**Accommodating Our Pattern of Judgements about Metaphysical Explanations: Evidence that Metaphysical Explanation is not Asymmetric**

**Abstract**

It is near orthodoxy to suppose that metaphysical explanations are asymmetric: if x metaphysically explains y, then y does not metaphysically explain x. That is because philosophers have typically thought that an account of metaphysical explanation ought be sensitive to our practices in offering and evaluating metaphysical explanations, and to our intuitions about the conditions under which such explanations obtain, or fail to. Philosophers have supposed that as a matter of fact if we judge that x metaphysically explains y, then do not judge the converse: our every day practices, and our intuitions about cases, are evidence that metaphysical explanation is asymmetric. In turn, this assumption has led those who posit some kind of primitive relation that ‘backs’ metaphysical explanation—such as grounding—to suppose that relation to be asymmetric. Strangely, however, there has been no empirical investigation of our judgements on these matters, beyond armchair speculation of philosophers. This paper investigates our judgements and finds that, contrary to philosophical orthodoxy, of the population we tested people do not judge that metaphysical explanations are asymmetric.

**1 Introduction**

Theorising about metaphysical explanation is a hot topic. Metaphysical explanations are, in many areas, the bread and butter of philosophy: explaining minds in terms of brains; justice in terms of arrangements of institutions; macro-level phenomena in terms of micro-level phenomena, and so on, characterise a lot of what philosophy is in the business of doing. In what follows we will suppose that metaphysical explanations are true propositions of the form ⌜x *because* y⌝[[1]](#footnote-1) where ⌜x⌝ and ⌜y⌝ are sentences, and *‘because’* expresses a particular kind of explanatory connection (i.e. one that is metaphysical rather than causal).[[2]](#footnote-2)

Amongst recent research in this area, it is often held that instances of ⌜x *because* y⌝ are true iff[[3]](#footnote-3) there is a pair of facts,[[4]](#footnote-4) [x][[5]](#footnote-5) and [y], such that [x] obtains iff the sentence x, is true, and [y] obtains iff only sentence y, is true, and each fact is in some good sense what the relevant sentence is *about*, or what makes the sentence true,[[6]](#footnote-6) and a particular explanatory connection obtains between [y] and [x].[[7]](#footnote-7) One popular contemporary supposes that the explanatory connection which must obtain between [y] and [x] in order for ⌜x *because* y⌝ to be true is the relation of grounding.[[8]](#footnote-8) Then, for instance, ‘{Annie} exists *because* Annie exists’ is true iff [Annie exists] grounds [{Annie} exists]. We call this a grounding-based account of metaphysical explanation.

Defenders of grounding-based accounts are motivated towards such an account, at least in part, because they think it best accommodates many of our central intuitions and judgements about metaphysical explanations. It is typically supposed that grounding is an asymmetric, irreflexive, and non-monotonic relation,[[9]](#footnote-9) because it is thought that this best accords with the judgements we make about propositions of the form ⌜x *because* y⌝. In particular, it is assumed that we will not judge that ⌜x *because* x⌝ expresses a metaphysical explanation, for we will not judge that anything explains itself. Hence it is thought that metaphysical explanations are irreflexive, and therefore that so too must grounding relations be. It is also assumed that if we judge that ⌜x *because* y⌝ expresses a metaphysical explanation, then we will not also judge that ⌜y *because* x⌝ expresses a metaphysical explanation: that is because it is thought that we will judge that explanations cannot be circular. Hence that it is thought that metaphysical explanations are asymmetric, [[10]](#footnote-10) and that so too are grounding relations. Similar considerations apply to non-monotonicity.

Quite generally, the methodology to which extant grounding-based theorists appeal in developing their account of metaphysical explanation strongly suggests that they take it to be a desideratum of an account of metaphysical explanation that it accommodate our general *pattern* of judgements about what metaphysically explains what. Accommodating our pattern of judgements, need not, and will almost certainly in fact not, involve *vindicating* all our judgements—after all, there might be disagreements about what explains what, and these disagreements may not be faultless. Rather, it means accommodating the rough pattern of judgements that we find. So, for instance, if in general people are inclined to judge that instances of ⌜x *because* x⌝ are not metaphysical explanations, then this is a pattern that ought be accommodated. Likewise, if in general, most of us judge that if ⌜x *because* y⌝ is a metaphysical explanation, then ⌜y *because* x⌝ is not, then this, too, is a pattern that ought be accommodated. If we are inclined to judge that ⌜x *because* y⌝ is a metaphysical explanation only in certain circumstances, or only relative to certain subjects, then this, too, is a pattern we ought accommodate. To put it another way, were an account of metaphysical explanation to *systematically* and *frequently* misalign with our *pattern* of judgements, this would be a serious objection to the account. Moreover, we think this is an entirely reasonable methodological assumption to make. Since the concept of metaphysical explanation is taken to be one that can be traced back several thousand years,[[11]](#footnote-11) and is a deployed in perfectly ordinary situations, we would expect an account of metaphysical explanation to be sensitive to our pattern of judgements, lest it run the risk of being accused of changing the subject, and providing an account of some other phenomenon entirely.

Recently, grounding-based accounts have come under fire for failing to accommodate particular patterns in our judgements about metaphysical explanation. It has been argued that explanation—whether metaphysical or not—is something that involves both subjectivity and agent-relativity, for these explanations are things that (*inter alia*) increase understanding, or make some phenomenon intelligible, or answer some ‘why’ question, for some particular subject or other.[[12]](#footnote-12) In what follows we will suppose that metaphysical explanation is *agent-relative* iff instances of ⌜x *because* y⌝ just in case whether ⌜x *because* y⌝ is true can only ever be assessed relative to a subject. Then metaphysical explanations are *agent-neutral* iff they are not agent-relative. Further, we will say that metaphysical explanations are *context sensitive* just in case whether an instance of ⌜x *because* y⌝ is true, depends on features of a subject’s context. Here, we will take a subject’s context to be something broader than just a centred world (a world centred on an individual at a time and place). We take a subject’s context to include all of the subject’s psychological properties at a time and place in a world—and hence that subject’s epistemic goals, beliefs, knowledge, capacities, and so forth—as well as their local environment.

Then one way for metaphysical explanations to be context sensitive is if they are *subjective*, where metaphysical explanations are subjective iff whether an instance of ⌜x *because* y⌝ is true depends on the mental states of (certain) subjects. If, say, whether there is an explanation present depends on whether that explanation induces certain psychological features in the relevant subject, then metaphysical explanations are subjective. Since one aspect of a subject’s context is that subject’s mental states—their epistemic goals, their background knowledge, their state of understanding—one way in which metaphysical explanation can be context sensitive is if it is subjective. Then metaphysical explanations are *objective* iff they are not subjective, and are *context insensitive* just in case they are not context sensitive. If metaphysical explanations are context insensitive, then they are objective, though the converse does not hold.

If what increases understanding, or illuminates some phenomenon, or answers some why question, does so *for* one subject, but not *for* another, and if it is increasing understanding, or providing illumination, or some such, for subjects, that determines whether ⌜x *because* y⌝ is a metaphysical explanation or not, then metaphysical explanation will be agent-relative, since instances of ⌜x *because* x⌝ will be metaphysical explanations for some subjects, and not others.

Some authors have concluded, on this basis, that metaphysical explanations are both subjective and agent-relative,[[13]](#footnote-13) and have argued that grounding-based accounts of metaphysical explanation fail because they cannot accommodate either the subjectivity or agent-relativity of metaphysical explanation. After all, whether or not a grounding relation obtains between certain facts is not an agent-relative or subjective matter.

This objection assumes that it is a desideratum of an account of metaphysical explanation that it accommodate our pattern of judgements, and then claims that there is at least one such pattern that grounding-based accounts cannot accommodate.

Let’s say that people’s *judgements* about whether assertions of ⌜x *because* y⌝ are metaphysical explanations, are *agent-relative* iff their judgements about whether assertions of ⌜x *because* y⌝ are metaphysical explanations are always judgements relative to some particular subject. Then let’s say that people’s *judgements* about whether assertions of ⌜x *because* y⌝ are metaphysical explanations, are *context sensitive* iff their judgements about whether assertions of ⌜x *because* y⌝ are metaphysical explanations, non-trivially[[14]](#footnote-14) depend on features of the context they are assessing. In particular, people’s *judgements* about whether assertions of ⌜x *because* y⌝ are metaphysical explanations, are *subjective* iff their judgements about whether assertions of ⌜x *because* y⌝ are metaphysical explanations non-trivially depend on the psychological or epistemic features of the subject relative to whom they are assessing whether the utterance is a metaphysical explanation.

There is good reason to think our judgements are agent-relative and context sensitive. There is plenty of empirical research that suggests that judgements about *causal* explanations are subjective and agent-relative (Triandis (1995; Nisbett 2003); Hilton (1990), Pennington & Hastie (1993), Vlach & Noll (2016)), (Chin-Parker and Bradner (2010)) Hoyos and Gentner (2017); (Hilton and Slugoski 1986; Knobe 2009; Hitchcock and Knobe 2009; Kahneman & Miller 1986) and recent empirical work by Latham and Miller (ms) on our judgements about metaphysical explanation has shown that said judgements are context sensitive and agent-relative.

As we argue in §2, however, contrary to recent suggestions this empirical data does not show that there are patterns of judgements that extant grounding-based accounts cannot accommodate. To know whether there are such patterns, we need to know more about the ways in which our judgements are context sensitive and agent-relative. We aim to determine whether there are some patterns of context sensitive agent-relative judgements that extant grounding-based theories cannot accommodate. We outline the study’s methodology and results in §3, before arguing, in §4, that they provide good reason to think that extant grounding-based theories cannot accommodate the particular pattern of judgements we find: namely a pattern on which our judgements fail to be asymmetric.

**2 Empirical Evidence: what we know so far**

There is plenty of evidence that subjects will differently prefer, or disprefer, different putative causal explanations depending on contextual factors including the beliefs of the explainer and the subject being offered the explanation (see Hilton (1990), Pennington & Hastie (1993), and Vlach & Noll (2016)). People are inclined to prefer the (putative) explanation that is most salient at the context (Hilton and Slugoski 1986; Knobe 2009; Hitchcock and Knobe 2009; Kahneman & Miller 1986). Sometimes a (putative) causal explanation is more salient when it appeals to causal factors that are in some way abnormal: to causal factors that do not typically occur and hence which stand out. Sometimes salience is the product of practicality. People are more likely to prefer causal explanations that appeal to causal factors over which they have control, to those that appeal to causal factors over which they have no control (Hitchcock and Knobe 2009). Further, different kinds of explanations are evaluated according to their perceived usefulness to the evaluator in facilitating the performance of upcoming tasks (Vasilyeva, Wilkenfeld, and Lombrozo 2017) and are sensitive to which contrast class is identified (McGill 1989; Hilton & Erb 1996. Sometimes salience is the product of background beliefs and expectations. People are more likely to prefer causal explanations when those explanations accord with their expectations about what explains what (Hitchcock and Kobe 2009; Kahneman and Miller 1986) and cohere with their existing set of explanations (Murphy & Medin, 1985; Mackonis, 2013; Chapman & Chapman (1969).

Jointly, this suggests that judgements about causal explanations are context sensitive, subjective, and agent-relative, and, in turn, suggests we ought expect judgements about metaphysical explanations to have these features. Indeed, there is recent evidence that this is so. Latham and Miller (ms) investigated people’s judgements regarding whether an utterance of ⌜x *because* y⌝ was true, or was an explanation for a subject, in three contexts: a context in which the subject who asserts ⌜x *because* y⌝ is someone for whom it is explicitly stated that coming to learn y illuminated, for that individual, why x—what they call the epistemic condition—and a context in which intervening on [y] in order to intervene on [x] is especially salient in the context occupied by the subject—what the call the intervention condition— and a context in which it is explicitly stated that the subject who asserts ⌜x *because* y⌝ is someone for whom coming to learn y did not in any way illuminate why x; nor is it salient, at that context, that intervening on [y] is a way to intervene on [x]—what they call the absence condition. They found that participants were more likely to agree that the assertion of ⌜x *because* y⌝ in the intervention condition was an explanation, for the subject, than they were the absence condition. They also found that although a majority of participants judged that the assertion was, in each condition, true and that it was an explanation for the subject, the majority was significantly smaller in the absence condition than in the intervention condition. They concluded that the presence of certain contextual factors made it more likely that people would judge that ⌜x *because* y⌝ was an explanation for the subject. They concluded that our judgements are both context sensitive and agent-relative, but unclear whether they are subjective. That is because participants might assume that the subject in the intervention condition is *aware* of the salience of the particular intervention (in which case the presence of this mental state is relevant in determining peoples judgements) or they might not make this assumption (in which case the mental state of the subject plays no role).

Despite what is sometimes suggested, however, extant grounding-accounts can accommodate that data. Defenders of such approaches can argue that these findings merely show that judgements about *acts* of metaphysical explanation are agent-relative and subjective, and do not show that metaphysical explanations themselves have these properties. Following Achinstein (1983) we will suppose that an *act* of metaphysical explanation is a speech act that expresses a proposition of the form ⌜x *because* y⌝. Then it might be that some speech acts that express propositions of that form count as acts of metaphysical explanation, and others do not, depending on features of the context in which they are uttered: perhaps they only count as acts of explanation if they answer the relevant subject’s why question, or if they illuminate, for that subject, why [x] is the case, or some such. If so, *acts* of metaphysical explanation are agent-relative and subjective, and it is these acts that participants judge to be acts of explanation, or not, at different contexts. Their judging this, however, is consistent with metaphysical explanations *themselves* being agent-neural and context insensitive, since it might be that the proposition expressed by any such speech act expresses a metaphysical explanation (if the proposition is true) regardless of whether the speech act is itself an act of explanation. Hence extant grounding-based accounts can accommodate the fact that our pattern of judgments is both context sensitive and agent-relative, by locating that context sensitivity and agent-relativity entirely in acts of explanation, and not in metaphysical explanations themselves.

Is there some pattern of judgements that *would* pose a problem for the extant grounding-theorist? Yes. Extant grounding-based theorists can maintain that metaphysical explanations are context insensitive and agent-neutral, so long as all of people’s contexts sensitive and agent-relative judgements can be explained by their locating their context sensitivity and agent-relativity in the act of explanation and not the explanation itself. This can be done as long as people’s patterns in judging that certain speech acts *are* acts of explanation, are a subset of the cases in which the grounding-based theorist holds that there is a metaphysical explanation present. That is, the grounding-based theorist can accommodate its being the case that for a range of true propositions of the form ⌜x *because* y⌝, assertions of those propositions are not acts of explanation (where, for instance, they don’t play the relevant epistemic role for the subject in question). But she cannot accommodate any assertion of ⌜x *because* y⌝ counting as an act of metaphysical explanation if the proposition expressed is not a metaphysical explanation. So if there is some pattern of judgements in which people judge that assertions of ⌜x *because* y⌝ are *acts* of explanation, but where extant grounding-theorists say that these are not even acts of explanation because the assertion does not express a metaphysical explanation, then this would be a pattern that such a view cannot accommodate.

In what follows we outline a study that we ran to test a hypothesis about one such pattern of judgements: a pattern in which people judge both that ⌜x *because* y⌝ is an act of explanation in one context, and that ⌜y *because* x⌝ is an act of explanation in another context. Since grounding-based theorists suppose that metaphysical explanations are asymmetric, and so is the relation of ground, such a pattern of judgements, even conceived of as judgements of *acts* of explanation, cannot be accommodated by their view.

We presented participants with three pairs of vignettes (though each participant only sees one vignette of the six). In each pair of vignettes the same pair of facts are explanatorily relevant, but the context is different. In particular, since Latham and Miller found that making salient, at a context, intervening on [y] in order to intervene on [x] made it more likely that people would judge that that subject’s assertion of ⌜x *because* y⌝ in that context was an explanation for that subject, we focussed on manipulating this particular aspect of a subject’s context.

Hence in one pair of vignettes intervening on [x] in order to intervene on [y] is made salient, and in the other pair, intervening on [y] in order to intervene on [x] is made salient. We hypothesised that in a context in which intervening on [x] in order to intervene on [y] is made salient, participants would judge that an assertion of ⌜x *because* y⌝ is true, and it is an explanation for the subject at that context, and that in a context in which intervening on [y] in order to intervene on [x] is made salient, participants would judge both that an assertion of ⌜x *because* y⌝ is true, and it is an explanation for the subject at that context.

More carefully, we had nine specific hypotheses. First, we hypothesised that mean levels of agreement that an utterance of ⌜x *because* y⌝ is true in a context in which intervening on [y] in order to intervene on [x] is made salient, would be statistically significantly above 4: that is, we hypothesised that people would, on average, agree that ⌜x *because* y⌝ is true in this context. Further, we hypothesised that a majority of participants would agree that the utterance of ⌜x *because* y⌝ is true in this context. Third, we hypothesised that mean levels of agreement that ⌜y *because* x⌝ is true, in a context in which intervening on [x] in order to intervene on [y] is made salient, would be statistically significantly above 4. Further, and fourth, we hypothesised that a majority of participants would agree that an utterance of ⌜y *because* x⌝ is true in that context.

Fifth, we hypothesised that mean levels of agreement would be statistically significantly above 4 that the assertion of ⌜x *because* y⌝ was an explanation *for that subject in that context,* of why x, in a context in which intervening on [y] in order to intervene on [x] is made salient: that is, we hypothesised that people would, on average, agree that when Maria asserted ⌜x *because* y⌝ in that context, that was an explanation for Maria, of why x. Six, we hypothesised that a majority of participants would agree that when Maria asserted ⌜x *because* y⌝ , in this context, this was an explanation for Maria, of why x. Seventh, we hypothesised that mean levels of agreement would be statistically significantly above 4 that the assertion of ⌜y *because* x⌝ was an explanation *for that subject in that context,* of why y, in a context in which intervening on [x] in order to intervene on [y] is made salient: that is, we hypothesised that mean levels of agreement that when Maria uttered ⌜y *because* x⌝ this was an explanation for Maria, of why y, in a context in which intervening on [x] in order to intervene on [y] is made salient, would be statistically significantly above 4. Eighth, we hypothesised that a majority of participants would agree that when Maria uttered ⌜y *because* x⌝, in this context, this was an explanation for Maria, of why y.

In all, then, we hypothesised that participants would judge that an assertion of ⌜x *because* y⌝ is true, and is an explanation, and that an assertion of ⌜y *because* x⌝ is true, and is an explanation, when each assertion takes place in the right kind of context: namely a context inn which a particular intervention is salient.

Ninth, and finally, we hypothesised that there would be no significant difference between participant’s levels of agreement regarding whether an utterance of ⌜x *because* y⌝ is true in a context, and their levels of agreement regarding whether an utterance of ⌜x *because* y⌝ is an explanation for the subject, in that context. We made this prediction since if a participant judges that when Maria asserts ⌜x *because* y⌝ she says something true, we would expect them to judge that what Maria says is an explanation, for Maria. We wanted to confirm that this was so.

**3 Experimental Design**

**3.1 Method**

*3.1.1 Participants*

625 people participated in the study. Participants were U.S. residents, recruited and tested online using Amazon Mechanical Turk,[[15]](#footnote-15) and compensated $2 for approximately 20 minutes of their time. 65 participants had to be excluded for failing to follow task instructions. This means that they failed to answer the questions (89), or failed an attentional check question (115). The remaining sample was composed of 421 participants (aged 21-99; 155 female, 2 transgender/non-binary). Mean age 32.07 (SD = 10.07). Ethics approval for this study was obtained from the [blanked] Human Research Ethics Committee. Informed consent was obtained from all participants prior to testing. The survey was conducted online using Qualtrics.

*3.1.2 Materials and Procedure*

Participants were divided into six groups, each of which saw a single vignette and responded to one set of statements. Group 1 participants saw vignette 1(a), and group 2 participants saw vignette 1(b).

Vignette 1(a) Mind/Brain

Fred is experiencing a lot of stress. He learns that whenever someone is stressed, they have very high cortisol levels, and that whenever anyone has very high cortisol levels, they are stressed. He learns that stress and high cortisol levels go together because what it is to have one, is to have the other.

Fred goes to his pharmacist, Maria. Maria tells Fred that a new drug has just been released—*destressor*—and that this drug works by preventing cortisol from being released into the system. Maria tells Fred ‘Fred, you are stressed because you have high cortisol levels’ and she recommends that Fred takes destressor.

Vignette 1(b) Mind/Brain

Fred is experiencing a lot of stress. He learns that whenever someone is stressed, they have very high cortisol levels, and that whenever anyone has very high cortisol levels, they are stressed. He learns that stress and high cortisol levels go together because what it is to have one, is to have the other.

Fred goes to his therapist, Maria. Maria tells Fred that a new therapy technique has been developed—*unstressor*—and that this therapy, consisting of meditation and mindfulness, works to alleviate the experience of stress. The therapist tells Fred ‘Fred, you have high cortisol levels because you are stressed’ and she recommends that Fred undergo the unstressor therapy.

Group 3 participants saw vignette 2(a) and group 4 participants saw vignette 2(b)

Vignette 2a Sets

Sets are abstract objects, like numbers, or functions (like addition, and subtraction, and division). But unlike number or functions, sets have members. Even though sets are abstract objects, their members can be concrete things, like dogs, chairs, electrons, and people. In fact, for any bunch of things, there’s a set containing just those things. *Singleton* sets are sets that contain only one member. So the singleton set containing the number 2, is the set that only contains 2. The singleton set containing Eminem, is the set that contains only Eminem as a member. Sets only exist when their members do, and their members only exist when the set does. So if Eminem exists, then the singleton set containing Eminem exists. If the singleton set containing Eminem exists, then Eminem exists. If one exists, then so does the other.

Fred is a member of an elite secret time team. This team of people can travel anywhere in time, and can erase people and events from the timeline, so that those people and events never existed at all. Fred is talking with his supervisor, Maria, about the suggestion that they ought to erase Eminem from the timeline. Fred says to Maria ‘but what about the singleton set containing Eminem?’ Maria responds that if they erase Eminem, then they will erase the singleton set as well. At the end of their discussion, Maria tells Fred that the singleton set containing Eminem exists because Eminem exists.

Vignette 2b Sets

Sets are abstract objects, like numbers, or functions (like addition, and subtraction, and division). But unlike number or functions, sets have members. Even though sets are abstract objects, their members can be concrete things, like dogs, chairs, electrons, and people. In fact, for any bunch of things, there’s a set containing just those things. *Singleton* sets are sets that contain only one member. So the singleton set containing the number 2, is the set that only contains 2. The singleton set containing Eminem, is the set that contains only Eminem as a member. Sets only exist when their members do, and their members only exist when the set does. So if Eminem exists, then the singleton set containing Eminem exists. If the singleton set containing Eminem exists, then Eminem exists. If one exists, then so does the other.

Fred is a member of an elite secret abstract-objects team. This team of people can travel anywhere in the abstract realm and can intervene on any abstract object. The team of people can, for instance, intervene on numbers, and functions and sets. Fred is talking with his supervisor, Maria, about the suggestion that they ought to erase the singleton set containing Eminem, from the abstract realm. Fred says to Maria ‘but what about Eminem?’ Maria responds that if they erase the singleton set containing Eminem, from the abstract realm, then they will erase Eminem as well. At the end of their discussion, Maria tells Fred that Eminem exists because the singleton set containing Eminem exists.

Group 5 participants saw vignette 3(a) and group 6 saw vignette 3(b).

Vignette 3a Euthyphro

Fred is not sure whether or not God approves of eating snails. Fred finds snails really tasty, and hopes that God does approve of eating snails, since, Fred knows, God approves of things only when they are good, and everything that is good, is something God approves of.

One day Fred meets up with his old friend, Maria, and the two of them visit Maria’s prayer group: the Change God’s Mind prayer group. The group aims to pray to God, to change His mind about what he approves of. Maria suggests that Fred prays, with the group, to bring it about that God approves of eating snails. In fact, God exists, and He does approve of eating snails. After the prayer meeting, Maria tells Fred that eating snails is good because God approves of it.

Vignette 3b Euthyphro

Fred is not sure whether or not God approves of eating snails. Fred finds snails really tasty, and hopes that God does approve of eating snails, since, Fred knows, God approves of things only when they are good, and everything that is good, is something God approves of.

One day Fred meets up with his old friend, Maria, and the two of them visit Maria’s prayer group: the Change What is Good prayer group. The group aims to pray to God, to get God to change which things are good. Maria suggests that Fred prays, with the group, to bring it about that eating snails is good. In fact, eating snails is good, and God exists, and He does approve of eating snails. After the prayer meeting, Maria tells Fred that God approves of eating snails because eating snails is good.

After seeing one of these vignettes all participants were then asked to respond to Maria’s assertion on two different Likert scales. One of the Likert scales ran from 1 ‘Completely sure that what Maria says is false’ at one end (either the far left or the far right, determined randomly: this is so on all the Likert scales henceforth described) to 7 ‘Completely sure that what Maria says is true’ at the opposite end of the scale via 4 ‘I am indifferent between these two options’. The other Likert scale ran from 1 ‘Completely sure that the statement is *not* an explanation for Maria’ at one end to 7 ‘Completely sure that the statement *is* an explanation for Maria via 4 ‘I am indifferent between these two options’.

After having done so, participants were taken to a new page that did not have either the vignette or Likert scales on it and were asked an attentional check question: *“In the vignette you were asked to read, what were Fred and Maria talking about?”* to which they could answer (1) Abstract Objects; (2) Bicycles; (3) God or (4) Minds and Brains. Participants who choose incorrectly were eliminated.

*3.1.3 Analyses*

Let’s call participants’ levels of agreement regarding whether Maria’s assertion is true, their *levels of truth agreement.* Then participants whose level of truth agreement is *higher* are participants who more strongly agree that Maria’s assertion is true. Let’s also call participants’ level of agreement whether Maria’s assertion is an explanation for Maria, their *levels of explanation agreement*. Then participants whose level of explanation agreement is higher are participants who more strongly agree that Maria’s assertion is an explanation for her.

In order to test whether people’s levels of truth agreement and levels of explanation agreement differed significantly from indifference (a score of 4 on the Likert scale) we ran separate one-sample t-tests to test whether the mean response significantly differs from 4 in each condition. If the mean is significantly above 4, then overall people might think that what Maria says is true or is an explanation for her; if the mean is significantly below 4 then overall people might think that what Maria says is false or is *not* an explanation for her; if the mean does not differ significantly from 4 then overall people might be indifferent. We compared levels of truth agreement and levels of explanation agreement between conditions 1(a) and 1(b), 2(a) and 2(b), and 3(a) and 3(b) using separate between-subjects t-tests

In the condition in which the mean was significantly greater than 4, we combined the proportion of people who thought that what Maria said was false, or was not an explanation, with those who were indifferent. We then ran separate one-way 𝜒2-tests to test whether the *majority* of people responded in agreement that what Maria said was true or was an explanation for her. We compared the proportions of people between conditions 1(a) and 1(b), 2(a) and 2(b), and 3(a) and 3(b) using separate 𝜒2 tests of independence.

Finally, in order to test whether within participants their levels of truth agreement differed significantly from their levels of explanation agreement we ran separate paired-sample t-tests for each condition.

4. Results

Consider, first, our four hypotheses about people’s judgements about the truth of the various assertions. Let’s call people’s mean levels of agreement that an assertion of ⌜x *because* y⌝, (or ⌜y *because* x⌝ ) is true, their *mean levels of truth agreement*, and call people’s mean levels of agreement that an assertion of ⌜x *because* y⌝, (or ⌜y *because* x⌝ ) is an explanation for the (relevant) subject, their mean levels of explanation agreement. Then we hypothesised that in a context in which intervening on [y] in order to intervene on [x] is made salient, participants’ mean levels of truth agreement would be significantly above 4. We also hypothesised that a majority of participants would judge the assertion to be true. We also hypothesised that an assertion of ⌜y *because* x⌝ in a context in intervening on [x] in order to intervene on [y] is made salient, participants’ mean levels of agreement that the assertion is true, would be significantly above 4. We also hypothesised that a majority of people would judge that the assertion is true.

Table 1 below summarises the descriptive data for level of truth agreement from the experiment. The ‘Yes’ column represents the proportion of participants who reported that what Maria said is true (5, 6 or 7). The ‘No’ column represents the proportion of participants who reported that what Maria said is false (1, 2 or 3). The ‘I’ column represents the proportion of people who reported being indifferent between these two options (4). The t-value tells us the result of the t-test, and the p-value tells us whether the t-test is significant. Where the p-value is <0.05, the t-test tells us that the mean is significantly above, or below, 4.

As we can see all four of these hypotheses were vindicated across *all three* pairs of vignettes.

*Table 1. Descriptive data and t-test results for level of truth agreement.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Condition** | **%Yes** | **%No** | **%I** | **Mean** | **SD** | ***t-value*** | ***p*-value** |
| **Mind/Brain** |
| **1A:**  **Stress because cortisol** (N = 74) | 71.6 | 16.2 | 12.2 | 5.09 | 1.48 | 6.353 | <.001 |
| **1B: Cortisol because stress** (N = 71) | 77.5 | 7.0 | 15.5 | 5.46 | 1.34 | 9.212 | <.001 |
| **Between-Subjects:** |  | -1.576 | .117 |
| **Sets** |
| **2A: Set because member** (N = 56) | 85.9 | 5.4 | 8.9 | 5.66 | 1.33 | 9.380 | <.001 |
| **2B: Member because set** (N = 64) | 71.8 | 14.1 | 14.1 | 5.17 | 1.60 | 5.862 | <.001 |
| **Between-Subjects:** |  | 1.808 | .073 |
| **Euthyphro** |
| **3A: Good because God approves** (N = 76) | 65.8 | 15.8 | 18.4 | 4.96 | 1.66 | 5.042 | <.001 |
| **3B: God approves because good** (N = 80) | 67.5 | 17.5 | 15.0 | 4.86 | 1.63 | 4.737 | <.001 |
| **Between-Subjects:** |  | .372 | .710 |

Next, consider our four hypotheses regarding people’s judgements about whether the various assertions are explanations for the subject who utters them. We hypothesised that mean levels of agreement that what the subject, said in asserting ⌜x *because* y⌝—in this case that subject is Maria—is an explanation *for that subject* of why x, would be statistically significantly above 4 in a context in which intervening on [y] in order to intervene on [x] is made salient. We also predicted that a majority of participants would judge that the assertion is an explanation for the subject. We also predicted that mean levels of agreement that what the subject, said in asserting ⌜y *because* x⌝—in this case that subject is Maria—is an explanation *for that subject* of why y, would be statistically significantly above 4 in a context in which intervening on [x] in order to intervene on [y] is made salient. We also predicted that a majority of people would judge the assertion to be an explanation for the subject.

Table 2 below summarises the descriptive data for level of explanation agreement from the experiment. The ‘Yes’ column represents the proportion of participants who reported that what Maria said is an explanation for her (5, 6 or 7). The ‘No’ column represents the proportion of participants who reported that what Maria said is not an explanation for her (1, 2 or 3). The ‘I’ column represents the proportion of people who reported being indifferent between these two options (4).

*Table 2. Descriptive data and t-test results for level of explanation agreement.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Condition** | **%Yes** | **%No** | **%I** | **Mean** | **SD** | ***t-value*** | ***p*-value** |
| **Mind/Brain** |
| **1A:**  **Stress because cortisol** (N = 74) | 71.6 | 16.2 | 12.2 | 5.00 | 1.54 | 5.604 | <.001 |
| **1B: Cortisol because stress** (N = 71) | 81.6 | 8.5 | 9.9 | 5.28 | 1.35 | 7.975 | <.001 |
| **Between-Subjects:** |  | -1.170 | .244 |
| **Sets** |
| **2A: Set because member** (N = 56) | 78.6 | 12.5 | 8.9 | 5.45 | 1.50 | 7.213 | <.001 |
| **2B: Member because set** (N = 64) | 75 | 17.2 | 7.8 | 4.95 | 1.58 | 4.832 | <.001 |
| **Between-Subjects:** |  | 1.748 | .083 |
| **Euthyphro** |
| **3A: Good because God approves** (N = 76) | 68.4 | 15.8 | 15.8 | 4.87 | 1.58 | 4.799 | <.001 |
| **3B: God approves because good** (N = 80) | 73.7 | 16.3 | 10.0 | 4.88 | 1.62 | 4.838 | <.001 |
| **Between-Subjects:** |  | -.026 | .980 |

Table 2 shows that all four our predictions about people’s judgements about whether what Maria said was an explanation for her, are supported. The results of our one-sample t-tests (which, recall, show us whether the mean response differs significantly from a value of 4) appear to show that overall, people think that what Maria is saying is an explanation for her, in *all* the conditions we tested.

However, the one-sample t-test’s do not tell us whether the majority of people in a given condition judge that what Maria says is true, or is an explanation for her: for that we must look to the results of our one-way 𝜒2-tests. We will start with the proportions of people who report that what Maria says is true, reported in Table 3 below. Surprisingly, we found that the majority of people in all conditions thought that what Maria says is true.

*Table 3. Results of* 𝜒*2-tests for level of truth agreement.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Condition** | **%Yes** | **%No/I** | 𝜒2 | ***p*-value** |
| **Mind/Brain** |
| **1A:**  **Stress because cortisol** (N = 74) | 71.6 | 28.4 | 13.838 | <.001 |
| **1B: Cortisol because stress** (N = 71) | 77.5 | 22.5 | 21.423 | <.001 |
| **Independence test:** |  | .651 | .420 |
| **Sets** |
| **2A: Set because member** (N = 56) | 85.7 | 14.3 | 28.571 | <.001 |
| **2B: Member because set** (N = 64) | 71.9 | 28.1 | 12.250 | <.001 |
| **Independence test:** |  | 3.370 | .066 |
| **Euthyphro** |
| **3A: Good because God approves** (N = 76) | 65.8 | 34.2 | 7.579 | .006 |
| **3B: God approves because good** (N = 80) | 67.5 | 32.5 | 9.800 | .002 |
| **Independence test:** |  | .051 | .821 |

While the majority of people in all conditions thought that what Maria says is true, we thought that which kind of vignette participants saw might have an effect on the relative majority. In order to investigate this possibility, we performed separate 𝜒2 of independence tests for level of truth agreement within each kind of vignette. The results of these separate independence tests show that there were no significant differences in proportions between any pair of vignettes. That is, there is no difference in proportions of participants who agree that what Maria says is true between each kind of vignette in either the Mind/Brain case, Sets case, or Euthyphro case.

Now onto the proportions of people who report that what Marias says, is an explanation for Maria reported in Table 4 below. Once again, we found that the majority of people in all conditions thought that what Maria says is an explanation for her.

*Table 4. Results of* 𝜒*2-tests for level of explanation agreement.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Condition** | **%Yes** | **%No/I** | 𝜒2 | ***p*-value** |
| **Mind/Brain** |
| **1A:**  **Stress because cortisol** | 71.6 | 28.4 | 13.838 | <.001 |
| **1B: Cortisol because stress** | 81.7 | 18.3 | 28.521 | <.001 |
| **Independence test:** |  | 2.046 | .153 |
| **Sets** |
| **2A: Set because member** | 78.6 | 21.4 | 18.286 | <.001 |
| **2B: Member because set** | 75 | 25 | 16.000 | <.011 |
| **Independence test:** |  | .213 | .644 |
| **Euthyphro** |
| **3A: Good because God approves** | 68.4 | 31.6 | 10.316 | .001 |
| **3B: God approves because good** | 73.8 | 26.3 | 18.050 | <.001 |
| **Independence test:** |  | .539 | .463 |

While the majority of people in all conditions thought that what Maria says is an explanation for her, we once again thought that which kind of vignette people saw might have an effect on the relative majority. So in order to investigate this possibility, we again performed separate 𝜒2 of independence tests for level of explanation within each kind of vignette. The results of these separate independence tests show that there were no significant differences in proportions of people who agree that what Maria says is an explanation, between any pair of vignettes.

Finally, we hypothesised that there would be no significant difference between participants’ mean levels of agreement regarding whether an assertion of ⌜x *because* y⌝ is true in a context, and their mean levels of agreement regarding whether an assertion of ⌜x *because* y⌝ is an explanation for the subject in that context. To test this we compared within-subjects people’s level of truth agreement and level of explanation agreement with separate paired-samples t-tests, reported in Table 5 below. We found no significant difference between an individual’s level of truth agreement and level of explanation agreement across any of the 3 pairs of vignettes.

*Table 5. Results of within-subjects t-test for level of truth agreement vs. level of explanation agreement.*

|  |  |  |
| --- | --- | --- |
| Level of Truth Agreement vs. Level of Explanation Agreement | ***t-value*** | ***p*-value** |
| **Mind/Brain** |
| **1A:**  **Stress because cortisol** | .656 | .514 |
| **1B: Cortisol because stress** | 1.341 | .184 |
| **Sets** |
| **2A: Set because member** | 1.117 | .269 |
| **2B: Member because set** | 1.050 | .298 |
| **Euthyphro** |
| **3A: Good because God approves** | .405 | .686 |
| **3B: God approves because good** | -.076 | .940 |

**5 Discussion**

Let’s group our nine hypotheses into several classes. The first class are hypotheses regarding whether assertions of ⌜x *because* y⌝ or of ⌜y *because* x⌝ were judge by participants to be true. Let’s say that a context is one in which *salience matches,* just in case participants are assessing an assertion of ⌜x *because* y⌝ at a context in which intervening on [y] in order to intervene on [x] is made salient. *Mutatis mutandis* for an assertion of ⌜y *because* x⌝.

We hypothesised that mean levels of truth agreement for utterances of both ⌜x *because* y⌝, and ⌜y *because* x⌝ in a context in which salience matches, would be above 4. Further, we judged that a majority of participants would judge that an assertion of ⌜x *because* y⌝ is true, and a majority would judge that an assertion of ⌜x *because* y⌝ is true, when asserted in a context in which salience matches. Both of these hypotheses were vindicated across all six vignettes.

It is unsurprising that assertions of ⌜x *because* y⌝ in the matching salience context were judged to be true, and also unsurprising that a majority of participants made this judgement. That’s because these judgements align with philosophers’ intuitions about what explains what. In 1(a) Maria asserts that Fred is stressed *because* he has high cortisol levels. So she is asserting that something about Fred’s mental state is explained by something about his brain state. In 2(a) she asserts that the singleton set containing Eminem exists because Eminem exists. Again, this is just the direction of explanation that philosophers suppose to obtain. Finally, in 3(a) she asserts that eating snails is good because God approves of it. This case is less clear-cut, insofar as there is genuine philosophical disagreement about which direction explanation proceeds in. But given that there is this disagreement, it cannot be surprising that participants were inclined to judge that Maria’s assertion is true.

What is more surprising, however, is that in (1b), 2(b) and 3(b), participants also judged that Maria’s assertion (this time of ⌜y *because* x⌝) was true, and, further, that a majority made that judgement.

In 1(b) participants agreed that when Maria asserts that Fred has high cortisol levels because he is stressed, that she says something true. In 2(b) participants agreed that when Maria asserts that Eminem exists because the singleton set containing Eminem exists, that she says something true. In 3(b) participants agreed that when Maria asserts that God approves of eating snails because eating snails is good, that she says something true. These results are particularly interesting, since in at least two of the three cases the direction of explanation proceeds in the *opposite* direction to the direction most philosophers take to obtain. Case 2(b) is particularly salient in this regard, since as far as we know, no philosopher has suggested that one can explain the existence of a member of a set in terms of the existence of the set itself. Yet overall, our participants agreed that what Maria said, when she said that Eminem exists because the singleton set containing Eminem exists, was true. Moreover, in all these cases a *majority* of participants judged that what Maria said was true. That is important. After all, a mean of significantly above 4 in these conditions could be the result of a majority of participants *weakly* *disagreeing* that the utterance is true (i.e. choosing 3 on the Likert scale) and a small minority *strongly* *agreeing* that it is true (i.e. choosing 7). In fact though, the mean above 4 is the result of a majority of participants judging that the utterance is true. That is a fairly startling result.

Moreover, we find the same pattern of results when we look at the second class of hypotheses. The second class of hypotheses are those regarding whether an assertion of ⌜x *because* y⌝, or of ⌜y *because* x⌝, are judged to be an explanation for the subject at the context.

We hypothesised that mean levels of explanation agreement for assertions of both ⌜x *because* y⌝, and ⌜y *because* x⌝ in a context in which salience matches, would be above 4. Further, we judged that a majority of participants would judge that an assertion of ⌜x *because* y⌝, and an assertion of ⌜y *because* x⌝, are explanations for the subject at a context in which salient matches. . Again, all of these hypotheses were vindicated across all six vignettes.

As before, it ought be unsurprising that mean levels of explanation agreement for assertions of ⌜x *because* y⌝ were above 4. After all, this is the direction in which philosophers suppose that explanation proceeds. Much more surprising is that mean levels of explanation agreement for assertions of ⌜y *because* x⌝ were also above 4. That is, in cases 1(b) 2(b), and 3(b) participants judged that Maria’s assertion was an explanation for her, when at her context salience matched. It was also the case that a majority of participants made this judgement.

There is one other important result gleaned from this study. There was no significant difference between participants’ mean levels of truth agreement regarding whether what Maria said in vignette 1(a), 2(a) and (2c) was true, and their means levels of truth agreement regarding whether what Maria said in vignette 1(b), 2(b) and 3(b) was true. That is, when we look at vignette 1(a) and 1(b), and look at participants’ mean levels of truth agreement, we find no significant difference, and *mutatis mutandis* for 2(a) and 2(b) and for 3(a) and 3(b). So participants did not have statistically significantly different levels of agreement that when Maria said that Fred is stressed *because* he has high cortisol levels, she said something true, than when she said that Fred has high cortisol levels *because* he is stressed. Likewise, participants did not have statistically significantly different levels of agreement that when Maria said that the singleton set containing Eminem exists *because* Eminem exists, she said something true, than when she said that Eminem exists *because* the singleton set containing Eminem exists, she said something true. *Mutatis mutandis* for the vignettes about God’s state of approval. Moreover, we find the same pattern of results when we look at participants’ mean levels of explanation agreement across the three pairs of vignettes. In each case, mean levels of explanation agreement between vignette 1(a) and 1(b) are not statistically significantly different, and likewise for the remaining two pairs of vignettes.

This, too, is a startling result. Consider, in particular, the vignette about Eminem and the singleton set containing Eminem. A majority of participants judged that when Maria said that Eminem exists *because* the singleton set containing Eminem does, she said something true, and that what she said was an explanation for her. Further, a majority of participants judged that when Maria said that the singleton set containing Eminem exists *because* Eminem does, she said something true, and that what she said was an explanation for her. Even so, one would have expected participants to *more strongly* agree to the latter two statements than to the former two, even given the change of context. After all, philosophers have typically thought that the fact that the singleton set containing Eminem exists is no explanation at all for the fact that Eminem exists. That there is a context in which people *as strongly* agree that this is an explanation, as they agree that the converse is an explanation at a different context, is very striking indeed.

All up, the vindication of hypotheses (1) (8) shows that people’s judgements about which direction explanation proceeds in, is sensitive to features of the context of assertion, and in particular, are sensitive to which intervention is made salient at that context. This pattern of judgements, however, is one that is impossible for extant grounding-based theorists to accommodate, given that they suppose the grounding relation to be asymmetric. They must say that *at most,* one of these pairs of judgements is right: namely the one that aligns with the direction in which the grounding relation runs.

But if that is the avenue that such theorists take, then it is difficult to see what licenses the supposition that grounding has the formal features it does. After all, this supposition has always been supported by an appeal to our intuitions and judgements about explanation. If we jettison these judgements and intuitions as being useful in developing an account of metaphysical explanation then it’s not clear what our motivation is, for supposing that grounding has the formal features it does, much less that metaphysical explanation has those features. Indeed, it’s not even clear that if one entirely jettisons the idea that an account of metaphysical explanation ought be sensitive to our patterns of judgements, that we haven’t simply changed the subject, and are not theorising about something else entirely.

Of course, none of this is to say that there is *no* way for grounding-based accounts, quite generally, to accommodate this data: far from it. Grounding-based theorists could accommodate this data if they jettisoned their claim that grounding is an asymmetric relation. If, instead, grounding is a symmetrical relation, and [x] and [y] are related by a grounding relation, then it follows that both ⌜x *because* y⌝ and ⌜y *because* x⌝ are true. It might then be that whether an assertion of ⌜x *because* y⌝ is an act of explanation is an agent-relative and context sensitive matter. The point, then, is not that there is some deep problem with posting grounding relations to back metaphysical explanations, but rather, that if one supposes that relation to be asymmetric, then one cannot in fact accommodate people’s pattern of judgements. So even allowing that grounding-based theorists can try to push any context sensitivity and agent-relativity into acts of explanation rather than explanations themselves, their current account still cannot accommodate the patterns of judgements that we in fact see. We leave it to grounding-based theorists to decide how they ought proceed in light of this evidence.

This still leaves many avenues of empirical investigation open. It is natural to interpret these results as telling us that by changing the context in certain ways we can change in which direction people think explanation proceeds. But our results do not in fact show that this is so. For all we know, it might be that in *both* contexts people are inclined to judge that assertions of ⌜x *because* y⌝ *and* ⌜y *because* x⌝ are true, and are explanations for the relevant subject. That is to say, we do not know that people would assess an utterance of ⌜y *because* x⌝ as false, or as not an explanation for the subject, in a context in which intervening on [x] in order to intervene on [x] is made salient: that is, a context in which salience *does not* match. So perhaps context does not *switch* the direction of explanation that people judge to obtain at all: perhaps in fact people think that explanation proceeds in both directions, *regardless* of which intervention is salient. We think that unlikely, but further investigation would be needed to show that this is not so.

Quite generally, we think that insofar as theorists of metaphysical explanation take themselves to be engaged in theorising that is intended to be sensitive to our general pattern of judgements about metaphysical explanation, or acts thereof, it is time to turn our attention to a deeper investigation of these judgements. We cannot know what a good theory of metaphysical explanation ought accommodate, without having a much better, and more nuanced, understanding of that pattern of judgements. We hope to begun, but only just begun, this task here.

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1. We use corner quotes here to signify that ⌜x *because* y⌝ is a *kind* of sentence, where x and y are variables that range over sentences. We will speak of ‘an instance of ⌜x *because* y⌝’ when we intend to talk about a particular instance of the schema. We will simply speak of ⌜x *because* y⌝ in order to talk about all instances of the schema. [↑](#footnote-ref-1)
2. Though there are some, such as Wilson (2018) and Schaffer (2016), who think that metaphysical explanation is a sort of non-diachronic causation. [↑](#footnote-ref-2)
3. Some authors have left open that the presence of this explanatory connection may be necessary, but not sufficient, for instances of ⌜x *because* y⌝ to be true. For instance, Audi (2012:119-120) writes: “For all I have said, it may be only a necessary condition of an explanation’s holding between two facts that a relation of determination hold between them. More might be required to fill out a sufficient condition (such as pragmatic or epistemic factors).” We return to this issue later. [↑](#footnote-ref-3)
4. Here, we understand facts to be structured parts of the world comprised of objects, properties and relations. [↑](#footnote-ref-4)
5. [x] should be read as ‘the fact that x’. [↑](#footnote-ref-5)
6. Or, if you prefer, the fact is the truthmaker for the sentence being true. Note that if we simply said that [x] is the fact that obtains iff the sentence x is true, we would not be distinguishing between facts in a sufficiently fine-grained way. See Duncan, Miller and Norton (2017) for a discussion of metaphysical explanation and hyperintensionality. [↑](#footnote-ref-6)
7. Schaffer (2009), Audi (2012), and Rodriguez-Pereyra (2005) endorse truth-conditions along these lines. [↑](#footnote-ref-7)
8. Exceptions include Norton & Miller (2017), Wilson (2014), Shaheen (2017), and Baron & Norton (2019). [↑](#footnote-ref-8)
9. See Schaffer, 2009, 2010; Raven, 2011, 2015; Rosen, 2010; Audi, 2012a, 2012b; Cameron, 2008). [↑](#footnote-ref-9)
10. Though see Rodriguez-Pereyra’s for the view that metaphysical explanation is not asymmetric (or irreflexive). See also Jenkins (2011) on irreflexivity. [↑](#footnote-ref-10)
11. See Schaffer (2010). [↑](#footnote-ref-11)
12. See for instance Thompson (2016) and Maurin (2018). [↑](#footnote-ref-12)
13. Thompson (2016); Maurin (2018). [↑](#footnote-ref-13)
14. Clearly each person’s judgments about anything at all trivially depend on the mental states of some subject, namely that person making the judgment, and hence trivially depend on features of context if the person making the judging is assessing whether a metaphysical explanation is true at their own context. We will say a metaphysical explanation non-trivially depends on features of the context being assessed just in case either (a) it depends on non-mental features of the context or (b) it depends of mental features of the context, and the context being assessed is not the same as the context of the individual making the judgment or (c) it depends on mental features of the context being assessed, which is the same as the context of the judgment, and those mental states provide *reasons* for the judgment, rather than being the mental states on which the judgment supervenes, or which cause the judgment. [↑](#footnote-ref-14)
15. These are people in a large database who partake in a range of online experiments, usually in psychology, behavioral economics and sociology, for monetary compensation. While they have significant experience in completing online experiments, there is little reason to think that these people will have a particular interest in, or knowledge of, philosophy. [↑](#footnote-ref-15)