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Belief

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Belief is the attitude we have when we regard something as true. People regard a large number and variety of things as true: for example, that $2 + 2 = 4$, that God exists, that Trenton is the capital of New Jersey, that Jakarta is bigger than a breadbox, that birds are cute, etc. What is commonly taken to unify the category of beliefs is the role they play in the production of intentional action: Believing a given claim typically disposes one to act as if that claim were true.

History

Beliefs (along with motivational states such as desires) are the fundamental posits of folk psychology, or our everyday understanding of why people act in the ways that they do. Why did Sydney walk to the fridge? Intuitively, it is because she thought that there was beer in the fridge (belief) and wanted one (desire). As such, theorizing about *belief* has been going on since the advent of folk psychology.

As a target of academic study, the nature of belief has been explored at length by philosophers, both ancient and modern. Of particular interest to philosophers has been the relationship between belief and knowledge (e.g., the ancient Greek philosopher [Plato \[1992\]](#) in the *Theaetetus*); the relationship between belief and faith (e.g., the Danish philosopher [Søren Kierkegaard \[1985\]](#) in *Philosophical Fragments*); the question of whether people can, in some sense, choose what to believe (e.g., the American philosopher and psychologist [William James \[1897/1979\]](#) in *The Will to Believe*); and the question of what makes beliefs rational or justified (e.g., the French philosopher and scientist [René Descartes \[1641/2013\]](#) in the *Meditations on First Philosophy*).

Contemporary discussion of belief in the philosophy of mind took shape with the advent of functionalism in the mid-20th century. Functionalists argued that mental states should be characterized in terms of the causal roles they play in the cognitive systems of which they are a part, such as the way belief and desire are characterized above: If someone desires that P and believes that doing Q will bring about P, they will, all else equal, do Q ([Putnam, 1967/1980](#)). The details of this view evolved over time, resulting in two distinct attitudes toward the scientific study of belief. On the one hand, versions of functionalism that characterized the relevant causal roles in terms of empirically discoverable, psychological laws have tended to take a more favorable attitude toward the idea that belief could be a proper object of scientific study (this view is sometimes called psychofunctionalism; see, e.g., [Block, 1980](#); [Fodor, 1987](#); [Porot & Mandelbaum, 2021](#)). On the other hand, versions of functionalism that characterized the relevant causal roles in terms of common-sense generalizations or conceptual truths have tended toward various degrees of skepticism about the prospects of a scientific study of belief (see, e.g., [Churchland, 1981](#); [Dennett, 1987](#)).

In the cognitive sciences, beliefs have appeared under a few different names: as “beliefs” or “states of opinion” in anthropology and sociology, as “attitudes” or “cognitions” in social psychology, and as “expectations” or “credences” in cognitive psychology. Hesitancy to use the term *belief* likely has something to do with the fact that, in many natural languages (such as English, Urdu, Swahili, etc.), the phrase “I believe that...” is often used specifically to signify strong, faith-like conviction in the claim

believed or, alternatively and somewhat paradoxically, to signify that the speaker is uncertain about the claim in question. The word “belief,” and for that matter the concept *belief*, however, are not to be confused with the mental state of belief itself [see [Concepts](#); [Conceptual Analysis](#)].

Much contemporary work on belief in the cognitive sciences has its roots in an early tradition in social psychology, going back to work by [Fritz Heider \(1958\)](#) on “attitude change” and [Leon Festinger’s \(1957\)](#) development of cognitive dissonance theory. Although social psychologists have traditionally preferred to use the term “attitude” in place of “belief,” other cognitive scientists are less wary of the nomenclature. For instance, neuropsychologists running placebo studies typically use the term *belief* as such and conceptualize their studies as investigations into the effects of belief. They may, for example, give one group of subjects nicotine-less cigarettes, give another group cigarettes with nicotine, and then tell half of the participants in each group that they are smoking nicotine-less cigarettes and the other half that they are smoking regular nicotine-filled cigarettes. Here, the aim is to create four groups: two that correctly believe they are smoking nicotine-filled or nicotine-less cigarettes and two that incorrectly believe they are smoking nicotine-filled or nicotine-less cigarettes. Researchers can thereby determine how much relative control on behavior the belief has versus the physical properties of the cigarette. Interestingly, believing you are getting nicotine does more for cravings and reward-prediction error learning than actually receiving nicotine ([Gu et al., 2015](#)).

Core concepts

Propositional attitudes

Belief is standardly classified as a species of propositional attitude, a kind of cognitive relation between a thinker and a proposition (like that it will rain or that it will snow). Other propositional attitudes include desire, hope, intention, doubt, etc. Each attitude is individuated from the others by the distinctive ways they relate thinkers to propositions.

Functionalism

What distinguishes belief from the other propositional attitudes? Many cognitive scientists and philosophers endorse some form of functionalism about belief ([Putnam, 1967/1980](#); [Quilty-Dunn & Mandelbaum, 2018b](#)). As in the case of other functionalist theories of mental states, belief’s causal role is typically specified in terms of a set of

1. Input conditions, which specify what kinds of events typically cause belief acquisition or revision;
2. Output conditions, which specify what kinds of actions beliefs typically cause; and
3. Internal role conditions, which specify how beliefs interact with other mental states and processes.

On the input side, most take beliefs to be more-or-less evidence-responsive: forming a belief (e.g., the belief that it is raining outside) is typically the result of acquiring evidence that supports the content of the belief (e.g., perceptual experience as of rain). On the output and internal role sides, most take beliefs

to play a key role in action guidance: Believing typically causes a person to behave in a way that would tend to satisfy their desires if the content of that belief were true. Beliefs are also taken to serve as fixed points in deliberation: Believing that it is raining outside typically involves a disposition to treat that belief's content as true in instances of inference and reasoning where that content is relevant.

Types of beliefs: Occurrent, standing, tacit, implicit

Eve believes that birds are cute. This belief may be at the front of her mind, perhaps as she is watching a sparrow take a dust bath. In that case, her belief is what researchers call an *occurrent belief*. When the belief is not at the front of her mind, it is instead a *standing* (or *dispositional*) belief. Standing beliefs do not all have the same standing; some are easier to access than others, and different prompts will trigger activation and recall differently.

The distinction between *occurrent* and *standing* beliefs coheres with the view that beliefs are mental representations. On this picture, beliefs are *occurrent* when their representational contents are activated (e.g., brought into working memory); when these contents are not *occurrent*, they are stored, and the beliefs can then be said to be *standing*.

Researchers also sometimes talk about *tacit beliefs*. Presumably, you do not currently believe that Ronald McDonald was not the president of the United States; however, one may want to say you *tacitly* believed it, in the sense that, although you had never considered the idea before (so it was not an *occurrent* or *standing* belief), you would have assented to the idea were it presented to you. On the representationalist picture, *tacitly* believing Ronald McDonald was not the president of the United States is presumably a matter of this belief's contents being easily derivable from things that one already believes.

Sometimes, *tacit belief* and *implicit belief* are treated synonymously: *implicit beliefs* are beliefs not explicitly represented (so not *occurrent* or *standing*) but whose contents are easily derivable from things one does explicitly represent. In the social psychology literature, however, the term “*implicit belief*” takes on a different sense and is typically used to describe attitudes (often, racist or sexist attitudes) that conflict with those one consciously endorses ([Kurdi & Mandelbaum, 2023](#)). This is consistent with *implicit beliefs* being a species of *standing belief*; in that case, they would be *standing beliefs* that conflict with other *standing beliefs* one holds, particularly *explicit beliefs*. Here, *implicit* and *explicit* do not refer to the representational structure of belief but instead refer to the tests that operationalize belief, either explicitly asking participants to report their beliefs (e.g., “Do you believe that all birds fly?”) or probing one's beliefs through more indirect measures (e.g., via the Implicit Association Test, a test which probes automatic responses, such as reaction times, to target categories, such as men and women).

Questions, controversies, and new developments

Does anything play the belief role? Realism vs. eliminativism

Beliefs are a posit of both everyday and scientific explanations of behavior. But this does not entail that there really are such things: Explanations have, at various times, posited things like witches and phlogiston (a substance early chemists thought was released in combustion), neither of which, given our current state of scientific understanding, are thought to actually exist. One point of disagreement in the literature concerns whether something similar might be true of belief.

Realism about belief claims that our appeals to belief are in good standing, though they differ in what kind of thing plays the belief role.

Eliminativism claims that there are no such things as beliefs: The term *belief*, like the terms *witch* and *phlogiston*, does not refer. Some eliminativists have been motivated by the thought that advancements in neuroscience will obviate the need to appeal to attitudes like belief and desire at all ([Churchland, 1981](#)). Others have worried more specifically about certain classes of cognitive models (typically, connectionist models), arguing that the success of these models threatens the existence of beliefs and desires ([Ramsey et al., 1991](#); for an updated discussion of the relevant issues, see [Millière & Buckner, 2024](#); [Piantadosi, 2023](#)).

What kind of thing plays the belief role? Representationalism vs. superficialism

Assume that realism about belief is true. What kind of thing plays the belief role? Representationalism claims that beliefs are mental representations contained in the mind that play a causal role in producing behavior. A popular version holds that beliefs are mental representations with a particular kind of structure (i.e., sentences in a language of thought; [Fodor, 1975](#); [Quilty-Dunn et al., 2023](#)). Superficialists ([Schwitzgebel, in press](#)), in some form or other, deny representationalism, identifying beliefs with patterns of dispositions that can be shared by both representational and nonrepresentational cognitive systems alike ([Davidson, 1984](#); [Dennett, 1987](#); [Ramsey, 1931](#); [Ryle, 1949](#); [Schwitzgebel, 2002](#)). According to this view, beliefs are analogous to personality traits: Just as there need not be a single mental state that makes one extraverted, so too, the superficialist claims, there need not be a single mental state that suffices for having a particular belief ([Schwitzgebel, in press](#)).

How many things play the belief role? Splitters vs. maskers, full vs. degreed belief

Some states appear to behave in ways that look evidence-resistant, despite fitting the other parts of the functional profile of belief. Examples include religious beliefs, political beliefs, and certain kinds of clinical delusions. On the basis of these differences, some philosophers and cognitive scientists have argued either (1) belief is in fact not constitutively evidence-responsive (for argument based on the case of delusions, see [Bortolotti, 2009](#); cf. [Mandelbaum & Porot, 2023](#)) or (2) these attitudes in fact comprise a different species of mental state, distinct from ordinary beliefs (for the case of religious and political beliefs, see [Van Leeuwen, 2023](#); [Van Leeuwen & Lombrozo, 2023](#)). These arguments are subject to the criticism that belief's evidence-responsiveness in these cases is systematically masked by other factors, such as ego-maintenance ([Flores, in press](#); [Helton, 2020](#)).

A similar debate along these lines concerns the distinction between full belief (often just “belief”) and degrees of belief (credences). So far, we have been assuming that, for any given proposition, one can either believe it or fail to believe it (by believing its negation, suspending judgment, or not forming any attitude toward the claim at all). Many formal models of behavior and cognition—most notably, Bayesian models in epistemology and decision theory ([Titelbaum, 2022](#)) and cognitive science ([Griffiths et al., 2024](#))—focus instead on how confident the thinker is in a given proposition, modeling these degrees of belief as real numbers on a scale from 0 (which represents absolute certainty that the proposition is false) to 1 (which represents absolute certainty that the proposition is true). Are full beliefs and credences distinct kinds of belief-like attitudes? Or does one reduce to the other (as would be the case if, for example, fully believing a proposition amounted to investing maximal credence in it)? This debate has a long history in epistemology (for a recent review, see [Jackson, 2020](#)) but has recently also received attention from empirically minded philosophers (e.g., [Nagel, 2021](#); [Weisberg, 2020](#)). A related set of questions concerns the relationship between belief, credence, and other belief-like attitudes, such as acceptance ([Cohen, 1992](#)) and endorsement ([Fleisher, 2018](#)).

How are beliefs acquired? Cartesian vs. Spinozan theories

There are two broad theories of belief acquisition. One is the Cartesian theory according to which when you encounter a new proposition you can assent to it, reject it, or suspend judgment altogether. The Cartesian hypothesis is that all of these processes are controlled ones, with acquisition and rejection subserved by similar, if not identical, mental processes ([Gilbert, 1991](#)). In contrast, the Spinozan theory maintains that propositions are immediately believed once one encounters them. Only after the initial acceptance can they be rejected. For the Spinozan, acceptance and rejection are subserved by different processes. Acceptance is automatic and effortless and can happen in parallel, even when one is not attending to the proposition. Rejection, however, is an optional and effortful process, one that proceeds serially (not in parallel) and demands attention and working memory resources ([Mandelbaum, 2014](#); [Pion et al., in press](#)).

How are beliefs changed? Rationalism and its critics

Another topic of debate is how existing beliefs change in response to incoming evidence. Here, the main point of disagreement concerns the extent to which standard cases of belief-updating obey rational standards. On one extreme, some hold that beliefs are updated largely in line with rational standards (e.g., Bayesian rules for updating probabilities; [Goodman et al., 2015](#); [Leider & Griffiths, 2020](#)) or the laws of deductive logic ([Quilty-Dunn & Mandelbaum, 2018a](#)). Such approaches must account for instances where beliefs seem to update in ways that contravene such rational standards. Another approach argues, from the prevalence of deviations from rational standards, to the conclusion that belief-updating may not be aimed at conserving truth but instead at the preservation of one’s sense of self (see [Festinger et al., 1956](#)) or the functioning of one’s psychological immune system ([Gilbert et al. 1998](#)). Such an approach predicts that, when the beliefs one most self-identifies with (e.g., the belief that one is a smart, or good, person) are under threat, evidence will be manipulated to save those beliefs no matter what to ensure the continued

persistence of one's self-image ([Mandelbaum, 2019](#)). Note that the two approaches just outlined need not be competitors: They may, instead, simply represent two different possible routes to belief change.

How are beliefs stored? Web of belief vs. fragmentationalism

The distinction between occurrent and standing beliefs presupposes that beliefs can be stored. Philosophers often express this thought by describing beliefs as sentences inscribed in an internal belief box, though the metaphor is only meant to mark the assumed functional dissimilarities between believing that some claim is true and other attitudes one may take toward the claim, like supposing or imagining that it is true. When it comes to actual theories of belief storage, there are, broadly speaking, two main models. On the web of belief model ([Fodor, 1983, 2000](#); [Quine & Ullian, 1978](#)), all of one's beliefs are housed in a single, interconnected web, where changes to any belief can change the entire topology of the web. In contrast, fragmented models of belief ([Bendaña & Mandelbaum, 2021](#); [Mandelbaum, 2016](#)) hold that there is no single web of belief. Instead these models posit that beliefs are housed in distinct fragments, such that updating one belief does not entail any change in any other beliefs, even ones evidentially or logically related. Note that these models need not posit a single token representation, which counts as one's belief that P. One may have multiple, redundant copies of a belief, each housed in a different fragment, enmeshed in different associative and inferential networks.

Who has beliefs? Belief in infants, nonhuman animals, and artificial systems

Some philosophers have thought that belief requires language ([Davidson, 1982](#)), and so, they have concluded that nonlinguistic creatures, like human infants and nonhuman animals, do not have beliefs. Where one comes down on this question clearly depends on where one comes down on the question of what beliefs are and how much and what kind of mental structure they require. In fact, most of the views just surveyed are compatible with belief in nonlinguistic creatures; a nonlinguistic creature might have the dispositions associated with acting as if they believed that there is food behind an occluder, and/or represent there being food being an occluder in an internal language of thought, all without speaking any natural language, like English or Chinese.

Finally, much of the classic literature on belief took artificial systems, like thermostats and chess-playing computers, to only count as having beliefs if one was sufficiently dispositionalist about the nature of belief (or, otherwise, to only count as having beliefs in a parasitic sense). The advent of large language models, and the advancement of theoretical work concerning whether and how such artificial systems represent, puts pressure on this assumption; if these systems' representational capacities are sufficiently complex, then they might count as believers according to a wider range of theories of belief than previously thought [see [Large Language Models](#)].

Broader connections

The very broad role that beliefs are supposed to play in reasoning and action guidance suggests they are one of the key components of thought and mental representation [see [Mental Representation](#)].

Though belief is usually treated as the central example of a propositional attitude, many of the issues related to belief (particularly, the debate between realists and eliminativists) apply equally to other propositional attitudes (like desire and intention). Issues related to the structure of belief (particularly, the debate between representationalists and superficialists, and within representationalism, debates of the language of thought) intersect with discussions concerning the structure of thought more generally (see [Quilty-Dunn & Mandelbaum, 2018b](#)) [see [Language of Thought](#)].

Much exciting work on belief in the cognitive sciences investigates not belief itself but the ways people think and talk about belief. This work includes work on the development of theory of mind (which explores when the concept BELIEF becomes available for use), as well as work on attitude reports in natural language [see [Theory of Mind](#)]. Focus on our concepts and terms for belief has tended to draw attention away from the mental state to which these concepts and terms refer. In recent years, however, the situation has changed considerably. Cognitive scientists and philosophers are paying increasing attention to the mental state itself, making the current moment something of a renaissance period for work on belief as such.

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