

No Justificatory Closure without Truth^{*}

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Abstract: It is well-known that versions of the lottery paradox and of the preface paradox show that the following three principles are jointly inconsistent: (*Sufficiency*) very probable propositions are justifiably believable; (*Conjunction Closure*) justified believability is closed under conjunction introduction; (*No Contradictions*) propositions known to be contradictory are not justifiably believable. This paper shows that there is a hybrid of the lottery and preface paradoxes that does not require *Sufficiency* to arise, but only *Conjunction Closure* and *No Contradictions*; and it argues that, given any plausible solution to this paradox, if one is not ready to deny *Conjunction Closure* (and analogous consistency principles), then one must endorse the thesis that justified believability is factive.

Keywords: Epistemic justification; justified believability; the lottery paradox; the preface paradox; the closure principle; the consistency principle; the truth connection.

1. Introduction

Consider the following three principles.

Sufficiency: For any epistemic agent A , if some proposition φ is very probable given A 's evidence (where φ is 'very probable' if and only if its probability is equal to or exceeds some specified threshold value t), then A is justified to believe φ .

Conjunction Closure: For any epistemic agent A , and any two propositions φ and ψ , if A is justified to believe φ at time t and A is justified to believe ψ at t , then A is justified to believe that $\varphi \ \& \ \psi$ at t .¹

No Contradictions: For any epistemic agent A , A is never justified to believe a proposition known to be contradictory.²

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¹ Importantly, *Conjunction Closure* is a principle about which propositions are justifiably believable, and it is not (and does not entail) any claim about how to extend one's justified beliefs by deduction.

² *Sufficiency*, *Conjunction Closure*, and *No Contradictions* are principles about which propositions one is justified to believe; or, in other words, they are about justified believability. As such, they are not principles about which propositions one justifiably believes.

Taken individually, each of these principles seems to be intuitively true. However, two well-known paradoxes show that they are jointly inconsistent; that is, Henry Kyburg's [1961, 1970] lottery paradox and D.C. Makinson's [1965] preface paradox.

This paper shows that there is a hybrid of the lottery paradox and the preface paradox that does not require *Sufficiency* to arise, but only *Conjunction Closure* and *No Contradictions*; and it argues that, since any plausible solution to this paradox must either deny *Conjunction Closure* or endorse the thesis that justified believability is factive, the acceptance of *Conjunction Closure* surprisingly implies the acceptance of the thesis that justified believability is factive. This paper also shows that there is an analogous version of the hybrid paradox that only requires the following intuitively plausible principle to arise: propositions known to be obviously inconsistent are not justifiably believable. Accordingly, it argues that, for roughly the same reasons considered in relation to the previously-introduced version of the paradox, any plausible solution to this other version of the hybrid paradox must either deny the principle that generates it or endorse the thesis that justified believability is factive; and, therefore, this paper also argues that the acceptance of this principle surprisingly implies the acceptance of the thesis that justified believability is factive.

Section 2 presents traditional versions of the lottery paradox and the preface paradox. *Section 3* shows why denying *Conjunction Closure* is not sufficient to explain the intuitive oddity of the two paradoxes, as there are versions of the paradoxes that do not require *Conjunction Closure* to arise, but only *Sufficiency* along with the principle that propositions known to be obviously inconsistent are not justifiably believable. *Section 4* and *Section 5* develop the central arguments of this paper.

2. The Lottery Paradox and the Preface Paradox

Consider the following version of the lottery paradox. Imagine that you know of a fair lottery with n tickets and exactly one winner. Suppose that the number of tickets, n , is very large, or at least sufficiently large to make it very probable that each ticket will lose. By *Sufficiency*, for each ticket t_i (where, for any value i such that i is a natural number, $1 \leq i \leq n$), you are justified to believe that t_i will lose. By multiple applications of *Conjunction Closure*, you are also justified to believe that t_1 will lose and t_2 will lose . . . and t_{n-1} will lose and t_n will lose. Given that you know that the lottery is fair and has exactly one winner, you are justified to believe that *it is not the case that t_1 will lose and t_2 will lose . . . and t_{n-1} will lose and t_n will lose*. By a further application of *Conjunction Closure*, you are justified to believe that t_1 will lose and t_2 will lose . . . and t_{n-1} will lose and t_n will lose and *it is not the case that t_1 will lose and t_2 will lose . . . and t_{n-1} will lose and t_n will lose*. However, since this is an obvious contradiction, by *No Contradictions*, you cannot be justified to believe it. Therefore, it is clear that *Sufficiency*, *Conjunction Closure*, and *No Contradictions* are inconsistent principles.³

Consider, then, the following version of the preface paradox. Imagine that you have just completed an ambitious and fairly lengthy book containing many substantive empirical claims, for example, about medieval history. You have diligently researched each of the n claims you have written in the book and, further,

³ I thank an anonymous referee and an associate editor of the *Australasian Journal of Philosophy* for pointing out that my presentation of the lottery and preface paradoxes was formally mistaken and helping me to fix it.

you have asked many reputable scholars in your field to read drafts of your manuscript to catch mistakes. As a result, each of the n claims you have written in the book is very probable given your evidence; and, indeed, for each claim s_i in the body of your book (where, for any value i such that i is a natural number, $1 \leq i \leq n$) you are justified to believe that s_i is true. By multiple applications of *Conjunction Closure*, you are also justified to believe that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true.

Imagine, however, that, as it is customary for authors in your field, you modestly state in the preface that your book contains at least one mistaken claim. Are you justified to believe this statement? By *Sufficiency*, it seems, you are justified to believe that *it is not the case that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true*. After all, it seems highly plausible that you have made at least one mistake somewhere in the book. For, first, like anyone else, you recognize your fallibility. For, second, all the ambitious books published in your field – including your previous books – have been showed to contain at least few mistakes. For, third, even though the probability that each claim s_i is not true is very low, given that the probability of a disjunction is at most equal to the sum of the probabilities of each of the disjuncts, and that the book in question is fairly long, it is very likely that your book contains at least one mistake. Then, by a further application of *Conjunction Closure*, you are justified to believe that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true and *it is not the case that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true*. However, assuming that you realize that this is an obvious contradiction, by *No Contradictions*, you cannot be justified to believe it. Therefore, it is clear that *Sufficiency*, *Conjunction Closure*, and *No Contradictions* are jointly inconsistent.

Since almost no philosopher would deny *No Contradictions*, it is typically agreed that any solution to each of the paradoxes must deny either *Sufficiency* or *Conjunction Closure*.⁴

Many contemporary philosophers argue that the right solution to the lottery paradox is to deny *Sufficiency*.⁵

Fewer philosophers, however, would say that the right solution to the preface paradox is to deny *Sufficiency*.⁶ In fact, in the way the paradox is presented, many would intuitively say that you would be justified to believe that there is at least one mistake in the book.⁷ Therefore, it seems, denying *Conjunction Closure* would be to many a preferable solution to the preface paradox, although this solution to the preface paradox would instead clash with the best-liked solutions to the lottery paradox.

One might otherwise think that the right thing is to deny both *Sufficiency* and *Conjunction Closure*. But, since both paradoxes can be solved with the denial of only one of the two principles, a more parsimonious solution appears to be preferable.

Importantly, this paper does not intend to settle the question concerning which principle is to be denied to solve the lottery and preface paradoxes, and, accordingly, it remains agnostic concerning this issue. However, the next section provides reasons for preferring the denial of *Sufficiency* to the denial of *Conjunction Closure*.

⁴ Priest [1998] is a notable exception, as he would deny *No Contradictions*.

⁵ Deniers of *Sufficiency* include Kaplan, [1981a, 1981b, 1996], Pollock [1995], Ryan [1996], Evnine [1999], Nelkin [2000], Adler [2002], Douven [2002], and Kelp [2017]. Critics of this solution to the lottery paradox include Kyburg [1970], Foley [1979; 1992], and Klein [1985].

⁶ For example, Douven [2002] and Kaplan [2013] argue for this strategy.

⁷ See, for example, Makinson [1965], Klein [1985], Foley [1992], and Christensen [2004].

3. Lotteries, Prefaces, and Inconsistencies

There are many good reasons for thinking that denying *Conjunction Closure* would not be enough to solve the lottery paradox and the preface paradox; and, among these, there is the suspicion that denying *Conjunction Closure* will not be enough to explain the intuitive oddity of the two paradoxes.⁸ In fact, there are versions of the lottery paradox and of the preface paradox that do not require *Conjunction Closure* to arise, but only *Sufficiency* along with another extremely plausible principle; that is,

No Inconsistencies: For any epistemic agent *A*, *A* cannot be justified to believe a set of propositions that *A* knows to be obviously inconsistent.

Before discussing the versions of the lottery paradox and the preface paradox that can arise from *Sufficiency* and *No Inconsistencies*, it may be worth to note that *Conjunction Closure* and *No Contradictions* entail *No Inconsistencies*, but not *vice versa*, and that *No Inconsistencies* is independently plausible, and it arguably would be plausible even if *Conjunction Closure* were false. It is easy to see why. Assume that *Conjunction Closure* is false: despite having justification for proposition *p* and for proposition *q*, you might not have justification for their conjunction *p* & *q*. However, if you know that *p*, *q*, and some other proposition *r* are jointly inconsistent, then it would likely appear to you that you cannot be justified to believe all of them; and it would appear to you that you should not believe at least one of them because their inconsistency implies that at least one of them must be false. This is exactly why even deniers of *Conjunction Closure* agree with its defenders that because *Sufficiency*, *Conjunction Closure*, and *No Contradictions* are jointly inconsistent, one of these principles is to be sacrificed. If deniers of *Conjunction Closure* did not agree with its defenders that *No Inconsistencies* is true, that is, if they held that jointly inconsistent propositions can all be justifiably believable to one, it would be at best unclear why they would sacrifice any of these principles.⁹

Let us move to the versions of the lottery paradox and the preface paradox that require only *Sufficiency* and *No Inconsistencies* to arise.

Consider, first, the version of the lottery paradox. Exactly as in the other version of the paradox, by *Sufficiency*, you are justified to believe, of each ticket *t_i* in sufficiently large fair lottery with exactly one winner, that *t_i will lose*. Assuming that you know that *t₁ will lose*, that *t₂ will lose* . . . that *t_{n-1} will lose*, and that *t_n will lose*, and that *it is not the case that t₁ will lose and t₂ will lose . . . and t_{n-1} will lose and t_n will lose* are obviously inconsistent propositions, you are justified to believe a set of propositions that you know to be obviously inconsistent. However, by *No Inconsistencies*, one cannot be justified to believe a set of propositions that one knows to be obviously inconsistent. Therefore, *Sufficiency* and *No Inconsistencies* are jointly inconsistent principles.

Consider, then, the following version of the preface paradox. Exactly as in the other version of the paradox, for each claim *s_i* in the body of your book, you are justified to believe that *s_i is true*. Again, by *Sufficiency*, you are justified to believe that *it is not the case that s₁ is true and s₂ is true . . . and s_{n-1} is true and s_n is true*. Assuming that you know that *s₁ is true*, that *s₂ is true*, that *s₃ is true* . . . that *s_n is true*, and that *it is not the case that s₁ is true and s₂ is true... and s_{n-1} is true and s_n is true*

⁸ See Douven [2002: 394–5] for an excellent summary of the reasons for being cautious about thinking that denying *Conjunction Closure* is the right solution to the lottery paradox and the preface paradox.

⁹ See Kaplan [1981a: 309].

are obviously inconsistent propositions, you are justified to believe a set of propositions that you know to be obviously inconsistent. However, by *No Inconsistencies*, one cannot be justified in believing a set of propositions that one knows to be obviously inconsistent. It follows that *Sufficiency* and *No Inconsistencies* are jointly inconsistent principles.

Therefore, any solution to the two paradoxes must either deny *Sufficiency* or deny both *Conjunction Closure* and *No Inconsistencies*. Since the denial of *Sufficiency* is a more parsimonious solution, there are at least *prima facie* reasons for preferring the denial of *Sufficiency* to the denial of *Conjunction Closure* and *No Inconsistencies* as a solution to the lottery paradox and the preface paradox.^{10,11}

Interestingly, many recently popular solutions to the two paradoxes agree that a principle in the vicinity of *Sufficiency* is tenable. After all, intuitively, any satisfactory solution ought to retain at least the following qualified version of *Sufficiency*:

*Sufficiency**: For any epistemic agent A , if some proposition φ is very probable given A 's evidence (where φ is 'very probable' if and only if its probability is equal to or exceeds some specified threshold value t), then A is justified to believe φ , unless A 's justification for φ is defeated.¹²

As Igor Douven and Timothy Williamson [2006] argue, however, any solution that defines the defeater in *Sufficiency** in terms of structural properties only (that is, very roughly, in probabilistic or broadly logical terms only) faces an immediate hurdle: if the defeater in *Sufficiency** is defined in terms of structural properties only, *Sufficiency** is either trivial or identical with the principle that propositions with probability 1 given one's evidence are justifiably believable for one.¹³ The reason why this is the case is roughly as follows. First, for any proposition p with probability $\text{Pr}(p) < 1$ and structural property P , there is a set Γ of jointly inconsistent, equiprobable propositions that contains p . Second, one can run a lottery on Γ , and, because *Conjunction Closure* and *No Contradictions* both hold, the paradox can arise. Accordingly, the assumption that p has P fails to prevent the paradox from arising.

Douven and Williamson acknowledge that their conclusion does not exclude that there can be solutions to the lottery paradox that do not define the defeater in *Sufficiency** in terms of structural properties. They are however doubtful that any such solution can avoid the collapse of *Sufficiency** into the principle that propositions with probability 1 given one's evidence are justifiably believable for one.

The next section of this paper explains why it is impossible to meet Douven and Williamson's challenge. In fact, it shows that if *Conjunction Closure* is true, justified believability must be factive.

¹⁰ See Kelp [2017: 1235–7].

¹¹ It is also noteworthy that these versions of the paradoxes give independent reasons for thinking that *No Contradictions* is not to blame for the paradoxes, since there is a version of each paradox that can arise without *No Contradictions*.

¹² See Douven and Williamson [2006: 758].

¹³ Douven and Williamson show that three well-known solutions to the lottery paradox face this problem: Pollock's [1995], Ryan's [1996], and Douven's [2002] earlier proposal.

4. Justification, Truth, and Conjunction Closure

This section explains why philosophers endorsing views of justification according to which *Conjunction Closure* is true must also accept the thesis that justified believability is factive.

For starters, consider a hybrid of the lottery paradox and the preface paradox. Imagine that you have just completed a book that contains sentences that express all and only logically independent propositions that you are justified to believe. Because of that, *ex hypothesi*, for each sentence s_i in the body of the book, you are justified to believe that s_i is true. By multiple applications of *Conjunction Closure*, you are also justified to believe that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true.

Imagine, further, that you have submitted your manuscript to *Perfectly Omniscient Press*, and that its perfectly omniscient referee has reviewed it. Imagine that, following the policy of *Perfectly Omniscient Press*, the perfectly omniscient referee writes in his report that there is exactly one mistake in the book, without telling you, however, which claim is false. Assuming that you know that the referee of *Perfectly Omniscient Press* is perfectly omniscient, as soon as you read the referee report, you come to know – and, thereby, justifiably believe – that *there is exactly one mistake in the book*. Given that you know – and justifiably believe – that *there is exactly one mistake in the book*, you are justified to believe that *it is not the case that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true*. Then, by a further application of *Conjunction Closure*, you are justified to believe that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true and *it is not the case that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true*. However, assuming that you realize that this is an obvious contradiction, by *No Contradictions*, you cannot be justified to believe it. This is a contradictory conclusion. Therefore, it is clear that this hybrid of the lottery paradox and the preface paradox only requires *Conjunction Closure* and *No Contradictions* as premises. For convenience, let us henceforth call this paradox ‘the hybrid paradox’.

There are three possible solutions to the hybrid paradox: first, denying *No Contradictions*; second, denying *Conjunction Closure*; third, denying that this paradox is possible.

As explained in *Section 2*, denying *No Contradictions* is not a plausible solution according to nearly all philosophers. It follows that any acceptable solution to this version of the paradox must either deny *Conjunction Closure* or deny that the paradox can possibly arise.

An answer to the following question, then, becomes relevant: how can one deny that this paradox can possibly arise?

It seems to me that only three answers to the question are viable: endorsing maximally radical scepticism; holding that your knowledge that the book contains a mistake defeats your justification for at least some of the claims in it; holding that it is impossible to have justification for the proposition that *there is exactly one mistake in the book*. Let us consider each of these three answers, one at a time.

First, one might endorse a maximally radical version of scepticism, and thereby hold that you – just like anyone else – are not justified to believe any proposition.¹⁴ Accordingly, a book containing sentences that express propositions that you have

¹⁴ Although it is at least unclear whether one can plausibly hold that no one can have justification for one’s beliefs, I will not address this worry in this paper, as it would greatly exceed the scope of the paper.

justification for would be blank, and thus could not contain any mistake. Therefore, it would be impossible for any referee to find mistakes in it.¹⁵

Although many philosophers take scepticism very seriously, almost no philosopher is a sceptic; and certainly no philosopher in the business of advancing a view of justification would endorse maximally radical scepticism; that is, a version of scepticism so radical to entail that no one can be justified in believing anything. Then, no one would argue that the hybrid paradox could not possibly arise in this way.

Let us, then, consider the second viable answer. One might hold that this hybrid of the lottery paradox and the preface paradox could not possibly arise because you would lose your justification for all the claims in the book once you learned that it contains a mistake without knowing which of its claims is mistaken. In other words, upon reading the referee report, and learning that the book contains a mistake without knowing which of its claims is mistaken, you would enter a lottery consisting of all the n claims in your book: a lottery with n claims of which exactly one (that is, the false claim) is the winner and $n - 1$ losers (that is, all remaining true claims). The paradox considered would then simply be a version of the lottery paradox instead of a hybrid version of the lottery paradox and the preface paradox.

Many philosophers agree that the right solution to the lottery paradox implies the acceptance of a view of justification according to which, for each ticket t_i in a sufficiently large fair lottery with exactly one winner, one is not justified to believe of t_i that it will lose. But, if this is the right solution to the lottery paradox, one might argue that an analogous solution would also be the right solution to the paradox considered in this section: you would not be justified to believe any of the claims in your book, just like you could not be justified to believe, of any of the tickets in a large fair lottery with a winner, that it will lose.

It is clear, however, that this solution cannot be the right solution to the paradox discussed in this section. Remember that, *ex hypothesi*, you are justified to believe all propositions expressed by sentences contained in the book; and, if you are justified to believe any other proposition, this proposition will be entailed by the propositions in the book. *Ipsa facto*, if you were to lose your justification for all the claims in the book (upon being told that it contains a mistake or in some other way), regardless of which view of justification is right, you would end up having at most one justified belief; that is, the belief that *there is a mistake in the book*.¹⁶ This would imply, in other words, a very radical version of scepticism. In fact, assuming that justification is not factive, very plausibly, almost any (if not each) of us is justified to believe that he or she holds at least a justified false belief. For starters, we are fallible: we have made mistakes in the past, and we will very likely make some mistakes in the future. Second, unless being justified to believe some proposition p entails the truth of p , it is always possible for one to have justification for a false proposition; and given that we hold very many justified beliefs, it is very likely that at least one of them is false. Finally, since, as explained previously, radical scepticism is very unpopular among philosophers, no one would be inclined to argue that knowing or having justification for the proposition that your book contains a mistaken claim defeats your justification for all of the claims in it.

¹⁵ Even assuming that you could justifiably believe that the book contains a mistake (by testimony or otherwise), you could at best have justification for one proposition, as you would only have justification for the empirically false proposition that *there is a mistake in the book*, but not for the obviously contradictory conjunction that *the book contains no claims and a mistaken claim*.

¹⁶ Even worse, you could possibly believe at most one justifiably believable proposition.

Typically, moreover, most philosophers agree that, in the preface paradox, while the proposition that *there is a mistake in one's book* is justified for one, one's justification for that proposition can at most partially defeat the author's justification for each of the claims in the book; and it clearly cannot cancel the author's justification for any of the claims contained in the book. Therefore, arguing that the hybrid paradox cannot arise because you would lose your justification for all the claims in the book upon learning that it contains a mistake is also at odds with most philosophers' intuition about which beliefs are justified in traditional preface paradoxes.

It is also arguable that learning that your book contains only one mistake raises your degree of justification for each of its claims. The book contains an extremely large number of claims, as its sentences express all and only logically independent propositions that you are justified to believe, and, according to any plausible view of justification, you are justified to believe an extremely large number of logically independent propositions. Then, unless justification is factive, for the same reasons you are justified to believe that *there is at least one mistake in your book*, you are also justified to believe that *there is more than one mistake in your book*. Because of this, if each claim in the body of your book is justified despite your justification for the proposition that *there is more than one mistake in your book*, learning that your book contains only one mistake should raise your degree of justification for each claim. After all, it raises the probability that each claim is true.

One might otherwise argue that learning about the referee's statement only defeats your justification for a subset of claims in the body of the book; that is, the least justified claims. This may seem more plausible than holding that learning that the book contains a mistaken claim defeats your justification for all the claims in its body.

There are, however, four simple replies to this argument. First, as explained before, it is arguable that learning that your book contains only one mistake does not lower your degree of justification for each of its claims, and, in fact, raises it. Second, given that the referee does not state which claim in the body of your book is false, why should his statement be considered as a defeater only for your justification for the least justified claim or claims? Intuitively, it should not. Third, it is at best unclear why you should lose your justification for the subset of claims that are the least justified, instead of your justification for a subset of claims whose conjunction is equally or less justified than the least justified claim or claims. Fourth, one can imagine a slightly modified version of the hybrid paradox in which all claims in your book are equally justified to you. It seems obvious to me that, in this version of the hybrid paradox, it would be irrational for you to reject one claim and not another.¹⁷

¹⁷ As it has been pointed out to me, one might also argue that once you learned that your book contains a mistake, you would add this piece of information to your evidence, and, while this would raise your degree of justification for most of your book's claims, you could at the same time lose your justification for some other claims. While adding this piece information to your evidence would make most of the book's claims become more probable, it might also make some others become less probable, and, crucially, sufficiently improbable for you to be justified to believe them.

There is an easy fix to the set-up of the paradox that prevents this argument from being seriously considered: it is sufficient to stipulate that the sentences contained in the book express, at least to a reasonable approximation, probabilistically independent propositions whose justification is acquired *via* a coarsely-individuated reliable belief-forming method; for example, *via* sight. This fix ensures that learning that your book contains a mistake cannot lower your degree of justification for some of its claims, while simultaneously raising your degree of justification for some other claims. Obviously, this fix considerably shortens the book; and, as such, it softens the very implausible sceptical conclusion that the previously-considered solutions seem to imply. However, this does not make this conclusion less unpalatable: if one stipulates that all sentences contained in the book express probabilistically

Let us turn to the third viable explanation for why the hybrid paradox cannot possibly arise; that is, holding the view that it is impossible to have justification for the proposition that *there is exactly one mistake in the book*.

There are two plausible strategies for defending this idea. First, one may argue that it is impossible to have justification for the proposition that *there is exactly one mistake in the book* because it is impossible for the book to contain mistakes, as justified believability is factive. Second, one could say that, while the book possibly contains mistakes (that is, justified believability is not factive), it would be impossible for one to be justified to believe that it really does.

Consider more closely the latter of the two strategies. It seems to me that this is not a plausible strategy to pursue to argue that the hybrid paradox cannot possibly arise. Pursuing it implies arguing that you cannot be justified to believe that *there is exactly one mistake in the book* from the omniscient referee's testimony. No one would deny, however, that you can come to know – let alone justifiably believe – some proposition p from the testimony of your epistemic superior about whether p ; especially if you know, as in the case discussed, that the testifier is perfectly omniscient. Arguing that it is impossible to come to know from the testimony of a perfectly omniscient testifier known to be perfectly omniscient would imply endorsing scepticism about testimony, for it could hardly be imagined a better source of testimonially-based knowledge. Arguably, it would also imply a more radical version of scepticism, for it is hard to imagine a better source of unqualifiedly-based knowledge. But these sceptical views are so implausible that no one would hold them.

Lastly, one may argue that it is impossible to have justification for the proposition that *there is exactly one mistake in the book* because justified believability is factive. In other words, it may be argued, first, that the following thesis is true.

Factivity: For any epistemic agent A , and any proposition φ , if A is justified to believe that φ , then φ is true.

And, if *Factivity* is true, then no one can be justified to believe that the book contains a mistake. It is easy to understand why. Remember that the paradox discussed in this section asks us to imagine that you have written a book containing sentences that express all and only logically independent propositions that you are justified to believe. Because of this, *ex hypothesi*, you are justified to believe, of each of the claims s_i in your book, that s_i is true. Then, assuming that justified believability is factive, if you have justification for the truth of s_i , s_i must be true. Therefore, none of the claims in the book can be mistaken. For this reason, it also follows from *Factivity* that it is impossible to be justified to believe that the book contains a mistake.

Importantly, it appears that this is the only plausible strategy to deny that the hybrid paradox can possibly arise. As argued, all other viable explanations imply radical scepticism, and scepticism is very unpopular among contemporary philosophers.

Therefore, any acceptable solution to the hybrid paradox must either deny *Conjunction Closure* or accept *Factivity*. Accordingly, the paradox shows that the acceptance of *Conjunction Closure* entails the acceptance of *Factivity*; that is, any view of justification according to which *Conjunction Closure* is true must also accept that the thesis that justified believability is factive.

independent propositions whose justification is acquired *via* sight, the previously-considered solutions would imply widespread scepticism about sight, and scepticism about sight is almost as implausible as maximally radical versions of scepticism.

5. Justification, Truth, and Inconsistencies

It is noteworthy that there is a slightly modified version of the paradox presented in *Section 4* that shows that if *No Inconsistencies* is true, then *Factivity* must also be true.

Exactly as in the version of the paradox discussed in the previous section, you are asked to imagine that you have just completed a book that contains sentences that express all and only logically independent propositions that you are justified to believe. Because of this, just like in the version discussed before, for each sentence s_i in the body of the book, you are *ex hypothesi* justified to believe that s_i is true.

Further, you are again asked to imagine that a perfectly omniscient referee has reviewed your manuscript, and that, upon reading his report, you come to know – and, thereby, justifiably believe – that *there is exactly one mistake in the book*. Again, given that you know – and justifiably believe – that *there is exactly one mistake in the book*, you are justified to believe that *it is not the case that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true*.

Assuming that you know that s_1 is true, that s_2 is true . . . that s_{n-1} is true, that s_n is true, and that *it is not the case that s_1 is true and s_2 is true . . . and s_{n-1} is true and s_n is true* are obviously inconsistent propositions, you are justified to believe a set of propositions that you know to be obviously inconsistent. However, by *No Inconsistencies*, one cannot be justified to believe a set of propositions that one knows to be obviously inconsistent. Since this is a contradiction, either *No Inconsistencies* is false, or one must argue that this paradox cannot possibly arise.

For roughly the same reasons considered in *Section 4*, however, the only plausible strategy to deny that the version of the hybrid paradox discussed in this section can possibly arise is to embrace *Factivity*. Therefore, any acceptable solution to this version of the hybrid paradox must either deny *No Inconsistencies* or accept *Factivity*. Accordingly, the paradox shows that endorsing *No Inconsistencies* entails endorsing *Factivity*; that is, any view of justification according to which one cannot be justified to believe propositions known to be inconsistent entails that justified believability is factive.

6. Conclusion

As argued in *Section 4*, the acceptance of *Conjunction Closure* surprisingly implies the acceptance of *Factivity*; and, as argued in *Section 5*, the acceptance of *No Inconsistencies* also implies the acceptance of *Factivity*. In other words, if one likes a view of justification according to which justified believability is closed under conjunction introduction, one must be ready to endorse the thesis that justified believability is factive; and, if one likes a view of justification according to which propositions known to be obviously inconsistent are not justifiably believable, one must also be ready to endorse the thesis that justified believability is factive.

Obviously, this conclusion is troublesome for all philosophers defending views of justification that deny *Factivity*, while accepting *Conjunction Closure* or *No Inconsistencies*: if this is the lesson to be drawn from the paradox discussed in this paper, then these views are simply wrong.¹⁸

¹⁸ See, for example, Smith's [2010, 2016, 2018] view.

Moreover, on the one hand, the conclusion that the acceptance of *Conjunction Closure* implies the acceptance of *Factivity* may arguably put pressure on defenders of *Conjunction Closure*, since very few philosophers are ready to accept *Factivity*.¹⁹ On the other hand, if according to the best-liked solutions to the lottery paradox and the preface paradox denying *Sufficiency* is preferable to denying *Conjunction Closure*, this paper shows that one would have reason to endorse *Factivity*.²⁰

¹⁹ Williamson [2000], Sutton [2007], and Littlejohn [2012] are three notable exceptions.

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