Believe is not a propositional attitude verb

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Abstract

I develop a challenge for the view that *believe* is a propositional attitude verb based on two observations: (i) *believe* can embed *in O*, and (ii) *in O* does not denote a proposition. To develop my challenge, I argue (section 2) that *believe* is not homonymous or polysemous between a propositional belief-that and non-propositional belief-in interpretation, and (section 3) that type-shifting *in O*'s denotation to a proposition falsely predicts that belief-in and belief-that reports are equivalent.

1 Introduction

What does *believe* contribute to the logical form of a belief-that report like *Ayesha believes that Rebecca swims*? A relation to a proposition, say propositional attituders (e.g. Schiffer 2003; King 2007; Forbes 2018).[1,2] For them, *believe* is a propositional attitude verb.

I argue that *believe* doesn't contribute a relation to a proposition to the logical form of belief-that reports. My argument is based on two observations. First, as belief-in reports like *Boris believes in his friends* and *Carol believes in sets* illustrate, *believe* can also embed the prepositional phrase *in O* instead of a *that*-clause.[3,4] But, second, *in O* intuitively doesn't denote a proposition, but a property of an eventuality, just like other prepositional phrases headed by *in* (e.g. *in the middle of the night* and *in the pool*).[5] Given these two observations, my argument goes as follows. Suppose that, in belief-in reports, *believe* contributes a relation to a proposition, just as it's meant to do in belief-that reports. Then *in O* leaves *believe*'s proposition slot unsaturated. But suppose that nothing else saturates that slot. Then we get a semantically ill-formed output. Yet belief-in reports are well-formed. Something has gone wrong.

The remainder of this paper defends the two claims we just supposed for the sake of the argument. Section 2 argues that, in belief-in reports, *believe* makes the same contribution as in belief-that reports: I suggest that relevant diagnostics support neither the homonymy nor the polysemy of *believe* across the two environments. Section 3 then argues against one way to get something other than *in O*'s denotation to saturate *believe*'s proposition slot: I suggest that type-shifting the property denoted by *in O* to a proposition falsely predicts that belief-in reports are equivalent to belief-that reports.[6]

[1] By 'proposition' I mean whatever is the object or content of belief-that, e.g. a set of worlds (e.g. Stalnaker 1984), a structured proposition (e.g. King 2007), or a property of individuals (e.g. Pearson 2013).

[2] Forbes' belief predicate in the metalanguage isn't a propositional attitude verb, as it's a monadic predicate of a state. However, *believe* in the object language is still treated as a propositional attitude verb.

[3] For discussion of belief-in see Price 1969; Szabó 2003; Textor 2013; Kriegel 2018; Wimmer forthcoming.

[4] Other reports where *believe* doesn't embed *that*-clauses include *Ayesha believes Rebecca* and *Sue believes the claim that sets exists*. For reasons of space, I focus on belief-in reports, but see e.g. Moltmann 2022; Djärv 2023; 2024 for discussion of the former, and Moulton 2009; Uegaki 2016 for discussion of the latter kind of report.

[5] I assume that *in O* is, and *believe in* (without *O*) isn't, a constituent. Results from constituency tests in Osborne 2015, pp. 252–5 and Müller 2023, pp. 6–11 either support this assumption (e.g. coordination, cf. examples 1 and 2) or can be explained away (e.g. question formation). For reasons of space, I don't apply these tests here.

[6] As an alternative to the type-shifter, propositional attituders might say that *S believes in O*, together with further context, merely makes salient a proposition about O that saturates *believe*'s proposition slot. In this

2 *Believe* Makes The Same Contribution

I now argue that *believe* makes the same contribution to the logical form of belief-in and belief-that reports. I focus on two ways to say that *believe* makes different contributions across these environments: the first is to say that *believe* is homonymous; the second is to say that it's polysemous.[7,8] Either way, *believe* would be ambiguous: there would be one reading or sense—the belief-that reading or sense—that denotes a relation to a proposition, and another—the belief-in reading or sense—that denotes something else. My argument works by highlighting the lack of evidence for saying that *believe* makes different contributions across belief-in and belief-that reports: I argue that relevant diagnostics support neither the homonymy nor the polysemy of *believe* across these environments. Given Grice 1978's modified Occam's razor, we thus have reason to deny that *believe* makes different contributions.

More specifically, I consider results from three diagnostics: the zeugma, contradiction, and pedantic correction tests.[9] Take the zeugma test first. Here, we form a pair of sentences containing the target word such that the two sentences get plausible interpretations only given different interpretations of the target. We then conjoin these sentences so as to elide one of the constituents containing the target word. If the resulting sentence is odd, that's evidence that the target is ambiguous, i.e. homonymous or polysemous. If not, that's evidence that the target is unambiguous or polysemous. For instance, *This bottle is made from beautiful glass and very tasty* sounds odd. That's evidence for the homonymy or polysemy of *bottle*.[10]

Failing the zeugma test doesn't distinguish unambiguous from polysemous expressions because polysemous expressions can fail the test. Consider a case of 'co-predication', where *bottle* occurs once, but with two senses: *David drank and smashed the bottle* (Felappi 2019, p.5). Here, *drank* triggers *bottle*'s content-sense; *smashed* its container-sense.

Crucially, *believe* fails the zeugma test. If we control for confounds, we get sentences that don't sound odd. Thus *believe* is either unambiguous or polysemous. Consider:

1. (a) Sue believes in the abundance of human error and (Salma) that everyone is wrong about sets.
   (b) Sue believes that everyone is wrong about sets and (Salma) in the abundance of human error.

2. (a) John believes in all the teachings of his church and (Jamal) that he is a prophet.
   (b) John believes that he is a prophet and (Jamal) in all the teachings of his church.[11]

way, they might argue, *S believes in O* functions analogously to *S believes*, which is acceptable in contexts that make salient a proposition that saturates *believe*'s proposition slot. One issue for this reply resembles that for the type-shifter section 3 considers. If a belief-in report's truth-conditions merely concern believing the salient proposition about O, propositional attituders falsely predict that belief-in reports are equivalent to belief-that reports. So they must say that *in O*'s denotation contributes something more. But if they say this, a theory that just relies on *in O*'s denotation, and not on a proposition made salient by *in O*, is potentially just as predictive, but simpler. Relatedly, relying on context in the way the reply does is risky: what if context makes salient a proposition about something other than O? Which proposition is now predicted to saturate *believe*'s proposition slot, the one about O, raised to salience by *in O*, or the one not about O?

[7]What polysemy is is much debated (cf. Vicente and Falkum 2017), with some even denying that polysemy differs from monosemy (e.g. Fodor and LePore 2002; Brody and Feiman 2023). I grant propositional attituders their preferred account of polysemy, as long as it's consistent with my use of the diagnostics below.

[8]By focusing on homonymy and polysemy, I leave open whether *believe* makes a distinct contribution in a belief-in report because it's context-dependent. For lack of space, I can't discuss this option here, though I'm not aware of diagnostics (see e.g. Viebahn and Vetter 2016) that favour it over the claim that *believe* makes the same contribution across belief-in and belief-that reports.

[9]My discussion of the zeugma and contradiction tests are deeply indebted to Mankowitz 2024's helpful summary of how they work and what limitations they have. My use of the pedantic correction test follows Felappi 2019.

[10]For recent discussions of the zeugma test see Liu 2023; Liebesman and Magidor 2024; Mankowitz 2024.

[11]Due to confounds, other elided conjunctions sound at least somewhat odd. Consider pseudogapping:

Unlike with the zeugma test, failing some other tests does distinguish unambiguous from polysemous expressions, allowing me to argue that *believe* isn't polysemous. Take the contradiction test.[12] We take a sentence with our target word and first affirm, then deny it. If we can get a context where this is acceptable, that's evidence our target is ambiguous. If we can't, that's evidence our target is unambiguous, i.e. neither homonymous nor polysemous. For instance, in a context where you drank the content of a bottle of juice, *What you drank was a bottle, but it wasn't a bottle* is acceptable. That's evidence that *bottle* is homonymous or polysemous.

Crucially, *believe* fails the contradiction test. Even in contexts where belief-that and belief-in are both salient, first affirming, then denying belief is unacceptable.

Context 1: Boris believes in his friends but doesn't believe that he'll need their help soon.
Context 2: Carol believes in sets but doesn't believe that everyone is wrong about them.

3. # {Boris/Carol} believes, but doesn't believe.

Another test to distinguish a polysemous expression like *bottle* from an unambiguous one is the pedantic correction test used by Felappi (2019, p. 5) (see also Textor 2011). In cases of co-predication, a pedantic speaker (imagine a strict English teacher) may correct one's use of the polysemous word, e.g. by replying to *David drank and smashed the bottle* that *David didn't drink the BOTTLE: he drank its CONTENT*. Yet even a pedantic speaker may not correct the uses of *believe* in 1 and 2 in the way they could correct our use of *bottle*: responding to 1a with *Sue doesn't BELIEVE that everyone is wrong about sets: she THINKS so* or to 2a with *John doesn't BELIEVE in all the teachings of his church: he has FAITH in them* would be odd.

- ?? John believes in all the teachings of his church and Jamal does that he is a prophet.
- ?? John believes that he is a prophet and Jamal does in all the teachings of his church.

But pseudogapping is generally infelicitous with belief reports:

- ?? John believes in all the teachings of his church and Jamal does in all the teachings of his.
- ?? John believes that he is a prophet and Jamal does that he is another prophet.

Topic shift also gets us odd-sounding sentences:

- – ? Boris believes in his friends and that it's raining.
  – ?? Boris believes that it's raining and in his friends.
- – ? Carol believes in sets and that it's raining.
  – ?? Carol believes that it's raining and in sets.

But topic shift also makes elided conjunctions of two belief-that reports odd-sounding:

- ? Boris believes that his friends are trustworthy and that it's raining.
- ? Carol believes that sets exist and that it's raining.

Changing the order of conjuncts can also get us odd-sounding sentences, even if we stay on topic:

- – Boris believes in his friends and that his mum is wrong about them.
  – ?? Boris believes that his mum is wrong about his friends and in his friends.
- – Carol believes in sets and that everyone else is wrong about them.
  – ?? Carol believes that everyone else is wrong about sets and in them.

But the contrast between the first and second members of each pair suggests that the second's oddity isn't due to ambiguity in *believe*, but due to something that affects only the second member. This suggestion is supported by corresponding non-elided conjunctions that sound similarly odd:

- ?? Boris believes that his mum is wrong about his friends and he believes in his friends.
- ?? Carol believes that everyone else is wrong about sets and she believes in them.

Whatever goes wrong with the non-elided conjunctions likely goes wrong with their elided counterparts too. Perhaps, asserting the first conjunct triggers some form of inference to the second, rendering assertion of the second redundant. Believing that everyone is wrong about sets might (given contextual factors we assume in our interpretation) presuppose believing in them; likewise for believing that one's mum is wrong about one's friends and believing in one's friends. If so, the second conjuncts assert what's presupposed by the first, as in

- ?? Sue quit smoking and used to smoke.

[12] Viebahn (2018) argues that the contradiction test doesn't distinguish unambiguous from polysemous expressions. But see Mankowitz 2024 for a reply.

In sum, *believe* fails the zeugma, contradiction, and pedantic correction tests.[13] That's evidence that *believe* doesn't make different contributions across belief-that and belief-in reports.

3 A Type-Shifter Does Not Help

Given that *believe* makes the same contribution across belief-that and belief-in reports, propositional attituders must say that *in O* somehow indirectly provides a propositional argument to saturate *believe*'s proposition slot. One way to do this is to appeal to a type-shifter, a function that takes the property denoted by *in O* as input and returns a proposition as output; which proposition is returned can be constant or context-dependent. One key consequence of using a type-shifter is that we predict belief-in reports to just attribute a belief-that. For if (in a context) the type-shifter converts the target property F into a proposition p, we predict the equivalence (in that context) of *S believes in O*, where *in O* (in that context) expresses F, and *S believes that P*, where P (in that context) expresses p.

Based on some of the observations I've made in Wimmer forthcoming, section 4, I argue against this equivalence: belief-in reports don't just attribute a belief-that. My argument works by comparing Price's (1965; 1969) type-shifter-friendly theory with part of my forthcoming type-shifter-unfriendly theory. I argue that my theory is preferable to Price's: it covers the same variety of cases, but doesn't multiply senses.[14,15]

Price distinguishes two senses of belief-in reports. Based on differences between examples like 4 and 5, he speaks of a 'factual' and an 'evaluative' sense (1965, pp. 12–3).

4. Carol believes in sets.
5. Daniele believes in public transport.

For Price, 4 is, at least by default, interpreted factually. That's because, at least by default, it seems equivalent to *Carol believes that sets exist.*[16] By contrast, 5 is, at least by default, interpreted evaluatively. The evaluative sense is meant to require that one positively evaluates what one believes in. For Price (1965, p. 18), that evaluation takes the form of an evaluative belief-that: 5 attributes to Daniele the belief that public transport is a highly efficient way of transporting persons and commodities, and that that's a good thing too. A belief-in report's evaluative sense thus attributes a belief that what one believes in has a certain property, and that it's a good thing that it does so. For Price, then, any belief-in report—whether factual or evaluative—is equivalent to a belief-that report, just as a type-shifter predicts.

I've previously argued that belief-in reports don't have distinct factual and evaluative senses, and that their different meanings are due to context-dependence instead (Wimmer forthcoming, sections 3 and 4). On my view, if one believes in O, one must (i) believe O to have a contextually salient property, e.g. to be a highly efficient way of transporting persons and commodities. And it must (ii) be the case that one would have contextually relevant positive feelings (e.g. satisfaction

[13] *Believe* also fails three further tests Cruse (1986, pp. 59–66) uses to distinguish homonymous from unambiguous and polysemous expressions. For reasons of space, I cannot go through these tests here.

[14] Further observations in Wimmer forthcoming, section 5 suggest an evidential requirement on belief-in reports, on which if one believes in O, one either has reason to form a belief-that before gathering easily available sensory evidence or cannot easily gather that sensory evidence. Unfortunately, presenting the argument against type-shifter-friendly theories based on these observations is beyond the scope of my present discussion.

[15] For lack of space, I can't test for distinct factual and evaluative belief-in readings or senses and so can't argue that there's no necessity to multiply senses here. But see Wimmer forthcoming, section 2.

[16] At best, this apparent equivalence only holds by default. In a context where it's salient whether sets can act as the foundation for mathematics, 4 can appear equivalent to *Carol believes that sets can act as the foundation for mathematics*. For Price, this would still be a factual interpretation. And in a context where it's also salient whether it's a good thing that sets can do this, 4 can be interpreted as also attributing the belief that it's a good thing that sets can do this. Here, Price would interpret 4 evaluatively. Parallel points also apply to 5.

or gratitude) should one learn that O has the property one believes it to have or would have contextually relevant negative feelings (e.g. disappointment or a sense of betrayal) should one learn that O doesn't have that property.[17]

(ii) requires that one is somehow affectively invested in what one believes in. But that investment neither entails nor is entailed by an evaluative belief-that. Thus, my 'affective requirement' is distinct from Price's 'evaluative belief requirement' and entails that belief-in reports aren't equivalent to belief-that reports.[18] For this reason, I use the remainder of this paper to argue for my requirement. I highlight that it's satisfied across the cases that force Price, given his evaluative belief requirement, to distinguish factual and evaluative senses. Given this, the affective requirement has the benefit of allowing us not to multiply senses.

Price's evaluative belief requirement for 5 explains a key intuition. Suppose Daniele becomes a 'localist' and now believes that it's a bad thing to transport persons and commodities—people and goods better stay where they are. Now, 5 isn't true, at least not on its default reading (Price 1965, p. 18). For Price, that's because Daniele now lacks the required evaluative belief that it's a good thing that public transport is a highly efficient way of transporting persons and commodities. But my affective requirement explains this intuition too. For if Daniele is a localist, he wouldn't be satisfied (disappointed) should he learn that public transport is (isn't) an effective way of transporting persons and commodities.

Crucially, my affective requirement also covers cases Price's evaluative belief requirement doesn't cover. Sometimes subjects have a belief-in, yet believe what they believe to be the case to be neutral or even bad, rather than good. These subjects don't satisfy Price's evaluative belief requirement. This forces Price to posit a distinct factual sense of belief-in reports that doesn't have the evaluative belief requirement. As an example, consider:

> Context: 6-year-old Gino believes it's bad to have monsters in one's wardrobe. Despite his parent's efforts to convince him otherwise, he believes there are monsters in his wardrobe.
>
> 6. Gino believes in monsters. True

Gino is like localist Daniele in believing what he believes to be the case to be bad, rather than good. Yet unlike localist Daniele, Gino has a belief-in. 6 is true.

Unlike Price's evaluative belief requirement, my affective requirement covers cases like Gino's. Thus, on my view, such cases don't force us to multiply senses. My requirement's crucial innovation is that it's possible that one would have some positive feeling should one learn that a proposition one believes is true or some negative feeling should one learn that that proposition isn't true, even if one doesn't believe its truth to be a good thing.[19] With this in mind, consider Gino. Though he wouldn't be grateful if he learned that there are monsters in his wardrobe, he'd feel a kind of satisfaction. For he'd be proven right, against the 'better judgment' of his parents. Conversely, Gino would feel a kind of disappointment if he learned that no monsters are in his wardrobe. For he'd be proven wrong, in line with the 'better judgment' of his parents. The satisfaction or disappointment Gino would feel in these cases would concern his role as a knower: they would be 'epistemic' or 'intellectual' feelings.[20]

[17] Conditions (i) and (ii) are individually necessary, but not jointly sufficient conditions for believing in O. To get jointly sufficient conditions we also need the evidential requirement mentioned in fn. 14.

[18] More precisely, the affective requirement only entails that belief-in reports are sometimes not equivalent to belief-that reports. See Wimmer forthcoming, fn.12 for discussion.

[19] It's also possible if one doesn't believe that it would be a good thing to learn that that proposition is true.

[20] One might reply that Gino believes that it would be good for him, in his role as a knower, to learn that there are monsters. This would allow Price to say that even Gino satisfies a version of the evaluative belief requirement. Thus, Price wouldn't need to multiply senses. However, this reply raises difficult questions. Must Gino have such a belief to believe in monsters? And if he had such a belief, wouldn't he also have a belief that it would be good for him, in his role as a knower, to learn that no monsters are in his wardrobe? After all, learning the truth is obviously good for one in one's role as a knower. But if so, could his intellectual satisfaction be due to his

Given what I've said about Gino, one might worry that the affective requirement predicts incorrect truth-conditions for 5. At least by default, 5 entails that Daniele would be satisfied in his role as a public transport advocate, not in his role as a knower, should he learn that public transport is an effective way of transporting persons and commodities. But, to cover Gino's case, didn't I weaken the affective requirement to merely entail satisfaction in some role? No. Context determines in what role one would have to be satisfied (disappointed) should one learn that the things one believes in do (don't) have the property they're believed to have. This yields the right predictions about Gino and Daniele. Gino's role as a knower is made salient by his parents' contextually given attempt to convince him that there are no monsters in his wardrobe. By contrast, Daniele's role as a public transport advocate is made salient by the default context we assume when hearing of someone believing in public transport.

In sum, my theory covers the same variety of cases as Price's, but doesn't multiply senses. And crucially, its affective requirement entails that belief-in reports aren't equivalent to belief-that reports. My theory is type-shifter-unfriendly.

4 Conclusion

I've argued that *believe* isn't a propositional attitude verb based on two observations: (i) *believe* can embed *in O*, and (ii) *in O* doesn't denote a proposition. To develop my argument, I suggested (section 2) that *believe* isn't homonymous or polysemous between a propositional belief-that and non-propositional belief-in interpretation, and (section 3) that type-shifting *in O*'s denotation to a proposition falsely predicts that belief-in and belief-that reports are equivalent.

As presented here, my argument isn't decisive. Fns. 6 and 20 noted two possible replies, along with some key questions for them. But other replies are possible too. For instance, propositional attituders might argue that positing homonymy or polysemy without independent evidence is still worth it, because it's necessary for getting the overall best compositional semantics of belief-in and belief-that reports. I haven't said anything to rule out this reply so far. But, I want to close by sketching, albeit very briefly, a semantics that puts pressure on it.

Let *believe* contribute the property of being a belief state to belief-that and belief-in reports (cf. e.g. Borer 2005; Pietroski 2005; Lohndal 2014; Elliott 2017). And let its embedded *that*-clause denote the property of having a certain propositional content (e.g. Kratzer 2006; Moltmann 2013; Moulton 2015; Elliott 2017; Bassi and Bondarenko 2021). Finally, drawing on Wimmer forthcoming, but omitting the evidential requirement mentioned in fn. 14, let *in O* denote the property of (i) having the propositional content that O has a contextually salient property and (ii) requiring a contextually salient affective investment in O having that property. *Believe* can now compose with a *that*-clause and with *in O* via predicate modification.[21] This gives propositional attituders a compositional semantics to contend against.[22]

Acknowledgements. I thank Guy Longworth, Kristina Liefke, Giulia Martina, the audience at PLM6, and anonymous reviewers for AC2024 and several journals for discussion. Some of the work on this paper was supported by a postdoc stipend from the Fritz Thyssen Foundation.

belief that it would be good for him, as a knower, to learn that there are monsters? If it was due to it, his belief that it would be good for him, as a knower, to learn that there are no monsters would be predicted to also give rise to intellectual satisfaction upon learning that there are no monsters. But would he have that intellectual satisfaction? Unfortunately, pursuing issues like these is beyond the scope of my present discussion.

[21] Even if an embedded *that*-clause was to denote a proposition, a dedicated syntactic head could convert that proposition to the property of having that proposition as content. Cf. Borer (2005) and Lohndal (2014): according to them, the internal argument of a verb is introduced by an additional syntactic head Asp.

[22] This semantics also explains restrictions on composition: e.g. the oddness of *S believes that P in O* is, roughly speaking, explained by two facts: (i) per eventuality, only one proposition can fill the thematic role of being its content; (ii) both *that P* and *in O* give us a proposition to fill that role.

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