



Against a second factor

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Abstract

In his recent book *Delusions and Beliefs*, Kengo Miyazono offers a thoroughgoing defence of delusions as biologically malfunctioning beliefs, greatly elaborating on his earlier (2015) defence of this view. Miyazono has it that delusions have biological doxastic functions (i.e. functions specific to belief), and that delusions involve direct or indirect malfunctions of this kind. In this short piece, I focus on Miyazono's defence of a two-factor approach to delusion formation as it appears in Chapter Four (*Etiology*). Miyazono approaches his discussion of the debate between one- and two-factor theories having already defended the key thesis of the book: that delusions are malfunctioning beliefs. Of course, that thesis might be thought to mesh nicely with the two-factor theorist's claim that there is a cognitive abnormality present in delusion formation or maintenance. However, I will discuss Miyazono's defence of the two-factor position in isolation from its role in his overall account of delusion. Miyazono abstracts away from the particulars of Max Coltheart's two-factor view, and takes himself to be investigating the plausibility of two-factor theories without the specific commitments of Coltheart's view (i.e. that the first factor of the Capgras delusion is not consciously accessible, and that the second factor is related to right hemisphere abnormalities). Miyazono also captures under the *two-factor* heading theories which locate the second factor in belief *maintenance* rather than just in belief *formation*. He puts forward a new argument for a two-factor approach which goes via *inference to the best explanation*. I begin by arguing that Miyazono's starting motivation for a two-factor approach rests on a misrepresentation of the one-factor approach. Then, I turn to the four components of Miyazono's inference to the best explanation argument, and argue that in each case, we do not have grounds for positing a second factor.

Elsewhere I discuss Miyazono's more general approach and argue that the right way to biologise delusions is not to see them not as biological malfunctions of belief, but instead as produced by mechanisms of belief formation operating in conditions which are historically abnormal for proper functioning (Sullivan-Bissett *manuscript*).

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1 The sufficiency assumption

According to empiricist accounts of delusion, anomalous experiences play a causal role in the explanation of delusion. Within empiricism, there is debate over the explanatory reach of such experiences, that is, whether they are the sole clinical anomaly to which we need appeal in explaining delusion (one-factor theory) or whether we need to, in addition, appeal to some further cognitive anomaly in the shape of a bias, deficit, or performance error relating to belief (two-factor theory). Miyazono characterizes the two-factor theory as a form of empiricism which ‘has an additional commitment that the data do not explain everything about delusion formation’ (p. 82). In discussing the Capgras delusion, he goes on:

[T]wo-factor theorists, however, insist that the abnormal data are not sufficient for the formation of the Capgras delusion. The abnormal data are a factor, ‘the first factor’, but there should be another factor, ‘the second factor’, to complete the explanation. (pp. 82–3)

The characterization of the competing one-factor position as endorsing a sufficiency claim is not a slip on Miyazono’s part. Earlier on in the book, the one-factor view is captured as ‘abnormal data are *sufficient* for the formation of delusions’ (p. 39, my emphasis), and then, ‘abnormal data are *sufficient* and, hence, anyone with the same abnormal data will, other things being equal, form delusions’¹ (p. 40, my emphasis). And later Miyazono notes that ‘the first factor is not *causally sufficient*, and we need to posit another factor’ (p. 88, my emphasis). To my knowledge, all two-factor theorists argue that if a one-factor theory were true, then every subject who had the relevant anomalous experience would have the delusional belief. But, since this is not the case, there must be a second factor (see e.g. Garety, 1991: 15; Garety et al., 1991: 194–5; Chapman and Chapman, 1988: 174; Davies & Coltheart, 2000: 11–12; Davies et al., 2001: 144; Young & De Pauw, 2002: 56; Davies et al., 2005: 224–5; Coltheart, 2015: 23). So Miyazono has company when it comes to reading sufficiency into the commitments of a one-factor theory. Nevertheless, I take the opportunity here to briefly outline why I think the sufficiency assumption—which has plagued the literature and assessment of the merits of the one-factor approach—is inaccurate.

As a historical matter, the idea that anomalous experience is *sufficient* or the *sole cause* of delusion formation has never been a component of the one-factor theory. Brendan Maher, the most often cited one-factor theorist (and indeed the theorist

¹ The *other things being equal* clause in this formulation of the one-factor approach is crucial. As we will see, though, when it comes to cases of dissociation (where some experience prompts delusion in some cases but not others), this *other things being equal* clause, which could be harnessed to explain the difference in these cases consistent with a one-factor approach, is conveniently forgotten by two-factor theorists.

cited by Miyazono), likely held no such commitment. He argued that the cognitive activity of people with delusions is ‘essentially indistinguishable’ from that employed by non-delusional people (1974: 103), and talks of a delusions being developed ‘through the operation of *normal cognitive processes*’ (1974: 103, my emphasis). In later work, he argued that ‘[t]he cognitive processes by which delusions are formed are in no important respect different from those by which normal beliefs are formed’ (1992: 262). Not only does nothing in these claims suggest that anomalous experience is sufficient for delusion formation, they suggest quite the opposite! Normal cognitive processes, in addition to anomalous experiences, are also clearly implicated in a delusion’s genesis. *Normal* cognition will tolerate a range of responses to particular experiences. It could thus even be a prediction of the one-factor approach, and indeed utterly unremarkable, that some people will have a given anomalous experience but not go onto develop a delusion. The key point of a one-factor approach is only that whatever cognitive quirks or intellectual styles we find to be involved in the move from experience to belief formation and maintenance, they do not constitute clinical abnormalities. It is thus a very curious feature of the debate that the one-factor theory has been characterised in a way unsupported by textual evidence.

All of that said, though, there are two places that Maher hints at the sufficiency claim, which it would be remiss of me not to speak to. The first is when he cites Graham Reed:

Given the necessary information, the observer can empathise with the subject; If he himself were to have such an unusual experience he would express beliefs about it which would be just as unusual as those of the subject. (Reed, 1974: 154, cited in Maher, 1999: 551)

The second hint at the sufficiency claim comes later in the same paper where Maher offers the following criticism of his own approach: ‘Many normal people have anomalous experiences but do not develop delusions. From this it is argued that something additional is necessary, and it must be a defect in reasoning’ (Maher, 1999: 566). He gives as ‘one response’ that ‘the kinds of anomalous experience that deluded patients have appeared to be much more intense and prolonged than those that occur to the population in general’ (Maher, 1999: 566).

So did Maher endorse the sufficiency claim after all? If he did, it was certainly not central to his approach. Nowhere in the outlining of his model does the sufficiency claim arise (see for example the commitments of the model given in bullet point lists in his 1992: 262–4; 1999: 550–1; 2006: 181–2). And in 1999 where there is limited evidence of the sufficiency claim in the quoting of Reed and the potential response to criticism, the conclusion of the paper moves away from this and back into line with the rest of his work:

It is entirely possible that delusions, like normal beliefs, arise from heterogeneous sources. [...] the study of delusions [...] highlights the cognitive processes that typically emerge in the attempt to find meaning in the presence of uncertainty. (Maher, 1999: 567)

It is hard to reconcile the idea that delusions arise from heterogeneous sources and a range of cognitive processes with the idea that anomalous experiences are *sufficient* for delusion formation. Maher's quoted conclusion here does not look friendly to the idea that it is a prediction of the one-factor account that an experiential anomaly would—whatever else might be going on with the subject cognitively—produce or sustain a delusion. Taken as a whole then, there is very limited evidence for the idea that Maher endorsed the sufficiency claim.

However, even if Maher were a one-factor theorist of the sufficiency kind, this is not the only way of being a one-factor theorist, and the overall prospects of the approach have been vastly underestimated when this is not recognized. Elsewhere I have defended a one-factor account, noting that:

Nothing in the statement of this approach suggests that anybody who has the definitive anomalous experience must have the delusional belief as well. (Noordhof & Sullivan-Bissett, 2021: 10297)

Given that the search for a second factor is motivated by an underestimation of the resources of the one-factor account, I take it that such a search is, in fact, unmotivated. The two-factor theorist is mistaken in expecting the one-factor theorist to identify an anomaly which would, whatever the psychology, give rise to delusion. She is thus also mistaken in taking the empirical observation of different beliefs arising from the same experience to be relevant in assessing the merits of the one-factor view.

Now, of course, one may still feel that there is something cognitively abnormal going on, and find oneself attracted to a two-factor account, even whilst granting that the search for a second factor ought not be mounted on the grounds that anomalous experience is insufficient for delusion. With that in mind, let us turn away from matters of interpretation towards matters of argumentation, and look at Miyazono's positive argument in favour of the two-factor approach. I note that later on in Chapter Four, Miyazono goes on to defend a particular version of the two-factor theory (identifying the second factor as a *bias towards observational adequacy*), and also argues for incorporating lessons from prediction error accounts into a two-factor framework. It is beyond the scope of this short piece to engage with these further arguments, and so I restrict what follows to Miyazono's argument for opting for two factors over one in general.

2 Inference to the best explanation

Miyazono argues for the two-factor theory via an argument from inference to the best explanation. He begins thus:

The fundamental commitment of the two-factor theory, which distinguishes it from other empiricist theories, is that abnormal data are not explanatorily sufficient. Another factor is needed for a complete account of the process of delusion formation. (pp. 84–5)

There are two claims here. Claim one is that *abnormal data are not explanatorily sufficient*. We have seen that this claim is consistent with the one-factor theory (and indeed happily endorsed by one-factor theorists themselves). Claim two is that *another factor is needed for an account of delusion formation*. This of course is anathema to a one-factor theory. So let us turn to Miyazono's reasons for endorsing this second claim.

Miyazono notes that there are many arguments for two-factor theories, and that his aim is to offer a new interpretation of them, such that together they constitute an argument from inference to the best explanation. In the service of this, Miyazono draws on four arguments, which I will consider in turn.

2.1 Alternative explanations

Miyazono's first argument is that the delusional hypothesis arrived at on the basis of an anomalous experience is not the only one available to the subject. Indeed, alternative explanations often represent better explanations of the aberrant data. The first factor cannot explain why the delusional hypothesis is favoured over a non-delusional (and often better) hypothesis. Certain candidate second factors on the other hand are thought able to do this work (pp. 85–6).

In response I note that answering the question of why the delusional hypothesis is favoured over the non-delusional one in the face of anomalous experience is not the task of a one-factor theory. The burden on the theory is to be *consistent with* the finding that people with delusions reach for particular hypotheses when, on the face of it at least, they ought not.² The theory is about the number of clinical abnormalities to which we need to appeal in an explanation of delusion formation or retention, the task has never been to have one's identified abnormality explain all features of the delusional context. Nevertheless, there are several things to say here, albeit briefly, which are at least suggestive of the idea that failure to uptake a better explanation gives us no grounds for positing a second factor.

First, that someone might form or maintain a belief (even a bizarre one) on evidence which, from a third-person perspective, better supports an alternative belief, is hardly an unprecedented epistemic fault exclusive to those with delusions. We need not look very far to find others committing the same sin: self-deceivers, believers in the paranormal, conspiracy theorists, and so on. Of course, I do not deny that there may be important differences between such cases and delusion. Nonetheless, they are enough to show that the charge that 'alternative explanations often represent better explanations' of the data being explained by the target hypothesis, is very far from a charge uniquely applicable to delusional explanations. Far more needs to be said before that feature of delusion gives us grounds for a second factor.

² Although, actually, I think that it is up for grabs whether alternative explanations are in fact better ones, or ones which are rationally required (see Noordhof and Sullivan-Bissett 2021: 10,298–300 for discussion).

Second, some features of the wider context of delusion are instructive. In many cases, in order to adopt the non-delusional explanation for one's experience, the subject would need to 'trust the evidence of other people's senses in preference to their own', and to do so in the face of striking, repeated, and intense anomalous experiences. This is no impossibility but is also 'not readily done by most people' (Maher, 1988: 25), and so we need not appeal to some cognitive abnormality to explain the failure to do so in the case of delusion.

Furthermore, there are several kinds of motivational influences which may help produce and sustain a delusion. Distress caused by the anomalous experience may be met with significant relief for the subject now that she has figured things out (alternative contents such as *I am unwell* may fit less well with one's motivations). In addition, some cases may involve motivational influences on the adoption of a given belief. For example, the Reverse Othello delusion may be helped along in its formation by the subject's very strong desire for the believed content to be true (for more on motivational influences in delusion and self-deception, see Noordhof and Sullivan-Bissett *forthcoming*). Furthermore, as Maher puts it, 'the social costs and consequences of major decisions made under the influence of the delusion may create a situation in which it is very difficult for the patient to re-examine the belief and publicly reject it' (2006: 182) (see Sullivan-Bissett, 2018: 938–40 for more on the availability of alternative explanations and the one-factor account).

Finally, the formation of a delusional belief (rather than an alternative) in response to anomalous experience is not a straightforward win for the two-factor theorist. In general, there is a fine balance to be struck when appealing to a second factor to explain why the delusional content is endorsed. Such a factor must be significant enough to do the required *tipping over* from experience to belief, but not so significant that it tips the subject into further delusional beliefs in the absence of anomalous experience (Noordhof & Sullivan-Bissett, 2021: 10,285). The more specific version of the problem concerns the two-factor theorist who takes her second factor to explain *explanation selection*, as Miyazono hints at. Suppose we took people with delusions to be bad at selecting explanations, and the second factor to be explanatory of that. Should not we also then expect subjects with delusions to select bad explanations more generally (should not they also thus be, for example, wide-ranging conspiracy theorists?). There is no evidence that this is the case. So the broader version of the problem here is that the second factor must be characterised in such a way that it does not ramify out to affect belief formation more generally. The more specific version of the problem is that a second factor which is appealed to in the service of explaining poor explanation selection in particular will also need careful characterisation given the lack of evidence for this ramifying out to the person's explanation selection more generally. Both the general and more specific problem may well present us with more substantial theoretical hurdles to overcome than the idea that a range of normal range cognitive styles are doing the work of causing some subjects to form delusional beliefs or favour delusional explanations over alternatives. We need not (and ought not) factorize these normal range styles.

2.2 Dissociation

The second argument Miyazono considers appeals to the fact that the first factor and delusional beliefs are dissociable. That is, there are some cases where subjects have the anomalous experience associated with a given delusion, but do not become delusional. We need a second factor to explain why some people form or maintain a delusion in the face of anomalous experience, and others do not (pp. 86–7).

That this observation should have any argumentative power comes from the sufficiency assumption which we have seen is not necessary to (or even to be found within) one-factor theories. It might be asked though whether the one-factor theorist has anything to say about the dissociation, even if it is in fact compatible with her position. Phenomena may well be compatible with one's favourite theory, but nevertheless not be terribly friendly to it.

The one-factor theorist has plenty to say here (although in this case can give only the headlines!). A range of normal individual differences can explain the dissociation so often harnessed in an argument for the two-factor theory. For example, certain background 'New Age' beliefs have been hypothesized to be involved in alien abduction belief (McNally and Clancy, 2005). Consider also the kinds of differences in intellectual styles that might contribute to one believing in paranormal phenomena (see Noordhof and Sullivan-Bissett *forthcoming*), or those which might contribute to believing in conspiracy theories (see Ichino and Sullivan-Bissett *manuscript*). Bringing to the interpretation of an anomalous experience certain background beliefs, or falling at some place in the normal range of intellectual styles, will no doubt be explanatorily useful here, but this does not require us to posit a cognitive abnormality relating to the way in which subjects form or maintain their beliefs. In the case of delusion, we simply have a variety of normal reasoning styles applied to abnormal experiences—the variation in response which gives rise to the dissociation is an unremarkable and predictable result of the wide range of cognitive styles found among human believers. Contrary to popular belief, there is no great embarrassment for the one-factor theory here.

2.3 Neurological abnormalities

Miyazono's third argument appeals to there being right prefrontal cortex damage found in people with monothematic and neuropsychological delusions. This damage could be the basis of a second factor (p. 87). For example, Max Coltheart has it that the second factor is a deficit in mechanisms of belief evaluation, arising from right hemisphere damage in the frontal lobe. This damage is hypothesized to interfere with the belief evaluation mechanisms (Coltheart, 2007: 1046; Coltheart et al., 2007: 644).

One issue with this (which Miyazono recognises) is that identifying a second factor in neurological damage will not get you complete coverage, since some delusions present with no such damage (p. 87). But put that aside. The more significant problem with appealing to this damage in support of a second factor is that there is no evidence that the damage causes any cognitive behaviour outside of

the normal range of belief formation and evaluation. Neurological abnormality is not abnormality of the relevant kind. There can be all sorts of reasons that someone might vary within the normal range, and for all we know, prefrontal cortex damage could simply move someone from one point in the normal range, to another. It could well be that damage of this kind makes some people more susceptible to forming delusional beliefs, but that is only a problem for the one-factor theory if the damage introduces belief formation or evaluation outside of the normal range (see Sullivan-Bissett, 2020: 695–6, Noordhof & Sullivan-Bissett, 2021: 10,303–4). Thus, the observation of neurological damage does not give the two-factor theorist the second factor she seeks (for more on the role of neurological damage in a two-factor theory, see Noordhof and Sullivan-Bissett 10,292–4).

2.4 Cognitive biases

Finally, Miyazono's fourth component in his overall argument appeals to 'cognitive abnormalities or biases' found in people with delusions. He draws on evidence for a jumping to conclusions bias (Huq et al. 1988) and evidence for a bias against disconfirmatory evidence (Moritz & Woodward 2006; Woodward et al. 2006). Miyazono has it that 'it is likely that some of those biases are *casually relevant* in the delusion formation process' (p. 87, my emphasis).

There are two ways to understand the claim of bias theories. The first is to understand such biases as ones which appear within the normal range, but are exaggerated in subjects who have delusions. If a bias of this kind could be identified, we would have our second factor (some two-factor theorists recognise that their search is one of clinical abnormality (see Noordhof & Sullivan-Bissett, 2021: 10,279 for several examples)). However, the empirical evidence purporting to speak in favour of biases so understood is flimsy (see Noordhof & Sullivan-Bissett, 2021: 10,286–10,292).

Another way is to understand these biases as ones which occur inside of the normal range, but are simply often associated with delusions. This is consistent with Miyazono's talk of *causal relevance*. But causal relevance does not a factor make. I do not deny that there might be particular reasoning styles or biases involved in delusion formation. But normal range styles and biases playing a causal role in the genesis or maintenance of a delusion is part and parcel of a one-factor approach, and indeed perfectly well captured by Maher's 'normal cognitive processes' (1974: 103). There is little evidence that such reasoning styles amount to a second *factor*, understood as a clinical abnormality specific to those with delusions. And if they do not, they cannot be harnessed in a case for the two-factor account.

3 Conclusions

I began by noting that Miyazono characterizes the one-factor position in terms of sufficiency, which is to say, that the first factor is *sufficient* for delusion formation. I argued that this has not been (and in any case, need not be) a commitment of the one-factor

approach, and in fact, one-factor theorists often talk about other influences on the formation and maintenance of delusion.

I turned then to Miyazono's inference to the best explanation argument for the two-factor theory, and gave reasons to reject each of the four components which made it up. Perhaps it will be thought though that notwithstanding the issues with each of the components, their cumulative weight nevertheless speaks in favour of the two-factor theory. Indeed, Miyazono himself concludes his case by granting that none of the four points are conclusive, but 'when considering the observations jointly, the most plausible explanation seems to be the two-factor theoretic explanation' (p. 88). Arguments from inference to the best explanation do not require their components to be demonstrative, and so Miyazono's move to packaging arguments for the two-factor theory in this way might be thought to mitigate their shortcomings. However, in the light of what I have said here, I think the four arguments do not meet even the lower standard required for them to partake in an inference to the best explanation argument. Miyazono draws an analogy:

[T]he footprint at a crime scene might not be conclusive evidence for a hypothesis about the perpetrator; it might be open to alternative interpretations. Jointly, together with other evidence, however, it might strongly support the hypothesis in the form of an inference-to-the-best-explanation argument. (p. 85)

What I have tried to show is that not only are Miyazono's footprints inconclusive evidence for the two-factor theory, none of them are even a good match for the two-factor shoe, and as such, no cumulative case can be had.

What about Miyazono's claim that non-two-factor explanations of his four observations will be 'ad hoc and/or theoretically complicated' (p. 88)? I hope that the sketches I have given of the alternatives do not strike the reader as such, after all, and if there is any doubt I refer them to my more thorough defences elsewhere (Sullivan-Bissett, 2020, Noordhof & Sullivan-Bissett, 2021, Noordhof and Sullivan-Bissett *forthcoming*). I conclude then that Miyazono underestimates the resources of a one-factor approach when he understands it as committed to the sufficiency claim, and although I welcome the explicit recognition that various arguments for the two-factor theory fall short on their own, and so are better packaged together, we have not, after all, been given grounds for thinking that appeal to a second factor represents the best explanation.

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