectories. This observed pattern implies a potential trade-off that women might have to navigate in their internship choices, wherein gaining financial support appears to be accompanied by a decrease in alignment between the internship and their broader academic and professional goals. The exact reason for women to make such decisions deserves further scholarly attention, as it is crucial to discern whether these choices are predominantly influenced by financial considerations, or if there are additional factors such as availability of opportunities or societal expectations. However, given the persistent gender pay gap in the labor market, this finding is troubling as it may suggest that internships could be an early phase where gender pay inequalities begin to manifest.

Third, race emerged as a potential factor influencing the level of alignment between internships and academic majors. Specifically, while White students in health majors experienced higher internship-major alignment than business students, the same did not hold for Black and Latinx students. This raises concerns about the potential inequitable access to quality internships that align with academic training for minority students in health programs. This observation echoes previous literature documenting racial disparities in educational and career opportunities (Pager and Shepherd 2008) and racial disparities in horizontal mismatch (Robst 2007; Bender and Roche 2013). Due to the sample size, the study may not have sufficient statistical power to detect other potential racial disparities in the alignment between internships, academic fields, or career aspirations, particularly when race intersects with different major groups. As such, future research with larger and more diverse samples is warranted to explore these complexities to understand the race-based nuances in the dynamics of internship experiences and their alignment with academic and career pathways. Last but not least, this study reveals that students whose internships are better aligned with their academic training and career plan also have a higher level of overall satisfaction with their internship experiences. This finding resonates with the horizontal mismatch literature on formal employment, which has shown higher job satisfaction for jobs that match well with one's academic fields (Robst, 2007). Future studies should delve deeper into the impact of internship-major-career alignment on various internship outcomes, such as wage, knowledge acquisition, networking opportunities, and long-term labor market outcomes after graduation. It is also essential to consider the implications of these findings in light of potential disparities in the alignments, as misalignment could lead to lower levels of satisfaction and potentially less effective career preparation.

Limitations and Conclusions

This study, while offering valuable insights, is preliminary and not without its limitations. Firstly, the relatively small sample size and large standard errors, especially in the analyses related to the moderation effects of gender and race, could have affected the statistical significance of some findings, and we may thus fail to detect certain gender and racial disparities. Secondly, the study relies on self-reported data to measure internship-major and internship-career alignments. These measures are susceptible to individual biases and perceptions, which could potentially influence the reported outcomes. Moreover, beyond internship pay, there is a lack of variables reflecting internship program features, such as task nature or supervision quality, that could help to explain precisely how the internship may lead to different levels of alignment or satisfaction. Third, this study only utilizes the first wave of the College Internship Study and therefore does not include long-term outcomes of internship alignments, such as their impacts on job placements and career progression, in particular the actual horizontal match between the respondents' first job and their academic training, which are critical elements of the transition from higher education to the labor market. Additionally, the study suffers from a selection bias, as the sample comprises only students who have participated in internships. This potentially excludes the experiences of those who did not participate in such programs, either by choice or due to lack of access. The conclusions drawn from this study, therefore, predominantly reflect the experiences of students already engaged in internships, which may not represent the larger student population.

Future research could address these limitations in several ways. Larger and more diverse samples could be employed to further explore the interactions of gender, race, and academic

majors with internship outcomes, thereby increasing the statistical power of the analyses. Longitudinal research designs could be adopted to trace the longer-term impacts of internship experiences, especially internship-major and internship-career alignments, on graduates' career trajectories. Mixed-method approaches, including in-depth interviews, could be used to delve deeper into students' experiences and perceptions regarding the horizontal match between the internship and academic training as well as skill attainment during internships that fits their career aspirations. In particular, reasons for accepting misaligned internships should be further investigated and potential differences across gender and racial groups should be analyzed. Last, given the significant variations in internship types and quality, future research and survey projects should develop and incorporate measures of these crucial programmatic factors. This will provide a better understanding of how specific features of an internship correlate with the alignment measures and overall satisfaction, shedding light on more tangible policy implications.

Despite these limitations, this study contributes valuable preliminary insights to our understanding of the alignment across student internship experiences, academic majors, and career plans as well as the potential sociodemographic differences. These findings can serve as a foundation for future research in this field. Moreover, we propose a new tripartite alignment framework that could guide future studies on student internships. Research could further distinguish and investigate different forms of alignment and their implications. For example, how does an internship with "complete alignment" compare to one with "internship-career alignment only" in terms of skill development, job satisfaction, or salary? Researchers should further investigate institutional and individual factors that lead to these alignment scenarios. For instance, what role do personal motivation and aspirations, family background, academic and career advising, local labor market conditions, or institutional factors play in shaping these alignments? Furthermore, it is also worth investigation for students whose academic majors do not match their career aspirations, whether an internship with strong career-aspiration alignment could open up new career opportunities. Last, research should also aim at devising and testing interventions that help students achieve better internship-major-career alignment. For example, how should career advising collaborate with academic advising to provide opportunities with better alignment? How can internship programs be structured to enhance these alignments and, consequently, career outcomes?

Overall, this study underscores the importance of providing students with internships that align with their academic programs and career aspirations. This alignment, as suggested by our findings, may boost satisfaction with the internship. For higher education institutions and employers, the study highlights the need to consider gender and racial factors and their intersections with college majors in designing and implementing internship programs to ensure better internship-major-career alignment and equitable satisfaction levels for all students.

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