

An Unfortunate Outcome of Banning Statistical Support for Belief

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The concept of Banning Statistical Support for Belief (BSSB) is often used to respond to the lottery paradox. This paper will claim that the rational status of everyday beliefs is inadequate due to BSSB having strong consequences on everyday beliefs. The paper will first make a case for avoiding BSSB due to its impact on everyday beliefs. Second, the paper will discuss motivations for adopting BSSB. I will then discuss distinctions between credence and beliefs as attitudes, aiming to prove that since many of our beliefs are statistically based, BSSB is highly impactful. I will finish by addressing objections and clarifying why it is important to care about the consequences BSSB poses.

1 Introduction

Banning Statistical Support for Belief (BSSB) is a popular way of responding to the lottery paradox¹; however, this paper will argue that it has significant consequences for the rational status of everyday beliefs that have not been adequately appreciated. The argument is as follows: a vast number of our beliefs have a statistical basing. Thus, BSSB will entail that many of our beliefs are not rational; instead, we should hold high credences attitudes. By making light of the wide-ranging impact of endorsing BSSB as traditionally stated, I aim to give a reason to motivate avoiding BSSB as a strategy if possible. In §2, I will establish the motivations for adopting BSSB. In §3, I will draw a distinction between credence and belief as attitudes. §4 will seek to prove that many of our beliefs are statistically based, and so BSSB has wide-ranging consequences. Finally, §5 will consider objections to my position while §6 will suggest some reasons as to why we might care about this consequence.

2 Why Ban Statistical Support for Belief

To assert BSSB is to argue that believing P based on the purely statistical evidence (“P will occur 95% of the time” for instance) is irrational.² This move was initially motivated by Nelkin as a response to the lottery paradox. There are two popular variants of the lottery paradox in the literature; we will be concerned with the rationality version. We can lay out the paradox formally as follows:

1. It is rational for the agent to believe that their ticket (t1) will lose.

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1. Laid out formally in §2

2. Dana K. Nelkin, “The Lottery Paradox, Knowledge, and Rationality,” *Philosophical Review* 109, no. 3 (2000): 373–409.

2. If it is rational for the agent to believe (t1) will lose, then it is rational for them to believe that (t2) will lose and so on for every ticket in the lottery.
3. It is rational for the agent to believe (t1) will lose, and (t2) will lose and so on for each ticket in the lottery (from 1&2).
4. Given that the agent does not think the lottery is rigged it is rational for them to believe that either (t1) will win or (t2) will win and so on for each ticket in the lottery.
5. It is inconsistent for the agent to believe the conjunction in (3) and that one of the tickets will win.
6. This inconsistency is apparent to the agent.
7. It is rational for the agent to believe things that they are aware are inconsistent (from 3,4,5,6).
8. It is not rational to believe things which are inconsistent and be aware of the inconsistency.
9. **Conclusion:** 1,2,4,5,6 or 8 are false (by reductio)

Of the potential candidates for rejection (1) seems the most plausible. (2) holds because the agent would need some particular reason to doubt their ticket over others, and that is lacking. (4) seems reasonable given how the case is set up as doubting that the agent can believe that one ticket will win, despite that being the point of the lottery, would presumably entail a broad and undesirable scepticism. (5) is an uncontroversial logical truth and (6) is reasonable if we grant that any rational lottery ticket holder who believes they will lose would be able to reason themselves into recognising this inconsistency by reflection. Denying (8) would mean denying consistency requirements for rational beliefs that are clearly inconsistent, which is not intuitively appealing, giving us a reason to seek an alternative.

Given that denying (1) seems the most desirable, we need an explanation of why the agent is not rational in believing that their ticket will lose. Nelkin notes that the statistical evidence used to justify (1) is a peculiar kind of justification for a belief because it does not entail a causal connection between the belief and the facts that make the belief true. For a belief such as "the furniture is still in the room I just left" the evidence one has ("there have been no peculiar sounds") causally connects the belief to the truth. If the furniture had somehow been moved, one would not expect to have the evidence (you would have heard peculiar sounds) and so would not have that belief. However, in the lottery case, the agent's evidence (losing is statistically likely) is not connected to the truth of the matter in the sense that whether the ticket is a winner has no bearing on whether losing is statistically likely.

Another way of understanding the dissimilarity between statistical and non-statistical evidence is to note how we act differently in light of being wrong depending on the type of evidence. You might think rationality aims to guide one to the truth; when one fails to believe true propositions, they either failed in being rational or were missing some evidence. In the furniture example, had it turned out that the furniture had been moved, then you would seek an explanation for why you lacked evidence to indicate that this was the case. But this does not happen in the statistical case; when you believe P due to statistical evidence and then learn not-P, there is no obvious candidate for evidence that you should look for to explain your false belief.

Nelkin takes this odd nature of statistical evidence to explain why it cannot make the agent's belief that they will lose rational. However, the question then emerges as to what the agent is rational in believing and to this Nelkin suggests "My ticket will probably lose"³. I take it to be more accurate to say that the agent is not rational in forming any belief, they are instead rational in forming a high credence that their ticket will lose. In the next section, we will consider how belief and credence are distinct attitudes.

3 The Credence Belief Distinction

E.G. Jackson, amongst other scholars, has made a distinction between two types of propositional attitudes: beliefs and credences. Beliefs are coarse-grained, you can believe P, disbelieve P, or remain undecided between P and not-P. Credences

3. Nelkin, 400.

are fine-grained, usually stated as a number 0-1 where having 1-credence(P) represents being maximally confident in P and 0-credence(P) being maximally confident in not-P.⁴ This shows why BSSB entails that the agent in the lottery case is rational in holding a credence but not a belief; credence attitudes can capture the degreed aspect of the attitude that Nelkin ascribes to them. How exactly these two attitudes relate is an open question, a complete account of which is beyond the scope of this paper. This section will be concerned with the more modest goal of demonstrating that there are good reasons to think that credences and beliefs are distinct attitudes. To do this, I will cast doubt on both the belief-first and credence-first views.

3.1 Belief-First Views

Belief-first views argue that credences can be reduced to beliefs; that is, having a credence is just a matter of having a particular belief. Typically, they take a form similar to the following:

Belief-First: For S to have credence of n in p just is for S to believe (Mp), where M is an epistemic modal and M and n correspond to each other.

Epistemic modals are terms that describe the likelihood of an outcome, and they can be precise (the chance of p is 50/50) or imprecise (p will probably happen). An important thing to note about belief-first in its conventional form is that it is content-enhancing, as it relates some credence attitude with content P to a belief with the more complicated content of Mp .

Jackson argues against the belief-first view.⁵ Her argument relies on two notions, grasping, and edge cases, which have been defined below:

Grasping: One grasps proposition P when one understands P such that they can form a propositional attitude with P as its contents.

Edge Cases: Edge cases occur when there is a proposition P such that one can grasp P but could not grasp a proposition more complex than P .

If we accept one can form an attitude with a proposition as its contents only if they can grasp P , then the following problem emerges:

1. There may exist some proposition P such that S grasps P but would not grasp a more complicated proposition than P .
2. Because S can grasp P , they can form a credence with P as its content.
3. Mp is more complicated than P .
4. If S cannot grasp Mp , then they cannot believe Mp .
5. S cannot believe Mp (1,3,4) yet can have a credence in P (2).

Belief-first views entail that one cannot have a credence without having some related belief. Edge cases would show that it is possible to have some credence P and yet not be able to form the related belief entailed by belief-first because it would be too complex to grasp.

4. Elizabeth Jackson, "The Relationship Between Belief and Credence," *Philosophy Compass* 15 (6 2020): 1–3.

5. Elizabeth Jackson, "Why Credences Are Not Beliefs," *Australasian Journal of Philosophy*, 2021, 1–8.

It might be natural at this point to question whether or not edge cases exist. Why accept that there is some maximal point of complexity beyond which we could not understand a given proposition? Let me give a couple quick points in their defence here.

Firstly, complexity is a clear barrier for belief. By this I mean that we can make a proposition harder to believe by making it more complex and otherwise keeping its content the same. Examples of this are rife in philosophy; too often have I been confounded by a passage of Kant only to find myself amenable to the idea once it was properly explained by someone more learned. If we do things properly then the difference between the propositions expressed by Kant and my learned friend is not content but form. Once the form is simpler the content becomes graspable.

Secondly, how we learn indicates that the complexity of a proposition can be a barrier to our learning it. Grasping the Incompleteness Theorems, for instance, is not something that is immediately possible for most of us. Rather we start by learning simpler propositions that can form the basis for more complex propositions, from which, an understanding of the Incompleteness Theorems can emerge. I take this progression from simple to complex propositions to be a sort of pushing of the edges where the process of learning just is an expansion of the complexity of the propositions that we can grasp. That we must learn the simple to grasp the complex indicates an edge case that can be pushed.

All this to say, if we have reason to believe that there are some types of edge cases, then Jackson has posed a compelling problem for the common belief-first view. This gives us some basis for thinking that credences are not merely beliefs and so I will move on to motivating the second half of this section's argument: that beliefs are not merely credences.

3.2 Credence-First Views

Counter to belief-first views, credence-first takes it to be the case that having a belief is in some way reducible to having a particular credence. A conventional example of a credence-first view is the Lockean thesis which posits a normative connection between having a high credence and forming a belief⁶.

Lockean Thesis: S ought to believe P iff S has a rational high credence in P.

One immediate reaction that one might have to this view is the question of how one construes "high credence" in a way that is not ad hoc. The level freest from this concern would be credence 1, but this comes with the worry of entailing a widespread scepticism, there are presumably few things in which we can be maximally confident.

Beyond ad hoc concern, there are reasons to be sceptical that beliefs are purely a matter of sufficient credence. Consider cases of naked statistical evidence (as suggested by L. Buchak⁷) where you have two potential culprits, Jake and Barbara, for a crime, and you know that Jake belongs to a demographic that is 10 times more likely to have committed the crime than Barbara. Given this demographic information, you ought to be able to form the very high credence that Jake committed the crime, but it seems no matter how likely Jake's demographic is to have committed the crime, only evidence that directly connected Jake to the crime could justify believing Jake had done it. What this suggests is that there may be concerns that bear on the rationality of belief (moral concerns for instance), but do not bear on credences such that one cannot simply reduce beliefs to having a specific credence.

4 How BSSB Entails That Many Beliefs are Irrational

Having established the motivations behind BSSB and that it entails denying rational belief to the agent and replacing it with rational credence (a distinct attitude), I now turn to the primary concern of this paper, establishing the wide-ranging

6. Jackson 2020a, 6.7

7. Lara Buchak, "Belief, Credence, and Norms," *Philosophical Studies* 169 (2014): 285–311.

consequences of BSSB. This objection builds on a suggestion made by D. Christensen, where it seems several of our beliefs have the following form:⁸

P only if not-Q.

Where our evidence for disbelieving Q is purely statistical. To see how this works, consider the following case. Mary tells you that she is driving to New York for the weekend, and that following Saturday, when someone asks you where Mary is, you tell them that she is in New York. However, because you are aware that sometimes things go wrong, you know that there are factors that would have prevented her from getting there; perhaps she was hit by a truck (Q). These factors not occurring form a necessary condition for Mary being in New York. Note that to rationally believe that Mary is in New York, you must disbelieve Q, it would not be enough to withhold belief. If the person had asked you if Mary had been hit by a truck on the way to New York, it would not be right for you to assert that you are undecided on the matter but believe that she made it. However, our grounds for believing that Mary was not hit by a truck are purely statistical; we have no evidence other than the fact that being hit by a truck while driving is rare.

And this shows how BSSB has unintuitive consequences. Suppose our belief that Mary was not hit by a truck cannot be made rational by inferring from the statistical evidence. In that case, we cannot rationally believe a necessary condition for Mary being in New York, and if we cannot do that, then we cannot rationally believe that Mary is in New York. Reflection will show that many epistemic beliefs have this structure, from Biden being president depending on him not having died, to your fridge still working because it has not suffered a random power surge. BSSB has the consequence of entailing that these beliefs are not rational. As with the lottery paradox, it seems that what we are rational in holding instead is a high credence in these matters.

5 Objections and Rebuttal

This section will address the concern that our belief that Mary is in New York is not based on disbelieving these Q outcomes (those being outcomes where if Q is true P cannot be the case). You might think that, when forming our belief, it never occurs to us that a truck hitting Mary was possible and so we never form a belief about that outcome. Instead, our belief is based on the far simpler inference of "Mary said she would be in New York; therefore, she is in New York" where Mary's testimony represents a form of non-statistical evidence which is therefore free of BSSB concerns. Under this model, statistical evidence need never enter the picture. In response, I note that my point regarding Q outcomes being a necessary condition stands, so if questioned about these possibilities, one does have to commit themselves to disbelieving them to rationally maintain the belief that Mary is in New York. In these cases, your basis for disbelieving Q is presumably still statistical. The alternative would be inferring that not-Q from your belief that P. But given that P is itself based on testimony, this has the counter-intuitive result of suggesting that Mary's testimony can justify your disbelief in Q; despite it seemingly being the case that there is no explanatory connection between the testimony and the possibility of Q. When asked why you do not believe that Mary was hit by a truck, it would not be satisfactory to respond, "because she told me she would be in New York and therefore I believe she is in New York and was not hit by a truck".

One can press this concern about whether statistical evidence ever enters the picture absent of individuals questioning you directly about Q outcomes. In her 2020 paper, Jackson argues for a saliency-based distinction between two types of evidence.⁹

B-Evidence: Evidence for P that does not make salient not-P.

C-Evidence: Evidence for P that does make salient not-P.

8. David Christensen, "Putting Logic in its Place: Formal Constraints on Rational Belief," chap. Deductive Constraints: Problem Cases, Possible Solutions (Oxford University Press, 2004), 33–68.

9. Elizabeth Jackson, "Belief, Credence, and Evidence," *Synthese* 197, no. 11 (2020): 5073–5092, <https://doi.org/10.1007/s11229-018-01965-1>.

Where salience is simply a matter of whether a possibility is being considered, P is salient when one considers P as a potential outcome.

Given this, I suggest the following objection.¹⁰ C-evidence cannot make belief rational for similar reasons as we had in §2. Namely, when you base a belief on C-evidence and then find out that you were wrong, there is no obvious candidate for fault in the reasoning process. In contrast, if you base your belief on B-evidence, you will seek an explanation as to why your reasoning led you to a faulty belief. In the lottery case, we clearly have C-evidence, but this is not the case for typical epistemic beliefs; a belief like "Mary is in New York" is an example of B-Evidence. Because our evidence in typical epistemic cases never make salient not-P (by making us consider Q possibilities), we have a way of distinguishing said cases from the lottery cases. Additionally, because Q is never made salient in the first place, we have a plausible reason to think that not-Q does not base our epistemic beliefs.

In response, I would like to show why we might be sceptical of how appropriate this salience requirement is. First, note that under this argument if Q possibilities are made salient, then the belief will once again appear irrational under BSSB because of the difficulties of finding non-statistical evidence against Q as explained above. Jackson admits that whether a piece of evidence is type B/C can depend on factors other than the contents of the evidence; her example is how the evidence is presented.¹¹ A more pressing concern is that the different mental states of two agents can also affect whether evidence is B/C. Imagine another Mary case where Mary has told two different people, Vanya and Elliot, that she is going to drive to New York. The previous night Vanya had watched a documentary on road safety, and when they receive the testimony evidence, their mind is drawn to the possibility that Mary might crash. Because of this, a Q possibility is made salient, and therefore Vanya cannot rationally believe that Mary will be in New York. Elliot, on the other hand, had seen that same documentary five years prior, but because he has not thought about it for some time, his mind is not drawn to the possibility of a crash when he gets Mary's testimony. So for him, the testimony remains B-Evidence, and he can rationally believe that Mary will be in New York. The difference between Vanya and Elliot is not their body of evidence. The difference is simply in how recently they have considered the relevant evidence, and yet this difference is a deciding factor between which of them can rationally believe P under the saliency model. That a factor such as this could be the difference-maker in whether a person is rational is presumably not a desirable consequence if we agree that such factors have little to do with rationality and therefore gives us reason to doubt the saliency view.

As a final remark in defence of my view I would like to point out that your belief in P is seemingly affected by changes in your attitude towards Q. Consider another Mary case where car accidents are relatively common (they occur 50% of the time), in this world; you could not form a belief regarding Q even if BSSB were not a concern as you have no evidence to form a belief either way. Even absent any questions about car accidents or the possibility being made otherwise salient it is not clear that one could rationally believe that Mary had made it New York without being able to rationally disbelieve Q. I take this observation to suggest that your belief P being rational is sensitive to your disbelief in Q even when you form no conscious attitude towards Q. If this is the case, then the BSSB concerns I have been raising may be present regardless of what one has to say about salience.

6 Why Care?

Even if you accept the assertion that BSSB has the wide-ranging consequences that I have described, you may still doubt that it matters; there is a question of why exactly we should care if many of our beliefs are not rational, but a high credence attitude is. §3 indicates why we should think the attitudes are distinct, but the question of why we should seek to have one over the other is a separate issue. As with §3, a full account of this question is beyond the scope of this essay, though here I will briefly point towards two reasons that indicate that the difference between belief and high credence is one that matters.

First is an appeal to our intuitions about what beliefs we take ourselves to have. You might think that it is intuitively wrong for an argument to have the conclusion that we do not rationally believe a great many everyday things,

10. Jackson's paper does not directly make this point; it is concerned with improving on BSSB. However, I take her view to apply to our current context.

11. Jackson 2020b, 5088.

and this is one of the reasons that we are motivated to find ways to reject scepticism. The results of BSSB that I've been arguing for are not nearly the level of widespread scepticism, but the supposed high credence attitudes are not the common sense understanding of the sort of attitude that we usually take ourselves to have to these epistemic propositions.

Second is an appeal to the idea that beliefs simplify reasoning.¹² Suppose one has a vast number of credences that relate to a specific subject. In that case, the calculations that one must do to reason on that subject while maintaining rationality can become very complicated. For instance, if certain credences are high, then the reasoning process can be simplified by appealing to a belief with the same content. This gives us a reason to maintain the commonsense view that we have many beliefs with which to reason.

Before concluding, I would like to acknowledge that if one is an eliminativist about belief (that being the position that belief is not an attitude which we need to include in our ontology), then you are unlikely to care if BSSB has the consequences I suggest. However, eliminativists still have reason to consider the work done in this essay valuable because it shows how BSSB can support eliminativism by revealing that many everyday beliefs are irrational.

7 Conclusion

This essay has argued that BSSB has the consequence of entailing that many of our epistemic beliefs are not rationally held and that instead they should be replaced with a high credence attitude. This conclusion has been reached by suggesting that many beliefs can only be rationally held if one believes that the required necessary conditions are met. These beliefs in the necessary conditions are usually based purely on statistical inference which cannot make beliefs rational according to BSSB.

I have furthered my view as follows. By arguing that many of our everyday beliefs do have this statistical basing by showing how one is rationally compelled to appeal to these statistical facts when questioned about Q possibilities. I then demonstrated that an appeal to saliency introduces problematic features as difference makers, when questioning whether one is rational. And finally, I suggested that believing P is sensitive to your attitude towards Q even when these attitudes are not conscious. While this paper does not directly doubt BSSB, it is expected that the wide-ranging consequences of the move give us a reason to seek a different solution. I have justified this expectation first by showing that credences and beliefs are distinct attitudes and then suggesting that belief plays a pivotal role in simplifying reasoning that credences cannot.

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