The impact of philosophy education on intellectual traits

An informal report for the Executive Committee of the American Philosophical Association

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Philosophers often claim that studying philosophy helps people to become better thinkers. It encourages people to question things that others take for granted, to reflect more deeply, and to reason more carefully. It helps people to recognize the limits of their own understanding and awaken them from "dogmatic slumbers." In other words, in addition to whatever intrinsic value philosophy may have, many think that the discipline is also instrumentally valuable insofar as it is distinctively well-suited to cultivating intellectual virtue.

If this claim were supported by compelling, non-anecdotal evidence, this could be helpful for advocating for the discipline. In recent years, university departments across the humanities have faced heightened pressure to demonstrate the relevance and impact of their curricular offerings. The case for philosophy's place in the core curriculum could be substantially strengthened by finding ways to articulate its value in terms of quantifiable and communicable outcomes. Yet, even if the data are not so boosterish, it is nonetheless important for us to understand exactly how philosophy coursework impacts students. Indeed, perhaps we should be *more* interested in the empirical data if these metrics are not so favorable for philosophy, as this would help to to know what kinds of claims we are entitled to make on its behalf and how we might improve.

Prior research has found some striking differences between philosophers and non-philosophers on intellectual traits like reflectiveness, logical reasoning ability, and open-mindedness. But it's not clear whether such differences reflect an impact of studying philosophy (i.e., a treatment effect) or pre-existing differences (i.e., a selection effect). Obviously, the strongest evidence for a treatment effect would come from randomized, controlled trials. But, given that this is not likely to be feasible (at least not at any large scale or over any long period of time), we must rely on observational methods. One approach is to test for changes in students' intellectual traits over time. Students who are already more open-minded, reflective, or who have stronger critical thinking skills, may be more likely to choose a philosophy major. However, regardless of where they start, if students who major in philosophy show *more growth* in these tendencies and abilities than their peers, then this would be at least some evidence that studying philosophy contributed to that growth. In this report, we adopt such an approach.

Thanks to the grant from the American Philosophical Association, we have accessed a large sample collected by the Higher Education Research Institute (HERI) and Cooperative Institutional Research Program, based at the University of California, Los Angeles. Using these data, we investigated whether philosophy majors show more growth than non-philosophy majors in intellectual traits like open-mindedness and a tendency to think carefully and thoroughly, as well as more personal forms of growth that might be fostered by philosophical study (e.g., self-understanding). Additionally, although this is not our primary question, we sought to better understand what students who major in philosophy are like. Specifically, we examined the demographics of philosophy majors, the other subjects that they tend to study when they double major, and the patterns of adding and dropping of philosophy majors between freshman and senior year.

Sample and demographics

The sample includes *N* = 122,352 students graduating from 369 colleges and universities across the United States between 2010 and 2019. With a sample of this size, we have adequate statistical power to test for differences between philosophy majors and non-philosophy majors, despite the fact that only a small proportion of students major in philosophy (1.3% in this sample).

Demographics of philosophy majors

Table 1 reports the demographics of the entire sample, the subset of the sample that intended to major in philosophy when they arrived on campus freshman year (*n* = 413), and the subset that completed a philosophy major by senior year (*n* = 1,623).

Consistent with national trends, in the entire sample, females outnumber males by roughly 3 to 2. However, among philosophy majors, we find the reverse. Among both freshmen who intended to major in philosophy and seniors who did major in philosophy, there are about 2 females for every 3 males. Thus, although the major is disproportionately male, it is not extremely unbalanced. Moreover, the gender balance does not appear to change between the group that was interested in philosophy at the start of freshman year and the group that completed the major by senior year (despite the substantial change in the number of students in each group).

With respect to race or ethnicity, there don't appear to be any marked differences between philosophy majors and the sample as a whole. Proportionally, the full sample looks very similar to each of the philosophy major groups. Considering religious affiliation, intended majors look similar to the sample as a whole. However, among students who complete a major in philosophy, there appear to be relatively fewer Christians (46% for philosophy majors, versus 59% for the full sample).

Table 1: **Demographics of the complete sample and the students majoring in philosophy**

	Intended majors		Majors		Entire sample	
	N	%	*N*	%	*N*	%
Sex						
Female	153	37	673	41	74954	61
Male	244	59	917	57	43728	36
Other	2	< 1	7	< 1	463	< 1
Missing data	14	3	26	2	3207	3
Race						
Asian or Pacific Islander	25	6	107	7	9422	8
Black/African American	8	2	48	3	3895	3
Latina/a/x	18	4	69	4	5851	5
White	283	69	1149	71	85606	70
Other	7	2	29	2	1583	1
Multiple selected	35	8	160	10	8993	7
Missing data	37	9	61	4	7002	6
Religion						
Christian	260	63	754	46	72168	59
None	104	25	591	36	27867	22
Other	43	10	175	11	8475	7
Missing data	6	1	103	6	13842	11

Note: The religious affiliation data for the intended majors come from the freshman survey, whereas the figures for the others come from the senior survey.

Students reported their family's annual household income in the freshman year survey. The income question used fixed response options (rather than, e.g., allowing students to write in a specific figure), meaning that the variable is somewhat coarse-grained. In the entire sample, the median response was "$60,000 to $100,000." The median for the philosophy majors (both intended and actual majors) was "$100,000 to $150,000." We tested whether this difference was statistically significant in multilevel regression models

(with students nested within institutions).[1] The results indicated that students' family income did not predict their likelihood of intending to major in philosophy at the start of freshman year (*log odds* = -0.01, 95% CI: [-0.04, 0.03], *p* = .727), nor their likelihood of having completed a philosophy major at the end of senior year (*log odds* = -0.02, 95% CI: [-0.09, 0.05], *p* = .504). That is, philosophy majors do not appear to come from wealthier backgrounds than non-philosophy majors.

Comparing the growth of philosophy and non-philosophy students

In this section, we report the results of analyses testing whether philosophers show more growth in intellectual traits than non-philosophers. We begin with some measures developed by the HERI, and intended to assess important skills and habits for lifelong learning and working in a pluralistic society. These measures are self-reports, which certainly have their limitations. But they nonetheless yield important insights into how students' academic majors shape their thinking.

"Habits of Mind" and "Pluralistic Orientation"

The HERI has developed self-report measures to assess positive intellectual traits, which they call the "Habits of Mind" and "Pluralistic Orientation" scales. In their official documentation, HERI describes them, respectively, as assessing "the behaviors and traits associated with academic success… [and] lifelong learning" and the "skills and dispositions appropriate for living and working in a diverse society." Looking at the questions included in each measure, it seems that the Habits of Mind scale assesses things like curiosity (see, e.g., items 2, 4, and 6), intellectual rigor (e.g., items 3, 7, 11), and intellectual humility (e.g., items 1 and 9). The Pluralistic Orientation scale seems to assess things like tolerance of diverse opinions (e.g., items 1 and 5) and open-mindedness (e.g., items 2 and 4).

The HERI finds these composite measures useful, and considers them important metrics for their purposes in studying higher education. But, to a philosophical eye, they might seem a bit eclectic. Hence, in addition to using composite scores computed from all items on each scale, we also break the scales apart to examine specific behaviors and (perceived) abilities. We report the latter results in the next subsection of this report.

For the Habits of Mind Scale, the instructions read, "How often in the past year did you…" and the response options are "Not at all," "Occasionally," and "Frequently." The individual items are:

1. Accept mistakes as part of the learning process
2. Ask questions in class

[1] Multilevel models enable us to account for differences among institutions while testing for an impact of our focal predictors. In this case, we used multilevel logistic regressions with family income as the predictor and a binary philosophy/non-philosophy variable was the dependent variable.

3. Evaluate the quality or reliability of information you received
4. Explore topics on your own, even though it was not required for a class
5. Integrate skills and knowledge from different sources and experiences
6. Look up scientific research articles and resources
7. Revise your papers to improve your writing
8. Seek alternative solutions to a problem
9. Seek feedback on your academic work
10. Seek solutions to problems and explain them to others
11. Support your opinions with a logical argument
12. Take a risk because you felt you had more to gain

For the Pluralistic Orientation scale, the instructions read, “Rate yourself on each of the following traits compared with the average person your age. We want the most accurate estimate of how you see yourself.” The response options are: “lowest 10%,” “below average,” “average,” “above average,” “top 10%.” The individual items are:

1. Ability to discuss and negotiate controversial issues
2. Ability to see the world from someone else’s perspective
3. Ability to work cooperatively with diverse people
4. Openness to having my own views challenged
5. Tolerance of others with different beliefs
6. Critical thinking skills
7. Ability to manage my time effectively

The HERI computes composite scores from these items, but these are more than simple averages of responses. Instead, different items have different levels of importance to the total score, with these weighting being based on the HERI’s prior research.[2] For present purposes, we standardized (i.e., *z*-scored) these measures. That is, scores are scaled such that the mean is 0 and the standard deviation is 1. A student with a score of 1 is therefore one standard deviation above average, whereas someone with a -0.5 is half of a standard deviation below the average.

The figures below indicate the mean levels for philosophy and non-philosophy majors on each scale in freshman year and senior year. Using multilevel models, we tested for changes over time, differences between groups (i.e., philosophy majors and non-philosophy majors), and—the crucial question—whether the changes over time differed between groups (i.e., an “interaction” between time and group).[3] For Habits of Mind, we found effects of time, $F(1, 110{,}392) = 639.31$, $p < .001$, group, $F(1, 119{,}793) = 220.32$, $p < .001$, and an interaction between time and group, $F(1, 110{,}428) = 19.46$, $p <$

[2] Specifically, they are θ scores from item response theory models. See here for additional details.
[3] Here we report the results of *F* tests, as these were multilevel 2 (time: freshman, senior) x 2 (group: philosophy, non-philosophy) Analysis of Variance models.

.001. For Pluralistic Orientation, we found effects of time, $F(1, 100{,}011) = 129.85$, $p < .001$, and group, $F(1, 119{,}685) = 138.05$, $p < .001$, but no interaction, $F(1, 100{,}095) = 0.74$, $p = .389$.

In short, for both measures, we find clear evidence of a selection effect: philosophy majors start off scoring higher than non-philosophy majors. We also find clear evidence of growth over time for both groups. When it comes to Pluralistic Orientation, the philosophy majors don't show any more growth than non-philosophy majors. However, for Habits of Mind, philosophy majors do show more growth—albeit not drastically more. Non-philosophy majors tend to increase by 0.30 standard deviations between freshman and senior year, whereas philosophy majors tend to increase by about 0.42.

Figure 1: **Philosophers' and non-philosopher's levels of Habits of Mind and Pluralistic Orientation at freshman and senior year.** Points and error bars indicate estimated marginal means and 95% confidence intervals for each group at each point in time.

Next, we took a more nuanced look at how philosophy majors compare with students majoring in other fields. Instead of contrasting philosophy majors with the entire group of all non-philosophy majors, we contrasted them with specific groups of other majors. These groupings were created by the HERI and reflect similarity among disciplines as well as relative size of each discipline. Hence, for example, history and political science are grouped together (n = 8,701 students). But English, a relatively large major (n = 4,621), is treated as its own group. Figure 2 below shows the means with 95% confidence intervals for these groups in freshman and senior years.

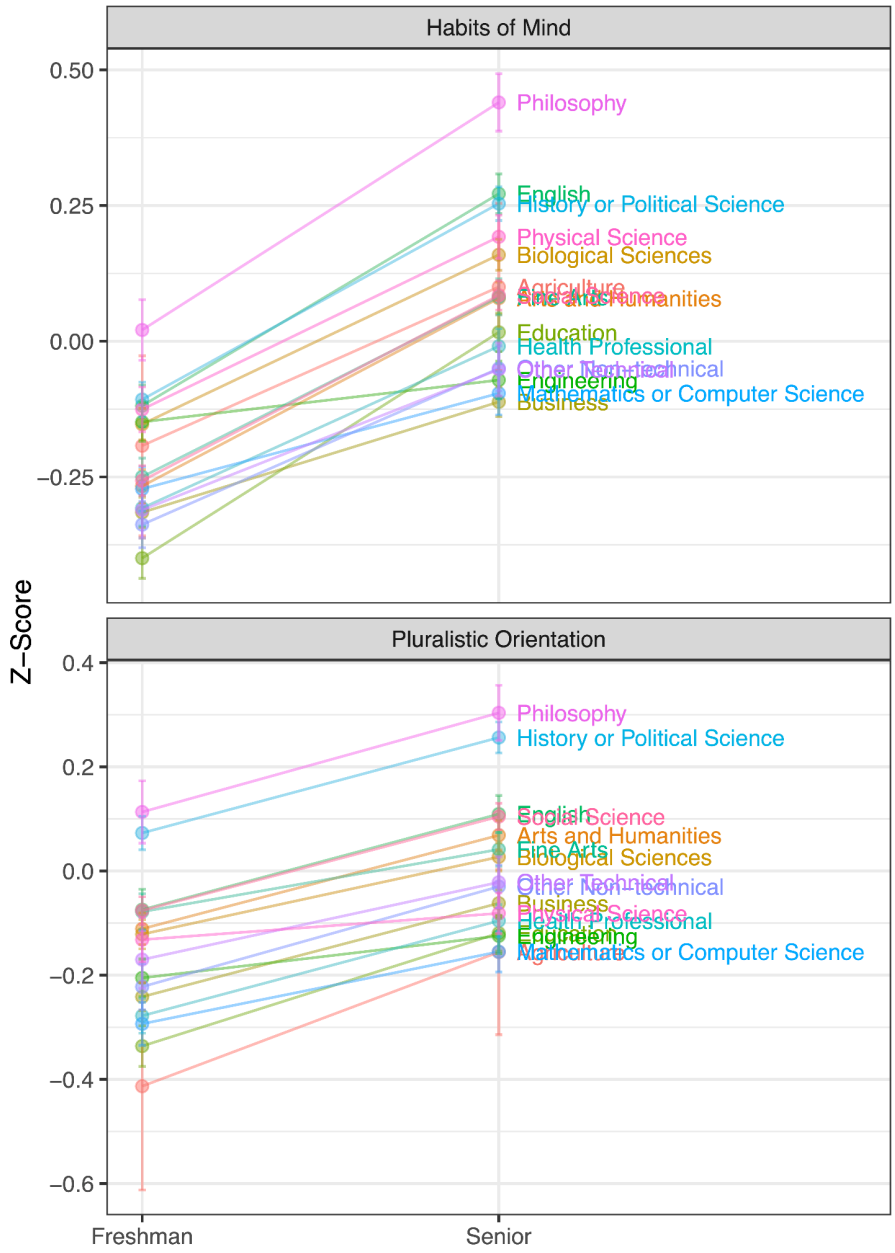

Figure 2: **Levels of Habits of Mind and Pluralistic Orientation across majors at freshman and senior year.** Points and error bars indicate estimated marginal means and 95% confidence intervals for each group at each point in time.

Interestingly, philosophy majors really do stand out from the rest, starting and ending higher than all other groups on both measures. (Though, with respect to Pluralistic Orientation, the History and Political Science group looks relatively similar.)

To highlight differences in the amount of change over time, Figure 3 plots the changes between senior and freshman year for each group. Philosophy majors show the most

growth on Habits of Mind and second most on Pluralistic Orientation (behind education majors).

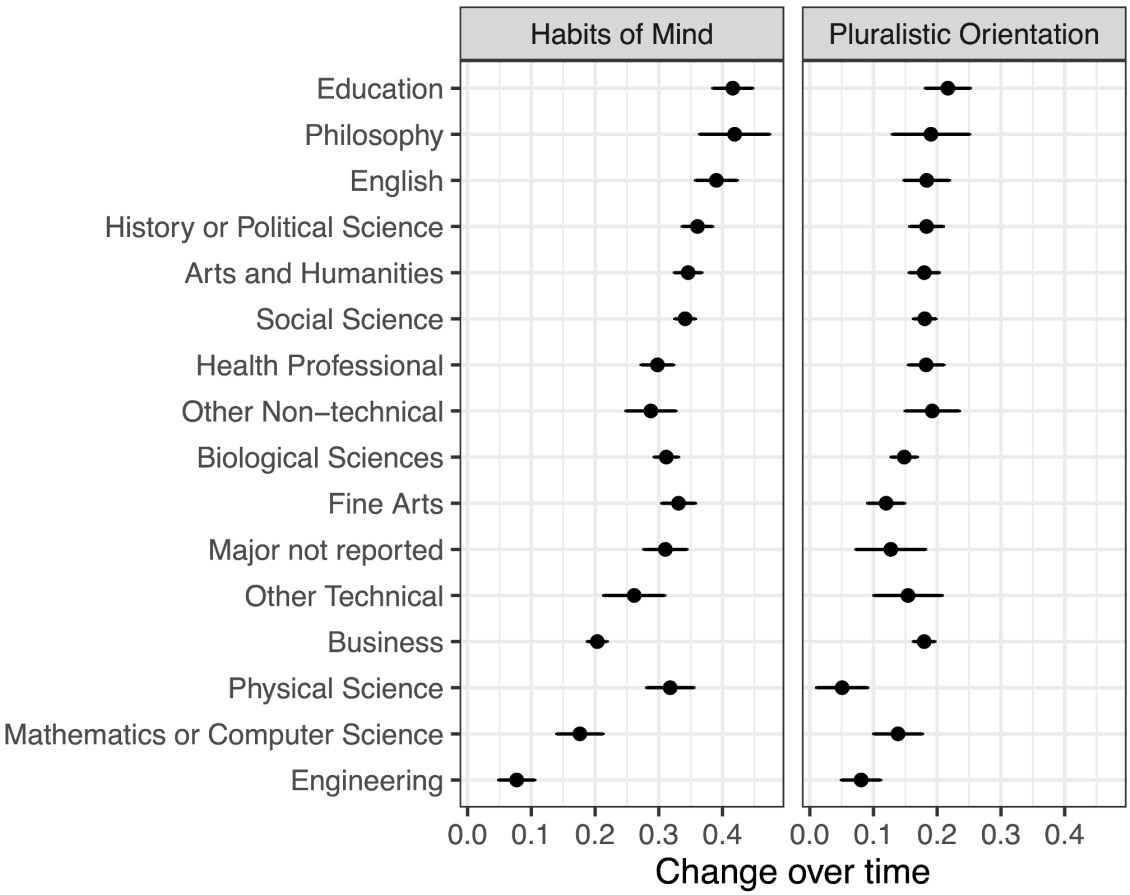

Figure 3: **Change in Habits of Mind and Pluralistic Orientation between freshman and senior year across majors.** Points and error bars indicate estimated marginal means and 95% confidence intervals for *changes* in each construct between freshman and senior year for each group.

Specific behaviors and abilities

We also analyzed these data at the level of individual items from the Habits of Mind (Figure 4) and Pluralistic Orientation scales (Figure 5). For now, we summarize these results relatively quickly. Philosophy and non-philosophy majors showed significant change over time for every item on both scales, and most items showed evidence of selection effects. But, the crucial question is whether there were interaction effects.

Considering Habits of Mind, perhaps the most striking pattern of results was for the item about revising writing. There is no difference between philosophy and non-philosophy majors in freshman year, but whereas non-philosophy majors decline over time, philosophy majors increase. We see a similar, though less dramatic divergence for seeking feedback on academic work. The frequency with which students ask questions

in class declines for non-philosophy majors, but remains high for philosophy majors. Both philosophy and non-philosophy majors show significant increases in the frequency with which they report looking up scientific articles and resources. However, non-philosophy majors show a larger increase.

Turning to the items from the Pluralistic Orientation scale, the results differ less from item to item. Again we see changes over time for both groups on all items. We also see varying degrees of selection effect (i.e., initial differences between groups). There are only a couple of items that show any evidence of interaction effects. Specifically, philosophy majors show larger increases in their (self-rated) ability to discuss and negotiate controversial issues and their openness to having their views challenged. These differences in growth between groups were quite small, however.

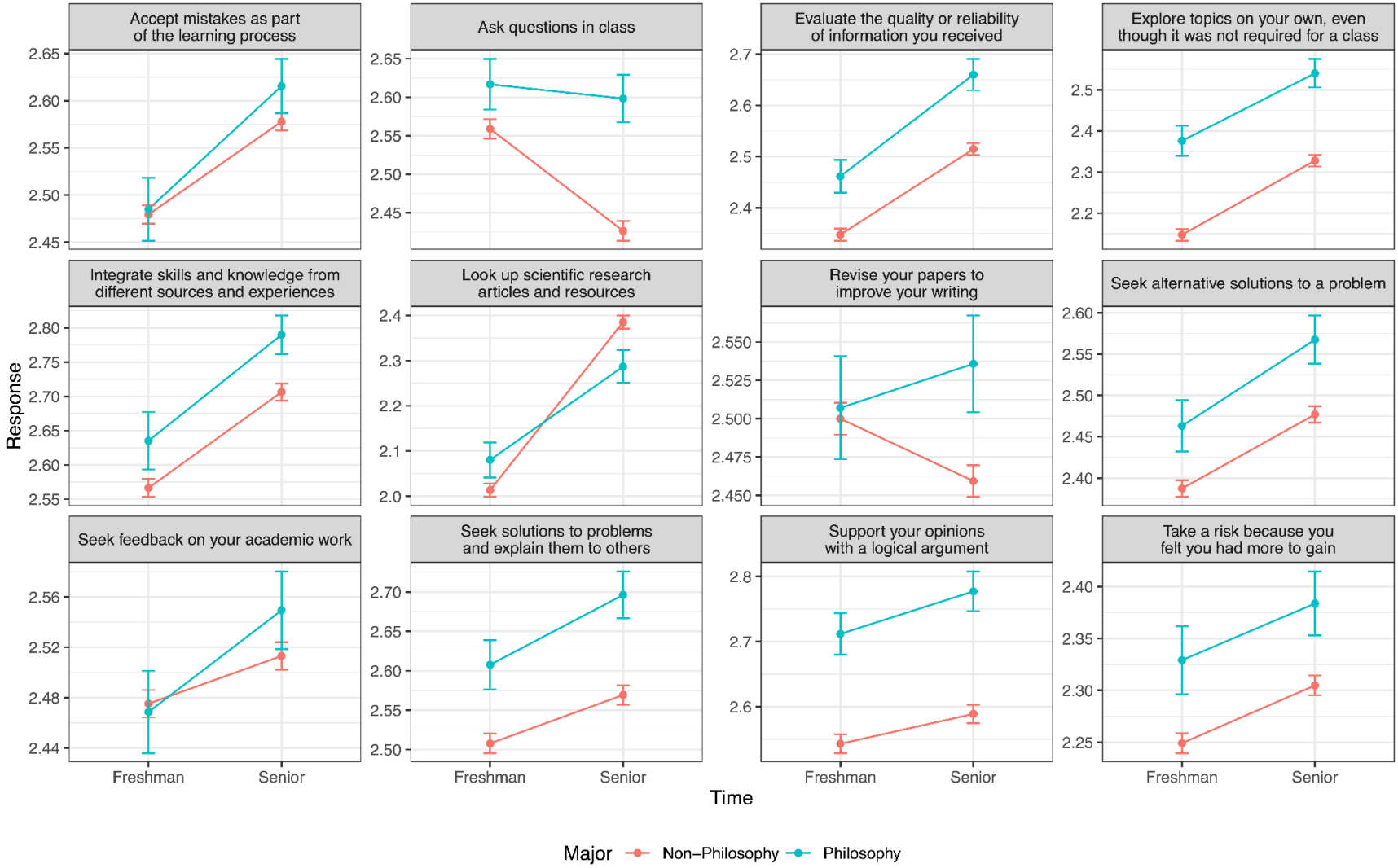

Figure 4: **Philosophers' and non-philosophers' levels for each Habits of Mind item at freshman and senior year.** Points and error bars indicate estimated marginal means and 95% confidence intervals for each group at each point in time.

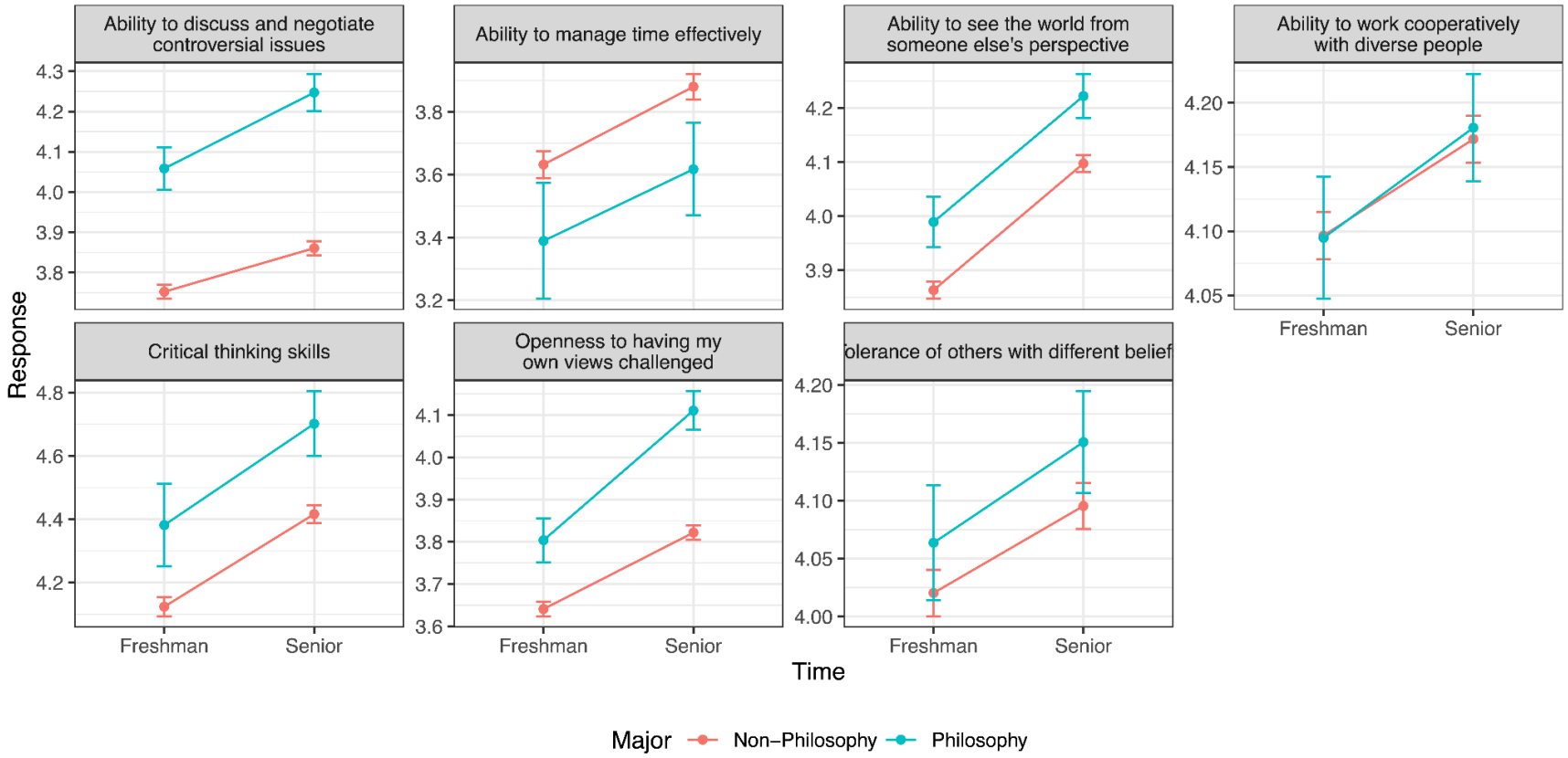

Figure 5: **Philosophers' and non-philosopher's levels for each Pluralistic Orientation item at freshman and senior year.** Points and error bars indicate estimated marginal means and 95% confidence intervals for each group at each point in time.

Understanding of self and others and emotional health

Another category of outcomes are less tangible aspects of a person's emotional development: their sense that they understand themselves, or that they understand people in general, as well as their overall emotional health. In these data, participants were asked to rate their self-understanding, understanding of others and emotional health using the same response scale as the items for the Pluralistic Orientation scale.

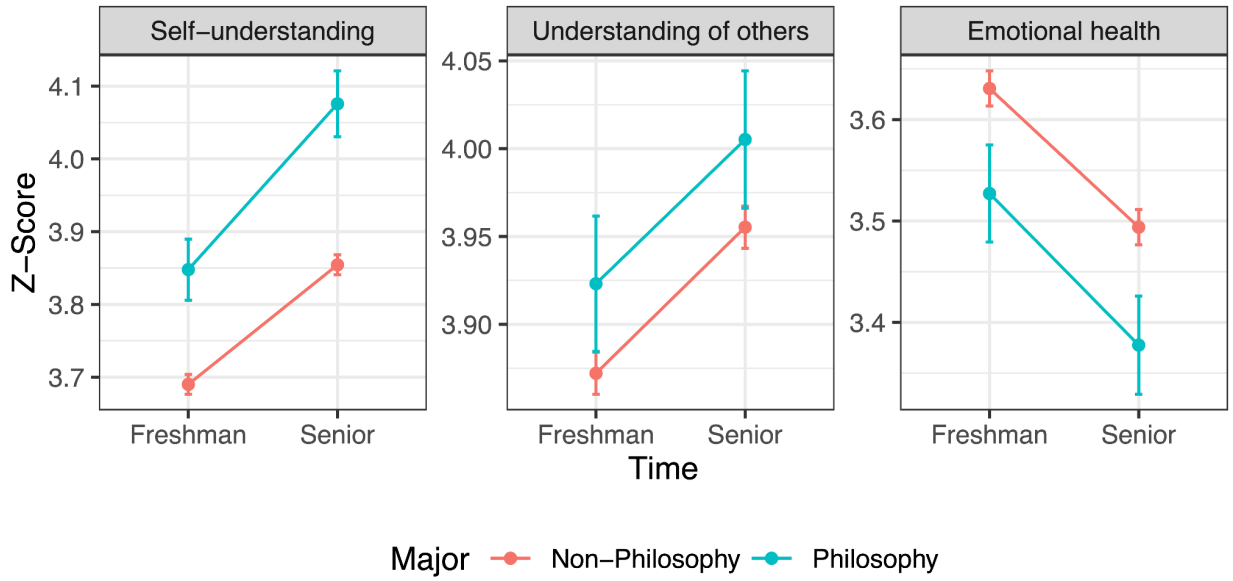

Figure 6: **Philosophers' and non-philosopher's levels of self- and other-understanding and emotional health at freshman and senior year.** Points and error bars indicate estimated marginal means and 95% confidence intervals for each group at each point in time.

For self-understanding, we found effects of time, $F(1, 101{,}304) = 243.21$, $p < .001$, group, $F(1, 113{,}682) = 120.02$, $p < .001$, and an interaction between time and group, $F(1, 101{,}333) = 6.40$, $p = .011$. That is, the philosophy majors increased in their sense of self-understanding by about 40% more than non-philosophy majors (Cohen's *d*s = 0.35 versus 0.25, respectively). For understanding of others, we found effects of time, $F(1, 112{,}691) = 55.31$, $p < .001$, group, $F(1, 117{,}332) = 10.63$, $p = .001$, but no interaction, $F(1, 112{,}693) = 0.003$, $p = .960$. The same pattern of results emerged for emotional health: an effect of time, $F(1, 112{,}563) = 124.67$, $p < .001$, and group, $F(1, 118{,}129) = 32.34$, $p = .001$, but no interaction, $F(1, 112{,}565) = 0.25$, $p = .620$. These results are illustrated in the figure above.

In short, we again find clear evidence of selection effects, whereby people who choose to major in philosophy have a stronger sense of self-understanding and understanding of others, and somewhat worse emotional health. Additionally, we see significant changes over time for all students, with increases in self- and other-understanding, and declines in emotional health. Crucially, compared with non-philosophy majors,

philosophy majors seem to grow more in their sense of self-understanding. However, they do not show any different changes in their sense that they understand others, nor in their emotional health.

Adding, dropping, and double-majoring in philosophy

As observed above, only a small proportion (1.3%, *n* = 1,623) of students major in philosophy. Of these, *n* = 923 had philosophy as their first major, and *n* = 700 had it as a second major. When these students arrived at college, however, only *n* = 413 planned to major in philosophy. As shown in the table below, many of these students ended up dropping the major. The takeaway is that most students who major in philosophy discover it after starting college, rather than entering with the intent to major.

		Planned to major in philosophy	
		No	Yes
Did major in philosophy	No	120,481	248
	Yes	1,458	165

Double majors

Many philosophy majors (71%, *n* = 1,154), also major in another field. For students with philosophy as their primary major, the most common secondary major was political science, followed by theology and various other arts and humanities fields. For students with philosophy as a secondary major, the most common primary major was again political science, but this time followed by English, psychology, and economics. The figure below shows the majors with at least 20 students who also majored in philosophy.

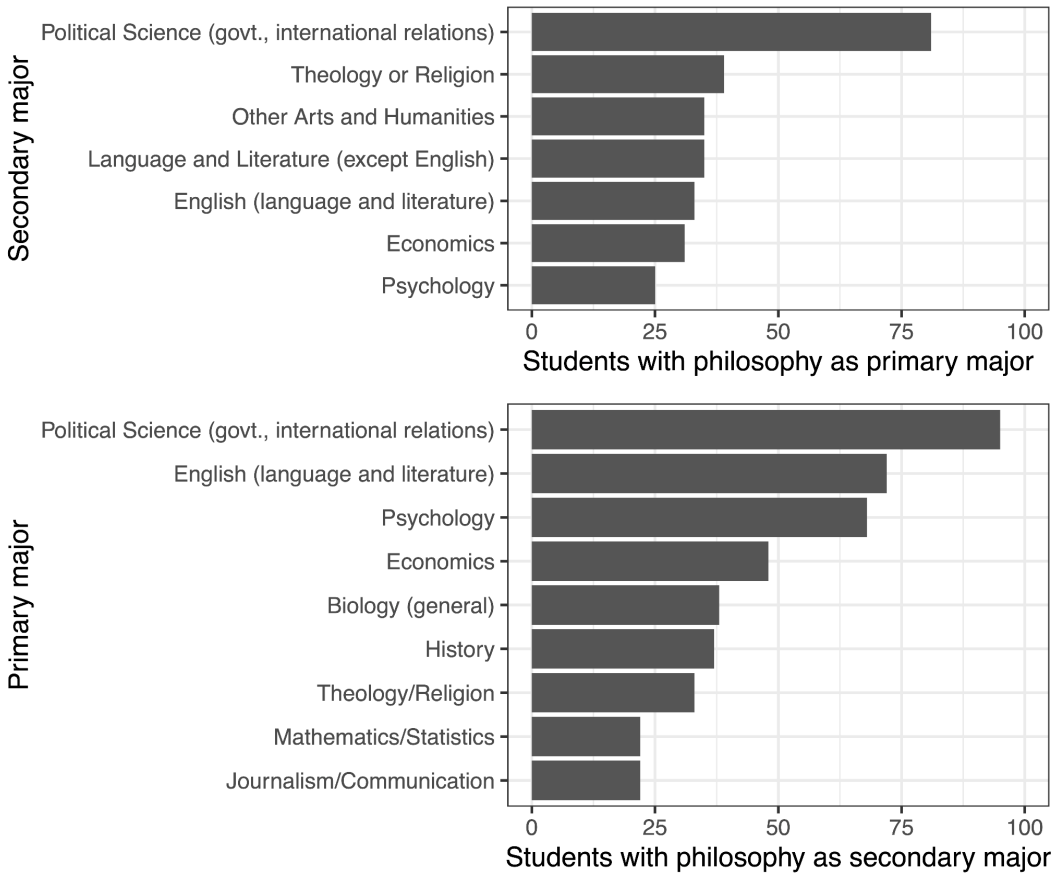

Figure 7: **Philosophy double-majors' other fields of study.**

Do demographics predict whether students add or drop a philosophy major?

Given that a large proportion of freshmen who intend to study philosophy ultimately drop the major, and that a large number of students join philosophy midway through their college years, we tested whether demographic factors might be related to students' odds of adding (i.e., not reporting an intent to major in philosophy during freshman year but reporting that they completed a philosophy major in senior year) or dropping (i.e., reporting an intent to major in philosophy during freshman year and not reporting that they completed a philosophy major in senior year).[4]

We found no evidence that students' odds of dropping an intended philosophy major were related to sex, $\chi^2(1) = 1.16$, $p = .282$, race, $\chi^2(5) = 2.33$, $p = .802$, religion, $\chi^2(2) = 3.65$, $p = .161$, or family income, $\chi^2(1) = 0.00$, $p = .971$. Of course, with only $n = 413$ intended philosophy majors in the sample, we may not have had enough statistical

[4] In these analyses, we used logistic multilevel models and Wald tests for significance. The sample included only a very small number of students who identified as non-binary (< 1% of the sample), and too few for robust statistical comparisons. Hence, these analyses include only students who identified as male or female.

power to detect impacts of these demographic factors. Nonetheless, if that's the case, then these results would still seem to indicate that, if there are demographic influences on the odds of dropping a philosophy major, they are probably not very large effects.

When it comes to adding a philosophy major, we found a very different pattern of results. There were significant associations with sex, $\chi^2(1) = 177.84$, $p < .001$, race, $\chi^2(5) = 26.84$, $p < .001$, and religion, $\chi^2(2) = 76.63$, $p < .001$, but no association with family income, $\chi^2(1) = 0.13$, $p = .716$. Males were 118% more likely to add a philosophy major than females. Christians were 79% less likely to add a philosophy major than students of other faiths and 74% less likely than non-religious students. Looking across racial groups, only one stands out. Compared with each of the other groups, Asian or Pacific Islanders were between 58% and 103% less likely to add a philosophy major. These results are illustrated in Figure 8.

It may be worth highlighting that these *relative* differences in the probability of adding a philosophy major reflect small probability differences in absolute terms. For example, although males are over twice as likely as females to add a philosophy major, the difference in the probabilities is only 0.9% (i.e., the probability of a male adding a philosophy major is 1.6% versus a probability of 0.7% for females).

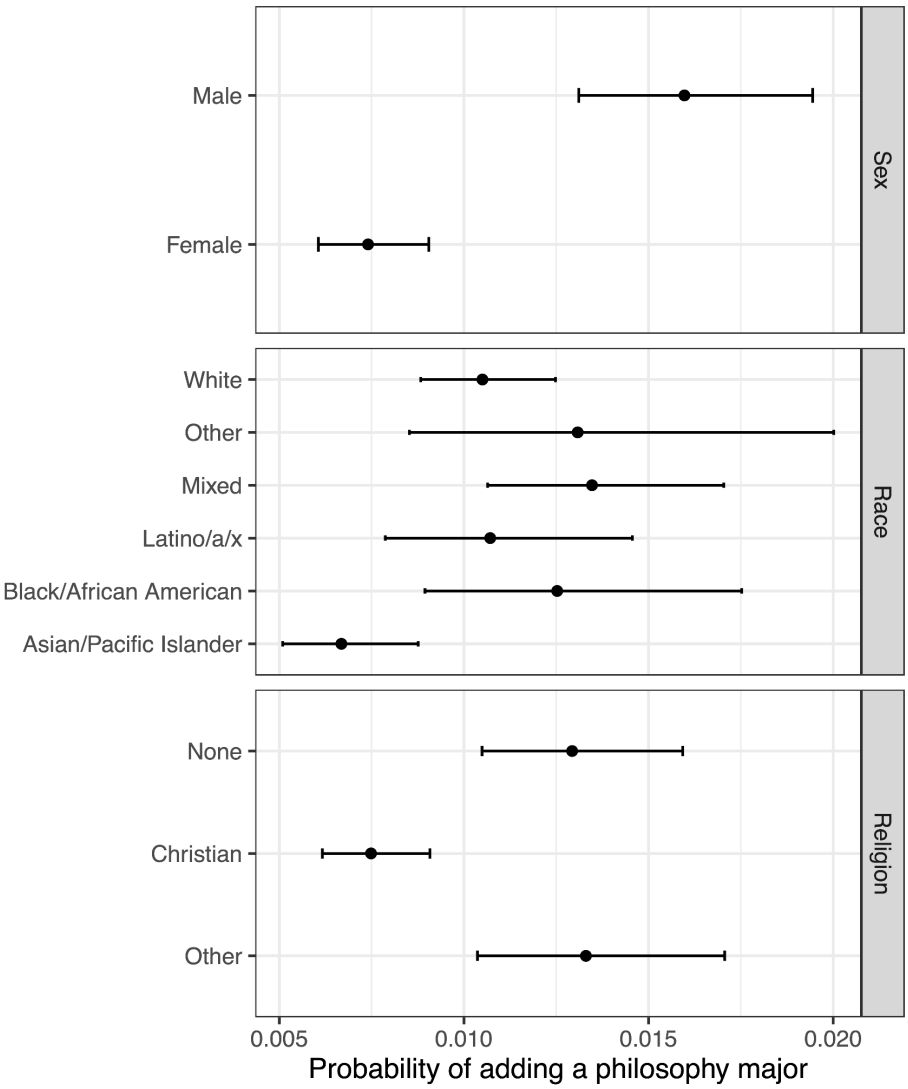

Figure 8: **Probability of adding a philosophy major across demographic groups.** Points and error bars indicate estimated marginal probabilities and 95% confidence intervals.

Summary and Takeaways

These analyses revealed several notable findings about how philosophy majors differ from non-philosophy majors. First, regarding our primary question of interest, we find clear evidence that philosophy majors enter college with more open-mindedness, curiosity, and a stronger tendency to be intellectually rigorous and reflective than non-philosophy majors. In addition, although students generally show some growth in these traits, philosophy majors tend to grow more growth than non-philosophy majors in at least some of them (indexed by the Habits of Mind scale). Although this difference in growth is not drastic, it remains noteworthy and suggests that philosophical education may uniquely enhance certain intellectual virtues.

The demographic profile of a typical philosophy major differs in notable ways from the general student population. Philosophy majors are more likely to be male, with a male to female ratio of about three to two, in contrast to the overall student body, where females outnumber males three to two. This gender disparity persists from freshman year, when students first express an interest in philosophy, through to senior year, indicating a consistent trend in who chooses and remains in the major. Although demographic factors do not appear to predict the likelihood of dropping a philosophy major, we did find that sex, race, and religion (though not family income) are each associated with the odds of *adding* a philosophy major during college. The demographic profile of the typical philosophy major invites further reflection on the characteristics that might draw an individual to pursue and complete a philosophy degree, but also, just as importantly, on the aspects of philosophy curricula, classroom environments, and departmental culture that might play a role in this process.

Future research could provide insights into such questions by incorporating HERI's faculty survey. These data could clarify whether philosophy faculty have different views on the aims of their teaching, employ certain pedagogical techniques more frequently than faculty in other disciplines, etc. Additionally, faculty satisfaction and perspectives on institutional priorities could reveal how departmental climates and support systems impact both teaching quality and student experiences. By examining both student and faculty data, we could achieve a fuller picture of the philosophy higher education experience.

Finally, the approach we have adopted in this study follows a pre/post model, examining students' intellectual traits at the beginning and end of their college education. However, future longitudinal research could benefit from supplementing these findings with more granular analyses, for example by tracking dynamic changes in students' intellectual development on a semester-by-semester basis. This would allow researchers to observe how specific philosophy courses and varied pedagogical approaches contribute to shifts in the intellectual traits examined here, as well as others. Similarly, such studies could isolate the unique strengths of particular kinds of courses. For example, it could be that courses in the history of philosophy uniquely promote curiosity, whereas courses in formal logic promote analytical prowess.

Overall, these results offer important insights into students' experiences with majoring in philosophy and the impacts of a philosophical education on students' thinking. Although causal inferences must be more tenuous when using a "quasi-experimental" design rather than a true, randomized experiment, these results do provide at least some initial and suggestive evidence that studying philosophy can make people better thinkers.