


Perceived Weaknesses of Philosophical Inquiry: A Comparison to Psychology

Wesley Buckwalter¹  · John Turri^{1,2}

Received: 27 August 2015 / Accepted: 24 November 2015 /
Published online: 2 February 2016
© Springer Science+Business Media Dordrecht 2016

Abstract We report two experiments exploring the perception of how contemporary philosophy is often conducted. We find that (1) participants associate philosophy with the practice of conducting thought experiments and collating intuitions about them, and (2) that this form of inquiry is viewed much less favourably than the typical form of inquiry in psychology: research conducted by teams using controlled experiments and observation. We also found (3) an effect whereby relying on intuition is viewed more favorably in the context of team inquiry than in individual inquiry and (4) that greater prior exposure to philosophy lowered one's opinion of inquiry driven by intuitions and thought experiments. Finally with respect to participant gender, we found that (5) women favored observation over intuition more than men did, and (6) tended to view a question pursued by a research team as more important than men viewed it.

Keywords Philosophical method · Psychological method · Intuition · Observation

Introduction

A philosophical proposition must not deal specially with things on the surface of the earth, or with the solar system, or with any other portion of space of time. A philosophical proposition must be such as can be neither proved nor disproved by empirical evidence. Too often we find in philosophical books arguments based

✉ Wesley Buckwalter
wesleybuckwalter@gmail.com; <http://wesleybuckwalter.org>

John Turri
john.turri@gmail.com

¹ Department of Philosophy, University of Waterloo, 200 University Avenue West, Waterloo, ON, Canada N2L 3G1

² Cognitive Science Program, Department of Philosophy, University of Waterloo, 200 University Avenue West, Waterloo, ON, Canada N2L 3G1

upon the course of history, or the convolutions of the brain, or the eyes of shell-fish. Special and accidental facts of this kind are irrelevant to philosophy.

— Bertrand Russell, *Mysticism and Logic*

Philosophy and psychology are closely related disciplines. Yet while philosophers and psychologists often investigate similar sorts of questions, they do so by using very different methodologies. To help illustrate this point, compare the traditional methods typically used by philosophers to the traditional methods found in experimental psychology with respect to the same question. For instance, consider one question that has overlapped both fields: do humans have free will (Baumeister 2008; Baumeister et al. 2009; Dennett 1984; Libet 1985; Nietzsche 1989, 1999; Pronin et al. 2006; Spinoza 1992[1677]; van Inwagen 1983)? In an attempt to harness the power of pure thought, the philosopher might answer this question by turning to deep reflection on the concept and nature of free will. To aid in his analysis he might construct a series of thought experiments or imaginary scenarios where a person makes a series of decisions, and then use his intuitions about these cases to help answer the question (see Gendler 2000; 2007). Most philosophical research is conducted and published by individuals. And because of the regrettable gender imbalance in philosophy (Paxton et al. 2012), the process usually ends up involving individual males constructing thought experiments and collating their intuitions about them. The stereotypical image of Rodin's *Thinker* comes to mind.

No doubt the typical psychologist would approach this question differently. Instead of turning to intuition, the psychologist would likely attempt to harness the power of controlled observation and experimentation. To aid in her analysis she might construct a series of behavioral studies or controlled experiments where a person makes a series of decisions, and then use the resulting observations that she collects to help answer the question. Most psychological research is conducted and published in collaboration with other researchers in a laboratory. And because women are not underrepresented in psychology (see the American Psychological Association's 2005 Doctorate Employment Survey), this process frequently involves working in groups where women equal or even outnumber men.

These two approaches represent the typical, albeit simplified, methods commonly associated with philosophy and experimental psychology. Each has advantages and disadvantages. We will not presently debate the substantive epistemological merits of intuition or observation. But we are curious to understand how people perceive the relative merits of these two approaches.

Philosophy is not always perceived as well as philosophers would like. Recent years have seen public discussions of whether studying philosophy has any value at all—both in higher education or for society as a whole (see Fish 2011, *The New York Times*: “Does Philosophy Matter?” or McIntyre 2011, *The Chronicle of Higher Education*: “Making Philosophy Matter—or Else” for two recent examples). United States politicians and Presidential candidates quip, “We need more welders and less philosophers” (Rubio 2015). Academic philosophy has long faced complex and troubling questions concerning lack of diversity and the underrepresentation of women in the discipline (see Lombrozo 2013, *NPR*: “Name Five Women In Philosophy. Bet You Can't”). Among scholars, the renowned physicist Stephen Hawking famously declared, “Philosophy is dead.” And discussion of the value of philosophy has even led notable

academic philosophers to draft anti-philosophy manifestos criticizing the contributions traditional analytic philosophers make to the academy (see Glymour 2011: “Manifesto”, and Thagard 2012: “Eleven Dogmas of Analytic Philosophy”).

What contributes to negative opinions about philosophy? There are certain to be a number of diverse contributing factors. Our question is about one such potential factor. Are negative opinions about philosophy partly due to the fact that people are suspicious of the way philosophers conduct their research? To help answer this question, it would be useful to examine how people evaluate typical philosophical inquiry compared to how they evaluate the typical inquiry of a neighboring field, such as psychology, when used to answer similar questions. This is exactly what we set out to investigate in the following experiments.

Experiment 1

One way to test how people evaluate philosophical inquiry compared to how they evaluate the typical inquiry of a neighboring field, such as psychology, is to ask people to choose between the different approaches associated with these fields. One dimension, mentioned earlier, separating philosophy and psychology is the basic methodological tools these researchers typically employed, namely, thought experimentation versus controlled experimentation. In this study we present participants with several research questions of central interest to both philosophers and psychologists and asked them to select the method better suited to provide answers. We find that participants strongly prefer the empirical methods they associate with psychology to help answer these questions.

Method

Participants

Participants ($N=420$, 161 female, aged 18–66 years, $M=29.6$ years, $SD=8.89$ years; 95 % reporting English as a native language) were recruited, tested and compensated using an online platform (Amazon Mechanical Turk + Qualtrics). They were paid \$0.30 for 2–3 min of their time. Participation was limited to those residing in the United States. Fifty-four percent had taken no philosophy courses, 29 % had taken one, 10 % had taken two, and 7 % had taken three or more. Twenty-four percent had taken no science courses, 16 % had taken one, 19 % had taken two, and 41 % had taken three or more.

Materials and Procedure

Participants were randomly assigned to one of seven conditions in a between-subjects experiment. Each participant read a single story. The stories all featured a university student interested in studying a certain research question. The stories differed by the particular question the student was interested in researching. The research questions that were featured involved whether:

- human beings have free will
- babies are born with a sense of fairness
- robots can ever be conscious
- some moral rules are relative to culture
- capitalism is morally superior to socialism
- it's possible to knowledgeably predict the future
- original artworks are inherently more beautiful than replicas

After reading the story, participants were asked to select the approach more likely to help the student answer this research question. They could select one of the following dichotomous response options:

1. Conduct thought experiments and gather intuitions about them.
2. Conduct controlled experiments and make observations about them.

Response options were rotated randomly. Upon selecting a dichotomous response option, participants were asked to rate how confident they were in their answer. These responses were collected on a six-item scale, where “1” was anchored with “not at all confident” and “6” was anchored with “completely confident.”

After reporting their confidence participants were taken to a new screen and could not go back and change their answers. On this new screen participants were presented with a sorting task. They were again presented with the text of the dichotomous response options in 1 and 2 above and asked to associate these with the discipline they better matched, philosophy or psychology.

After testing, participants were taken to a new screen where they completed a short demographic questionnaire.

Results

First, we found that assignment to condition did not affect which method participants thought was better suited to answer the research question, $\chi^2(6, 420) = 8.68$, $p = .193$. Overall, 76 % of participants selected controlled experimentation as the better method, which far exceeds what could be expected by chance, $\chi^2(1, 420) = 117.34$, $p < .001$. The percentage of participants that selected controlled experimentation for each question ranged from 67 to 85 % and, in each case, significantly exceeded chance rates, binomial tests, all $ps \leq .008$. (See Fig. 1). An analysis of variance revealed that there was no effect of condition on participants' reported confidence in their judgment, $F(6, 406) = 1.53$, $p = .168$, n.s. However, participant response to the question did affect reported confidence, with those selecting thought experimentation being less confident ($M = 3.79$, $SD = 1.32$) than those selecting controlled experimentation ($M = 4.61$, $SD = 1.12$), $F(1, 406) = 36.28$, $p < .001$. Follow-up independent samples t-test revealed that the magnitude of the difference in means was large, $t(144) = -5.61$, $MD = -0.82$, 95 % *CI* for $MD = -1.1$ to -0.56 , Cohen's $d = 0.94$.

Second, we also found that participants overwhelmingly associated thought experimentation and intuition with philosophy and controlled experimentation and observation with psychology (335, 80 %), $\chi^2(1, 420) = 148.8$, $p < .001$.

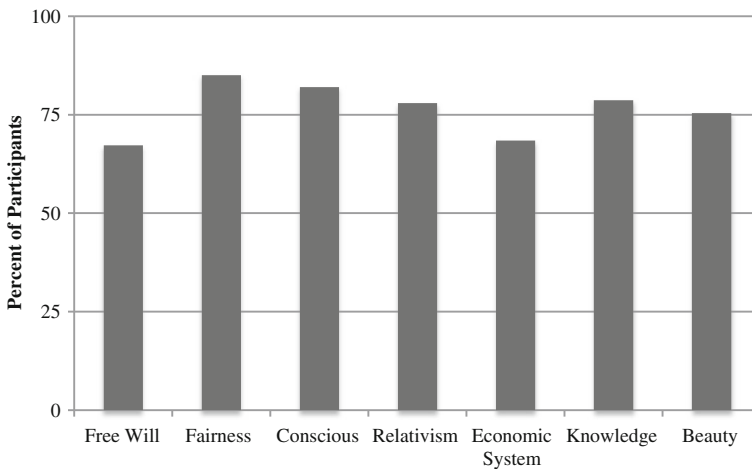


Fig. 1 Experiment 1. Percentage of participants that selected controlled experimentation for each research question

Discussion

The results show that participants clearly prefer the methods they associated with psychology to those they associated with philosophy. Participants overwhelmingly selected controlled experimentation and observation over thought experimentation and intuition. Moreover, participants who chose controlled experimentation were significantly more confident in their choice than participants who chose thought experimentation.

While this is certainly revealing, the study itself had some limitations. First, the methodological approaches were minimally described. Perhaps a more thorough description of the methodologies in action will produce a more favorable comparative assessment of philosophical method. Second, when asked to choose directly between the methodologies, participants preferred the psychological method. But perhaps participants will rate philosophical methods equally highly when each is considered on its own. In other words, perhaps a between-subjects evaluation of the methodologies will yield a different result than a within-subjects comparison. Although we think that a within-subjects comparison is actually more informative, we do agree that a between-subjects comparison is also worthwhile. Third, we used only one measure to collect preferences. But it could be informative to use a variety of measures to gauge preferences. The next experiment addresses all three of these points.

Experiment 2

We ran another experiment to address the three concerns raised about Experiment 1 and to replicate the main findings using a very different experimental design. The new experimental design features cases with more thorough descriptions of the philosophical and psychological methodologies being employed by researchers. We also investigate two additional methodological differences, mentioned earlier, separating typical

inquiry in philosophy and psychology, namely, the number of researchers involved in a research project, and the gender composition of those researchers. In this study we treat these differences as independent variables to be manipulated. We also collect a wider range of judgments about the value, responsibility, importance, and interest of the research methodologies employed.

Method

Participants

Participants ($N=1675$, 679 female, aged 18–82 years, $M=30.2$ years, $SD=10.5$ years; 94 % reporting English as a native language) were recruited, tested and compensated using an online platform (Amazon Mechanical Turk + Qualtrics). They were paid \$0.30 for 2–3 min of their time. Participation was limited to those residing in the United States. Forty-seven percent had taken no philosophy courses, 34 % had taken one, 12 % had taken two, and 7 % had taken three or more. Thirteen percent had taken no science courses, 10 % had taken one, 15 % had taken two, and 62 % had taken three or more.

Materials and Procedure

Participants were randomly assigned to one of sixteen conditions in a 2 (Number: Individual/Team) \times 2 (Composition: Male/Female) \times 2 (Method: Intuition/Observation) \times 2 (Question: Selfishness/Knowledge) between-subjects experiment. Each participant read a single story about one or more researchers conducting inquiry.

The Number, Composition, and Method factors manipulated the story's content according to the details outlined in the Introduction: the number of researchers involved, the gender of the researchers, and the method used to answer a research question. We included the Question factor in order to guard against results being driven by superficial features of, or presuppositions about, the research question under consideration. Each question is the topic of research in both philosophy and psychology.

All the stories are included in the [Appendix](#). Here we include two of them to give readers a sense of the materials. The first is a case where a solitary male researcher relies on thought experimentation and intuition to answer a research question about human selfishness. The second is a case where a team of female researchers rely on controlled experimentation and observation to answer a research question about human knowledge.

Individual Male Intuition (Selfish) Fred has always wondered whether humans are naturally selfish. In order to help answer this question, Fred constructs a series of thought experiments (imaginary scenarios) where a person must decide between doing something selfish or cooperative. For each scenario, Fred has a clear intuition about what the agent would choose. Fred then considers which hypothesis — (i) that people are naturally selfish, or (ii) that people are not naturally selfish—best fits with his own intuitions about these cases. Based on this procedure that harnesses the power of pure thought, Fred concludes that people are naturally selfish.

Team Female Observation (Knowledge) Mary, Sally and Jill have always wondered whether innate knowledge of grammar is required for humans to learn a language. In order to help answer this question, Mary, Sally and Jill construct a series of controlled experiments (behavioral studies) where a person learns to use language. For each scenario, Mary, Sally and Jill gather clear data about whether innate knowledge of grammar was also present. Mary, Sally and Jill then consider which hypothesis—(i) that innate knowledge is required, or (ii) that innate knowledge is not required—best fits with the team’s observations about these cases. Based on this procedure that harnesses the power of controlled experimentation, Mary, Sally and Jill conclude that innate knowledge is required to learn a language. After reading the story, participants answered six questions. All six questions appeared on a single screen underneath the story. All the questions are included in the [Appendix](#). Participants who read the *Individual Male Intuition (Selfish)* case were asked to respond to six items:

1. Fred is correct that people are naturally selfish.
2. The question Fred is investigating has important implications for everyday life.
3. The methodology used by Fred is valuable.
4. The methodology used by Fred is responsible.
5. The methodology used by Fred is well suited to answering important questions.
6. Would you be interested in using Fred’s methodology to answer questions that you care about?

Participants who read the *Team Female Observation (Knowledge)* case were asked to rate these six statements:

1. Mary, Sally and Jill are correct that learning a language requires innate knowledge.
2. The question Mary, Sally and Jill are investigating has important implications for everyday life.
3. The methodology used by Mary, Sally and Jill is valuable.
4. The methodology used by Mary, Sally and Jill is responsible.
5. The methodology used by Mary, Sally and Jill is well suited to answering important questions.
6. Would you be interested in using Mary, Sally and Jill’s methodology to answer questions that you care about?

Responses to items 1–5 were collected on a standard 9-point Likert scale. The response options were anchored with “Strongly disagree,” “Disagree,” “Neutral,” “Agree,” and “Strongly agree,” left-to-right on the participant’s screen. Responses to item 6 were similarly collected, except that the anchors were “Definitely no,” “No,” “Neutral,” “Yes,” and “Definitely yes.”

After testing, participants were taken to a new screen where they completed a short demographic questionnaire.

Results

For the purposes of analyzing the results, we constructed a Methodology Evaluation Scale (MES) based on the four probes, 3–6, about the methodology being used.

Responses to these items were highly internally consistent (Cronbach's $\alpha = .918$), strongly suggesting that they measure the same underlying construct. For each participant, their MES score was the mean of the values of their response to the four items. The value for each response could range from 1 ("Strongly disagree"/"Definitely yes") to 9 ("Strongly agree"/"Definitely no").

Using the MES score as our dependent variable, and controlling for the influence of participants' (dis)agreement with the substantive conclusion drawn by the researcher(s), we checked for main and two-way interaction effects for the four independent variables: Number (Individual/Group), Composition (Male/Female), Method (Intuition/Observation), and Question (Selfishness/Knowledge). We found main effects for each of these factors.

For Method, mean MES score was higher for observation than intuition, $M = 5.98/4.97$, $SD = 1.39/1.84$, ANCOVA, $F(1, 1658) = 162.2$, $p < .001$, $\eta_p^2 = .089$. For Number, it was higher for teams than for individuals, $M = 5.57/5.39$, $SD = 1.55/1.85$, ANCOVA, $F(1, 1658) = 4.5$, $p = .034$, $\eta_p^2 = .003$. For Composition, it was higher for female than for male, $M = 5.54/5.42$, $SD = 1.66/1.76$, ANCOVA, $F(1, 1658) = 4.38$, $p = .036$, $\eta_p^2 = .003$. And for Question, it was higher for human knowledge than for selfishness, $M = 5.65/5.31$, $SD = 1.71/1.69$, ANCOVA, $F(1, 1658) = 37.63$, $p < .001$, $\eta_p^2 = .022$.

We also found two significant interactions. First, there was an interaction between Method and Number whereby MES score for intuitional method was higher in Team conditions than Individual conditions, ANCOVA, $F(1, 1658) = 13.51$, $p < .001$, $\eta_p^2 = .008$. Reliance on intuition was viewed more positively in the context of team rather than individual research, $M = 5.21/4.72$, $SD = 1.66/1.97$, independent samples t-test, $t(814.84) = -3.87$, $p < .001$, $MD = .49$, whereas reliance on observation was viewed equally positively in the context of team and individual research, $M = 5.93/6.04$, $SD = 1.34/1.45$, independent samples t-test $t(838) = 1.2$, $p = .231$, n.s.. Second, we found an interaction between Method and participant gender, ANCOVA, $F(1, 1658) = 6.6$, $p = .01$, $\eta_p^2 = .004$, with women more highly valuing observation over intuition ($M = 6.08/4.85$, $SD = 1.36/1.87$) than men ($M = 5.92/5.05$, $SD = 1.42/1.81$). There was no main effect of participant gender and it entered into no other interactions.

Given how few of our participants had taken at least three philosophy courses (7 %) compared to how many had taken at least three science courses (62 %), one might worry that these results are being driven primarily by the comparatively greater prior exposure to, and familiarity with, scientific methodology. This might be compounded by the more general respect and veneration showed to science in our culture.

Following up on this legitimate worry, we analyzed the data for only those participants who had taken at least three philosophy courses ($n = 117$). Given the decrease in sample size and, consequently, statistical power, we didn't expect to find all the same effects in this more limited sample. Again treating MES score as our dependent variable, and controlling for the effect of agreement with the substantive conclusion drawn by the researchers, we found no effect of Question, Number or Composition.¹ But there was a significant main effect of Method, ANCOVA, $F(1, 100) = 18.9$, $p < .001$, $\eta_p^2 = .126$. Among participants who had taken at least three philosophy courses, MES scores were much higher for observational method than for intuitional

¹ The observed power for all these comparisons was very low: ($< .10$).

method, $M=5.74/4.39$, $SD=1.51/1.94$, independent samples t-test, $t(115)=-4.24$, $p<.001$, $MD=1.35$. Indeed, preference for observation over intuitions was even greater in this group than in the entire sample. What's more, if we compare MES scores for those with at least three philosophy courses, on the one hand, to those with zero philosophy courses, on the other, it turns out that the veterans hold intuitional methodology in significantly lower regard than the uninitiated, $M=4.39/5.04$, $SD=1.94/1.86$, independent samples t-test, $t(437)=-2.37$, $p=.018$, $MD=.65$, despite being no less favorable toward observational methodology, $M=5.74/5.99$, $SD=1.51/1.39$, independent samples t-test, $t(471)=-1.34$, $p=.18$, n.s.

Additionally, in a simple regression model that uses the number of philosophy courses taken (0, 1, 2, 3+) to predict MES score for intuitional methodology, we find a small but statistically significant negative correlation: $MES=5.094-0.078$ (Number of Philosophy Courses), $t(833)=-2.26$, $p=.024$, $R^2=.006$. By contrast, number of philosophy courses didn't significantly predict MES score for observational methodology. Far from confirming the worry we began with, these results suggest that greater exposure to philosophy doesn't improve the regard in which intuitional methodology is held, and it may even degrade it.

Before moving on, it's worth noting that in the more limited sample including only those with 3 or more philosophy courses, we once again observed a significant interaction effect between participant gender and Method on MES score: Women more highly valued observation over intuition ($M=5.86/4.1$, $SD=1.16/1.91$) than men ($M=5.65/4.5$, $SD=1.74/1.96$), ANCOVA, $F(1, 100)=5.1$, $p=.026$, $\eta_p^2=.057$.

We also analyzed the data to see whether any of the independent variables or participant gender affected whether participants thought the research question had important implications for everyday life (question 2 on the list above). There was a small main effect of participant gender, with women judging the questions to be more important than men, $M=6.44/6.29$, $SD=1.60/1.64$, ANOVA, $F(1, 1659)=6.42$, $p=.011$, $\eta_p^2=.004$. There was a small main effect of Question, with participants viewing the question about selfishness as having more important implications than the question about knowledge, $M=6.62/6.06$, $SD=1.47/1.73$, ANOVA, $F(1, 1659)=50.64$, $p<.001$, $\eta_p^2=.03$. There was also an interaction between Number and participant gender whereby women tended to view a question pursued by a team as more important than men viewed it ($M=6.54/6.19$, $SD=1.52/1.65$, independent samples t-test, $t(828)=-3.10$, $p=.002$, $MD=.35$), while women and men tended to view a question pursued by an individual no differently, $M=6.33/6.38$, $SD=1.67/1.62$, independent samples t-test, $t(843)=0.403$, $p=.687$, n.s.

Discussion

We found that people rated all the prototypical features associated with psychology (observation, team inquiry, increased presence of female researchers) higher than the prototypical features associated with philosophy (intuition, solitary inquiry, diminished presence of female researchers). We also found two interactions whereby intuition was viewed more favorably in the context of team inquiry than in individual inquiry and less favorably with greater exposure to academic philosophy.

We also found a gender-effect whereby men tended to prefer the methodology characteristic of armchair philosophy more so than women, while women tended to

prefer the methodology characteristic of experimental psychology more so than men. We note that experimental philosophers have previously speculated about the relationship between the use of intuitions and the underrepresentation of women in philosophy. For example, Buckwalter and Stich (Buckwalter and Stich 2013) suggested that philosophy's gender imbalance could be partly due to gender differences in intuitions about specific, central thought experiments. But set aside any question about gender differences over intuitions about specific cases. Indeed, suppose for the sake of argument that there are no such systematic differences that contribute to the problems facing the discipline. It could still be that men and women have different views about the value and relevance of inquiry driven primarily by appeals to intuition. Even if men and women shared all the same intuitions about all the important cases, women might tend to prefer the empirical methods associated with psychology over the intuition method associated with philosophy.

The gender differences we observed are statistically significant but not large. We leave it to others to conclude how much importance to place on such real but small differences. Of course, participants in this study only spent a couple minutes considering a single example of inquiry (see M. Thompson et al., *Why Do Women Leave Philosophy?*, Forthcoming, for subsequent research replicating and expanding our findings). Upon repeated exposure to similar examples of inquiry, the gender differences we observed might disappear or they might increase. Or perhaps they would continue at the same small but steady rate, resulting in gradual attrition over time and thereby contributing to the gender imbalance in philosophy. These are complex questions about causation that go beyond anything our investigation was intended address. But we think the possibilities are worth addressing and flag them for future research.

Conclusion

Inquiry in contemporary academic philosophy is prototypically done by individuals, driven by intuitions and thought experiments, and conducted mostly by males. By contrast, inquiry in contemporary psychology is prototypically done by teams, driven by observations and controlled experiments, and conducted more often by women.

We reported two studies on the perceived value of typical inquiry in philosophy and experimental psychology. We found that people overwhelmingly associated the methods of thought experimentation and intuition with philosophy, they overwhelmingly associated controlled experimentation and observation with psychology, and they overwhelmingly preferred the latter (Experiment 1). More specifically, using a wide variety of measures and descriptions of research contexts, we found that people value observation over intuition, team inquiry over solitary inquiry, and a greater presence of females on research teams (Experiment 2). We observed this same basic pattern across a wide range of questions central to philosophical inquiry, such as free will, consciousness, knowledge, moral relativism, fairness, and beauty. This suggests that philosophy's perceived value suffers when it is associated primarily with thought experimentation and intuition. This could, in turn, be responsible for part of the negative perception of philosophy in comparison to other fields of cognitive science.

We also found that greater prior participant exposure to philosophy (three or more courses) lowered one's opinion of inquiry driven by intuitions and thought experiments (Experiment 2). This result is consistent with prior work surveying professional

philosophers about the value of intuition (Kuntz and Kuntz 2011, though see also Buckwalter 2012). For instance, Kuntz and Kuntz found that nearly half of professional philosophers surveyed denied that intuitions are “useful”, and nearly three quarters denied that they were “essential” to justification in philosophical methods. While further work might track methodological trends within the discipline of philosophy itself, our results suggest that such preferences begin to develop upon early exposure to academic philosophy.

While we have shown that people associate preferred empirical methods more with psychology and dispreferred non-empirical methods more with philosophy, we haven’t shown that people associate philosophy with only non-empirical methods. Nor have we shown that people don’t value any of the methods that philosophers typically use. For example, philosophers and psychologists both often reason carefully from prior knowledge to new conclusions, conduct literature reviews, and submit work for peer evaluation, among other things. We have chosen to focus on some main aspects of philosophical and psychological research that distinguish them. Future work could compare the relative merits of distinctive methods used in the humanities and social sciences.

We would not advise philosophers to embrace methodological changes based solely on public reaction. But strong preferences for more “scientific” over “philosophical” approaches among the general public raise several important practical questions. Our studies were not designed to answer these questions and we raise them here as worthy of further investigation.

One question concerns enrolment in university philosophy courses. It’s reasonable to assume that the common perception of philosophy’s value and relevance affects overall student enrolment in philosophy courses, the number of philosophy majors, and diversity in philosophy. How might philosophers mitigate negative perceptions of how philosophy is done? Because of its reliance on both intuition as well as observation, experimentation and team-based research, we suspect that the emergence of the subfield of experimental philosophy can help counteract this negative perception. In fact, one principle motivation of experimental philosophers has been to borrow methods from empirical cognitive science whenever they can help answer important philosophical questions (see Knobe et al. 2012). Another way to help counteract this negative perception is through engagement with and incorporation of relevant empirical findings from other disciplines. To the extent that philosophical inquiry is seen as allied with such empirical methods and findings, it could help improve perceptions of the value and relevance of academic philosophy.

Another question concerns teaching effectiveness in university philosophy courses. It’s also reasonable to assume that common perceptions of philosophy’s value and relevance impact philosophical education and learning within the classroom. Philosophy instructors may be able to craft more effective teaching strategies by addressing the features associated with the negative impressions we have identified. Preferences for team-based research might also be taken into account to improve instruction and mentorship for undergraduate and graduate philosophy students.

We also found that although women expressed *more* interest in the philosophical questions concerning human nature, language and knowledge, they tended to value typical philosophical methodology investigating these questions *less* than men, preferring instead the methodology associated with psychology and experimental cognitive science. Given that philosophers and psychologists address many of the same questions, it’s possible that methodological preferences have led more women to specialize

in psychology over philosophy. Our studies were not designed to test this hypothesis, but the question merits further investigation. Yet even if this difference ultimately plays no role in these matters, one thing is certain: we know which of the two methods discussed are preferred to investigate the matter.

Acknowledgments For feedback we thank Joshua Alexander, Carolyn Buckwalter, Shannon Dea, Eddy Nahmias, and Angelo Turri. This research was supported by the Social Sciences and Humanities Research Council of Canada, a Banting Fellowship, and an Early Researcher Award from the Ontario Ministry of Economic Development and Innovation.

Appendix

Experiment 1

A university student is interested in studying whether human beings have free will.

A university student is interested in studying whether babies are born with a sense of fairness.

A university student is interested in studying whether robots can ever be conscious.

A university student is interested in studying whether some moral rules are relative to culture.

A university student is interested in studying whether capitalism is morally superior to socialism.

A university student is interested in studying whether it's possible to knowledgeably predict the future.

A university student is interested in studying whether original artworks are inherently more beautiful than replicas.

Which approach is more likely to help the student answer this question? Tick the bubble underneath your choice.

Conduct controlled experiments and make observations about them.

Conduct thought experiments and gather intuitions about them.

How confident are you in the answer you just gave?

Which approach on the left do you most associate with the disciplines on the right?

Drag each description to the discipline it best matches.

Philosophy

Psychology

Conduct controlled experiments and make observations about them.

Conduct thought experiments and gather intuitions about them.

Experiment 2

Individual Male Intuition Selfishness

Fred has always wondered whether humans are naturally selfish. In order to help answer this question, Fred constructs a series of thought experiments (imaginary scenarios) where a person must decide between doing something selfish or cooperative. For each scenario, Fred has a clear intuition about what the agent would choose. Fred

then considers which hypothesis—(i) that people are naturally selfish, or (ii) that people are not naturally selfish—best fits with his own intuitions about these cases. Based on this procedure that harnesses the power of pure thought, Fred concludes that people are naturally selfish.

Fred is correct that people are naturally selfish.

The question Fred is investigating has important implications for everyday life.

The methodology used by Fred is valuable.

The methodology used by Fred is responsible.

The methodology used by Fred is well suited to answering important questions.

Would you be interested in using Fred's methodology to answer questions that you care about?

Individual Male Observation Selfishness

Fred has always wondered whether humans are naturally selfish. In order to help answer this question, Fred conducts a series of behavioral studies (controlled experiments) where a person must decide between doing something selfish or cooperative. For each experiment, Fred gathers clear data about what the agent would choose. Fred then considers which hypothesis—(i) that people are naturally selfish, or (ii) that people are not naturally selfish—best fits with his observations about these cases. Based on this procedure that harnesses the power of controlled observation, Fred concludes that people are naturally selfish.

Fred is correct that people are naturally selfish.

The question Fred is investigating has important implications for everyday life.

The methodology used by Fred is valuable.

The methodology used by Fred is responsible.

The methodology used by Fred is well suited to answering important questions.

Would you be interested in using Fred's methodology to answer questions that you care about?

Individual Female Intuition Selfishness

Mary has always wondered whether humans are naturally selfish. In order to help answer this question, Mary constructs a series of thought experiments (imaginary scenarios) where a person must decide between doing something selfish or cooperative. For each scenario, Mary has a clear intuition about what the agent would choose. Mary then considers which hypothesis—(i) that people are naturally selfish, or (ii) that people are not naturally selfish—best fits with her own intuitions about these cases. Based on this procedure that harnesses the power of pure thought, Mary concludes that people are naturally selfish.

Mary is correct that people are naturally selfish.

The question Mary is investigating has important implications for everyday life.

The methodology used by Mary is valuable.

The methodology used by Mary is responsible.

The methodology used by Mary is well suited to answering important questions.

Would you be interested in using Mary's methodology to answer questions that you care about?

Individual Female Observation Selfishness

Mary has always wondered whether humans are naturally selfish. In order to help answer this question, Mary conducts a series of behavioral studies (controlled experiments) where a person must decide between doing something selfish or cooperative. For each experiment, Mary gathers clear data about what the agent would choose. Mary then considers which hypothesis—(i) that people are naturally selfish, or (ii) that people are not naturally selfish—best fits with her observations about these cases. Based on this procedure that harnesses the power of controlled observation, Mary concludes that people are naturally selfish.

Mary is correct that people are naturally selfish.

The question Mary is investigating has important implications for everyday life.

The methodology used by Mary is valuable.

The methodology used by Mary is responsible.

The methodology used by Mary is well suited to answering important questions.

Would you be interested in using Mary's methodology to answer questions that you care about?

Team Male Intuition Selfishness

Fred, George and Harry have always wondered whether humans are naturally selfish. In order to help answer this question, the three of them construct a series of thought experiments (imaginary scenarios) where a person must decide between doing something selfish or cooperative. For each scenario, Fred, George and Harry have a clear intuition about what the agent would choose. The three of them then consider which hypothesis—(i) that people are naturally selfish, or (ii) that people are not naturally selfish—best fits with the team's intuitions about these cases. Based on this procedure that harnesses the power of pure thought, Fred, George and Harry conclude that people are naturally selfish.

Fred, George and Harry are correct that people are naturally selfish.

The question Fred, George and Harry are investigating has important implications for everyday life.

The methodology used by Fred, George and Harry is valuable.

The methodology used by Fred, George and Harry is responsible.

The methodology used by Fred, George and Harry is well suited to answering important questions.

Would you be interested in using Fred, George and Harry's methodology to answer questions that you care about?

Team Male Observation Selfishness

Fred, George and Harry have always wondered whether humans are naturally selfish. In order to help answer this question, the three of them conduct a series of behavioral studies (controlled experiments). For each scenario, Fred, George and Harry gather clear data about what the agent would choose. The three of them then consider which hypothesis—(i) that people are naturally selfish, or (ii) that people are not naturally selfish—best fits with the team's observations about these cases. Based on this

procedure that harnesses the power of controlled observation, Fred, George and Harry conclude that people are naturally selfish.

Fred, George and Harry are correct that people are naturally selfish.

The question Fred, George and Harry are investigating has important implications for everyday life.

The methodology used by Fred, George and Harry is valuable.

The methodology used by Fred, George and Harry is responsible.

The methodology used by Fred, George and Harry is well suited to answering important questions.

Would you be interested in using Fred, George and Harry's methodology to answer questions that you care about?

Team Female Intuition Selfishness

Mary, Sally and Jill have always wondered whether humans are naturally selfish. In order to help answer this question, the three of them construct a series of thought experiments (imaginary scenarios) where a person must decide between doing something selfish or cooperative. For each scenario, Mary, Sally and Jill have a clear intuition about what the agent would choose. The three of them then consider which hypothesis—(i) that people are naturally selfish, or (ii) that people are not naturally selfish—best fits with the team's intuitions about these cases. Based on this procedure that harnesses the power of pure thought, Mary, Sally and Jill conclude that people are naturally selfish.

Mary, Sally and Jill are correct that people are naturally selfish.

The question Mary, Sally and Jill are investigating has important implications for everyday life.

The methodology used by Mary, Sally and Jill is valuable.

The methodology used by Mary, Sally and Jill is responsible.

The methodology used by Mary, Sally and Jill is well suited to answering important questions.

Would you be interested in using Mary, Sally and Jill's methodology to answer questions that you care about?

Team Female Observation Selfishness

Mary, Sally and Jill have always wondered whether humans are naturally selfish. In order to help answer this question, the three of them conduct a series of behavioral studies (controlled experiments). For each scenario, Mary, Sally and Jill gather clear data about what the agent would choose. The three of them then consider which hypothesis—(i) that people are naturally selfish, or (ii) that people are not naturally selfish—best fits with the team's observations about these cases. Based on this procedure that harnesses the power of controlled observation, Mary, Sally and Jill conclude that people are naturally selfish.

Mary, Sally and Jill are correct that people are naturally selfish.

The question Mary, Sally and Jill are investigating has important implications for everyday life.

The methodology used by Mary, Sally and Jill is valuable.

The methodology used by Mary, Sally and Jill is responsible.

The methodology used by Mary, Sally and Jill is well suited to answering important questions.

Would you be interested in using Mary, Sally and Jill's methodology to answer questions that you care about?

Individual Male Intuition Knowledge

Fred has always wondered whether innate knowledge of grammar is required for humans to learn a language. In order to help answer this question, Fred constructs a series of thought experiments (imaginary scenarios) where a person learns to use language. For each scenario, Fred has a clear intuition about whether innate knowledge of grammar was also present. Fred then considers which hypothesis—(i) that innate knowledge is required, or (ii) that innate knowledge is not required—best fits with his own intuitions about these cases. Based on this procedure that harnesses the power of pure thought, Fred concludes that innate knowledge is required to learn a language.

Fred is correct that learning a language requires innate knowledge.

The question Fred is investigating has important implications for everyday life.

The methodology used by Fred is valuable.

The methodology used by Fred is responsible.

The methodology used by Fred is well suited to answering important questions.

Would you be interested in using Fred's methodology to answer questions that you care about?

Individual Male Observation Knowledge

Fred has always wondered whether innate knowledge of grammar is required for humans to learn a language. In order to help answer this question, Fred constructs a series of controlled experiments (behavioral studies) where a person learns to use language. For each scenario, Fred gathers clear data about whether innate knowledge of grammar was also present. Fred then considers which hypothesis—(i) that innate knowledge is required, or (ii) that innate knowledge is not required—best fits with his own observations about these cases. Based on this procedure that harnesses the power of controlled observation, Fred concludes that innate knowledge is required to learn a language.

Fred is correct that learning a language requires innate knowledge.

The question Fred is investigating has important implications for everyday life.

The methodology used by Fred is valuable.

The methodology used by Fred is responsible.

The methodology used by Fred is well suited to answering important questions.

Would you be interested in using Fred's methodology to answer questions that you care about?

Individual Female Intuition Knowledge

Mary has always wondered whether innate knowledge of grammar is required for humans to learn a language. In order to help answer this question, Mary constructs a series of thought experiments (imaginary scenarios) where a person learns to use language. For each scenario, Mary has a clear intuition about whether innate

knowledge of grammar was also present. Mary then considers which hypothesis—(i) that innate knowledge is required, or (ii) that innate knowledge is not required—best fits with her own intuitions about these cases. Based on this procedure that harnesses the power of pure thought, Mary concludes that innate knowledge is required to learn a language.

Mary is correct that learning a language requires innate knowledge.

The question Mary is investigating has important implications for everyday life.

The methodology used by Mary is valuable.

The methodology used by Mary is responsible.

The methodology used by Mary is well suited to answering important questions.

Would you be interested in using Mary's methodology to answer questions that you care about?

Individual Female Observation Knowledge

Mary has always wondered whether innate knowledge of grammar is required for humans to learn a language. In order to help answer this question, Mary constructs a series of controlled experiments (behavioral studies) where a person learns to use language. For each scenario, Mary gathers clear data about whether innate knowledge of grammar was also present. Mary then considers which hypothesis—(i) that innate knowledge is required, or (ii) that innate knowledge is not required—best fits with her own observations about these cases. Based on this procedure that harnesses the power of controlled observation, Mary concludes that innate knowledge is required to learn a language.

Mary is correct that learning a language requires innate knowledge.

The question Mary is investigating has important implications for everyday life.

The methodology used by Mary is valuable.

The methodology used by Mary is responsible.

The methodology used by Mary is well suited to answering important questions.

Would you be interested in using Mary's methodology to answer questions that you care about?

Team Male Intuition Knowledge

Fred, George and Harry have always wondered whether innate knowledge of grammar is required for humans to learn a language. In order to help answer this question, Fred, George and Harry construct a series of thought experiments (imaginary scenarios) where a person learns to use language. For each scenario, Fred, George and Harry have a clear intuition about whether innate knowledge of grammar was also present. Fred, George and Harry then consider which hypothesis—(i) that innate knowledge is required, or (ii) that innate knowledge is not required—best fits with the team's intuitions about these cases. Based on this procedure that harnesses the power of pure thought, Fred, George and Harry conclude that innate knowledge is required to learn a language.

Fred, George and Harry are correct that learning a language requires innate knowledge.

The question Fred, George and Harry are investigating has important implications for everyday life.

The methodology used by Fred, George and Harry is valuable.

The methodology used by Fred, George and Harry is responsible.

The methodology used by Fred, George and Harry is well suited to answering important questions.

Would you be interested in using Fred, George and Harry's methodology to answer questions that you care about?

Team Male Observation Knowledge

Fred, George and Harry have always wondered whether innate knowledge of grammar is required for humans to learn a language. In order to help answer this question, Fred, George and Harry construct a series of controlled experiments (behavioral studies) where a person learns to use language. For each scenario, Fred, George and Harry gather clear data about whether innate knowledge of grammar was also present. Fred, George and Harry then consider which hypothesis—(i) that innate knowledge is required, or (ii) that innate knowledge is not required—best fits with the team's observations about these cases. Based on this procedure that harnesses the power of controlled observation, Fred, George and Harry conclude that innate knowledge is required to learn a language.

Fred, George and Harry are correct that learning a language requires innate knowledge.

The question Fred, George and Harry are investigating has important implications for everyday life.

The methodology used by Fred, George and Harry is valuable.

The methodology used by Fred, George and Harry is responsible.

The methodology used by Fred, George and Harry is well suited to answering important questions.

Would you be interested in using Fred, George and Harry's methodology to answer questions that you care about?

Team Female Intuition Knowledge

Mary, Sally and Jill have always wondered whether innate knowledge of grammar is required for humans to learn a language. In order to help answer this question, Mary, Sally and Jill construct a series of thought experiments (imaginary scenarios) where a person learns to use language. For each scenario, Mary, Sally and Jill have a clear intuition about whether innate knowledge of grammar was also present. Mary, Sally and Jill then consider which hypothesis—(i) that innate knowledge is required, or (ii) that innate knowledge is not required—best fits with the team's intuitions about these cases. Based on this procedure that harnesses the power of pure thought, Mary, Sally and Jill conclude that innate knowledge is required to learn a language.

Mary, Sally and Jill are correct that learning a language requires innate.

The question Mary, Sally and Jill are investigating has important implications for everyday life.

The methodology used by Mary, Sally and Jill is valuable.

The methodology used by Mary, Sally and Jill is responsible.

The methodology used by Mary, Sally and Jill is well suited to answering important questions.

Would you be interested in using Mary, Sally and Jill's methodology to answer questions that you care about?

Team Female Observation Knowledge

Mary, Sally and Jill have always wondered whether innate knowledge of grammar is required for humans to learn a language. In order to help answer this question, Mary, Sally and Jill construct a series of controlled experiments (behavioral studies) where a person learns to use language. For each scenario, Mary, Sally and Jill gather clear data about whether innate knowledge of grammar was also present. Mary, Sally and Jill then consider which hypothesis—(i) that innate knowledge is required, or (ii) that innate knowledge is not required—best fits with the team's observations about these cases. Based on this procedure that harnesses the power of controlled observation, Mary, Sally and Jill conclude that innate knowledge is required to learn a language.

Mary, Sally and Jill are correct that learning a language requires innate knowledge.

The question Mary, Sally and Jill are investigating has important implications for everyday life.

The methodology used by Mary, Sally and Jill is valuable.

The methodology used by Mary, Sally and Jill is responsible.

The methodology used by Mary, Sally and Jill is well suited to answering important questions.

Would you be interested in using Mary, Sally and Jill's methodology to answer questions that you care about?

References

- Baumeister, R. F. (2008). Free will in scientific psychology. *Perspectives on Psychological Science*, 3, 14–19.
- Baumeister, R. F., Masicampo, E. J., & DeWall, C. N. (2009). Prosocial benefits of feeling free: disbelief in free will increases aggression and reduces helpfulness. *Personality and Social Psychology Bulletin*, 35, 260–268.
- Buckwalter, W. (2012). Surveying philosophers: a response to Kuntz & Kuntz. *Review of Philosophy and Psychology*, 3, 515–524.
- Buckwalter, W., & Stich, S. (2013). Gender and Philosophical Intuition. In J. Knobe & S. Nichols (Eds.), *Experimental Philosophy Vol.2*. Oxford: Oxford University Press.
- Dennett, D. (1984). *Elbow room*. Cambridge: MIT Press.
- Fish, S. (2011). Does philosophy matter? *Opinionator, The New York Times*. Retrieved from <http://opinionator.blogs.nytimes.com/2011/08/01/does-philosophy-matter>.
- Gendler, T. S. (2000). *Thought experiment: On the powers and limits of imaginary cases*. New York: Routledge Press.
- Gendler, T. S. (2007). Philosophical thought experiments, intuitions, and cognitive equilibrium. In P. A. French & H. K. Wettstein (Eds.), *Philosophy and the empirical*. Oxford: Blackwell Pub. Inc.
- Glymour, C. (2011). Manifesto. *Choice and inference*. Retrieved from <http://choiceandinference.com/2011/12/23/in-light-of-some-recent-discussion-over-at-new-apps-i-bring-you-clark-glymours-manifesto>.
- Knobe, J., Buckwalter, W., Nichols, S., Robbins, P., Sarkissian, H., & Sommers, T. (2012). Experimental philosophy. *Annual Review of Psychology*, 63, 81–99.
- Kuntz, J. R., & Kuntz, J. R. C. (2011). Surveying philosophers about philosophical intuition. *Review of Philosophy and Psychology*, 4, 643–665.
- Libet, B. (1985). Unconscious cerebral initiative and the role of conscious will in voluntary action. *Behavioral and Brain Sciences*, 8, 529–566.
- Lombrozo, T. (2013). Name five women in philosophy. bet you can't. 13.7: cosmos and culture, NPR. Retrieved from <http://www.npr.org/blogs/13.7/2013/06/17/192523112/name-ten-women-in-philosophy-bet-you-can-t>.

- McIntyre, L. (2011). Making philosophy matter—or else making philosophy matter—or else. *The Chronicle Review, The Chronicle of Higher Education*. Retrieved from <http://chronicle.com/article/Making-Philosophy-Matter-or/1300293>.
- Nietzsche, F. (1989). *On the genealogy of morals*, trans. Vintage books. London: Walter Kauffman.
- Nietzsche, F. (1999). In G. Colli & M. Montinari (Eds.), *Also Sprach Zarathustra I-IV*. Munich: Deutscher Taschenbuch Verlag.
- Paxton, M., Figdor, C., & Tiberius, V. (2012). Quantifying the gender gap: An empirical study of the underrepresentation of women in philosophy. *Hypatia*, 27(4), 949–957.
- Pronin, E., Wegner, D. M., McCarthy, K., & Rodriguez, S. (2006). Everyday magical powers: the role of apparent mental causation in the overestimation of personal influence. *Journal of Personality and Social Psychology*, 91, 218–231.
- Rubio, M. (2015). *Republican presidential debate*. Milwaukee, Wisconsin: Fox Business Network.
- Spinoza, B. (1992) [1677]. *The ethics*, trans. Samuel Shirley, Cambridge: Hackett.
- Thagard, P. (2012). Eleven dogmas of analytic philosophy. hot thought, *Psychology Today*, Retrieved from <http://www.psychologytoday.com/blog/hot-thought/201212/eleven-dogmas-analytic-philosophy>.
- van Inwagen, P. (1983). *An essay on free will*. Oxford: Clarendon.