Rehabilitating Reasoning in Schizophrenia[*]

Carolina Flores

Abstract

Reasoning in schizophrenia appears to lie beyond the bounds of sense. For example, how are we to make sense of believing that one's partner is unfaithful because the fifth-lamppost along on the left is unlit? By analyzing empirical results on biases in schizophrenia (with a focus on work by Todd Woodward and collaborators), I argue that reasoning in schizophrenia in fact overlaps with ordinary reasoning. Reasoning in schizophrenia is the result of setting epistemic parameters in familiar ways, indeed, in ways that we praise in other contexts. It has much in common with ways of reasoning promoted by the Enlightenment tradition. This way of reasoning can be rational in some contexts. Indeed, if the experiences that patients with schizophrenia have were veridical, it would be rational to reason as they do. Schizophrenia emerges as primarily a disturbance of salience, with subjects doing the best they can to make sense of their unusual experiences.

1   Introduction

Consider the following two cases of delusions in schizophrenia (Bortolotti and Broome 2008, 829):

> A 21-year-old man has sudden conviction that certain songs played on the radio used his voice in the role of lead singer. He cannot explain why. (Yager and Gitlin 2005, 978)

> A man believes his wife is unfaithful to him because the fifth lamp-post along on the left is unlit. (Sims 2003, 119)

These cases are deeply puzzling. Why would anyone form and maintain these views? How could they get to such views of the world from their experience? It is not just that irrationality appears to be at play. The irrationality at play borders on the unintelligible. It threatens the idea that we can even understand the processes that lead to these delusions as the result of reasoning from one's experiences.

As Nick Shea puts it, in cases of delusions in schizophrenia, "the kinds of rational connections that are [a] paradigmatic feature of the personal level may have broken down very systematically" (Shea 2013, 1079). These cases make it plausible that

---

"psychosis is a predicate that we ascribe to a person who has seriously transgressed the intersubjective bounds of rationality" (Parnas et al. 2010, 32). More generally, schizophrenia elicits a "profound feeling of incomprehensibility and inaccessibility" (Nasar 2011); it is culturally taken to be "confusing, off-putting, nonsensical, unpredictable, inexplicable, and just plain bad" (Wang 2019).

In this paper, I will provide resources that push back against this image of schizophrenia. I will argue for two claims, one descriptive, one normative. At the descriptive level, I will argue that the cognitive biases implicated in delusion formation and maintenance in schizophrenia exemplify what I call *the Enlightenment epistemic style*. This is a way of reasoning that expresses a highly autonomous epistemic personality, of the sort that is willing to transgress social and intellectual norms. I will then consider normative implications of this claim. I will argue that this epistemic style is not inherently epistemically bad. Indeed, if patients' experiences were veridical, it would be rational for them to adopt such an epistemic style.

I will proceed as follows. In §2, I will offer an overview of what we know about reasoning in schizophrenia. I will focus on work by Todd Woodward and collaborators on cognitive biases that are distinctive of schizophrenia. In §3, I will argue that these reasoning biases are best understood as the result of certain (implicit) epistemic (i.e. knowledge and inquiry-related) preferences and values. Subjects reason in ways that express (perhaps extreme) versions of Enlightenment values. In particular, their reasoning expresses placing a high prize on intellectual autonomy and an extreme willingness to intellectually transgress. Finally, in §4, I will explore implications of this result. I will argue for two claims. First, reasoning in schizophrenia is in a continuum with ordinary reasoning; indeed, people in the non-clinical population often reason in ways that express similar epistemic values and preferences. Second, reasoning in these ways need not be irrational. In fact, if patients' experiences were veridical, reasoning in these ways would arguably be rational. The result is a view on which patients with schizophrenia are adopting reasonable ways of interacting with evidence in light of unusual experiences.

2   Reasoning in Schizophrenia: An overview

The last couple of decades have seen much systematic research on reasoning in schizophrenia. In this section, I will outline central results in this body of research. These results are generalizations about reasoning in schizophrenia. Specifically, I will discuss the *jumping to conclusions bias* (JTC) (Dudley et al. 2016), the *bias against disconfirmatory evidence* (BADE) (Woodward et al. 2006), the *liberal acceptance bias* (Moritz and Woodward 2004), and the *testimonial discounting bias* (Miyazono and Salice 2020). I will describe what each of these biases consists in by explaining illustrative experimental results.

Before beginning, a couple of clarifications. First, I borrow the term 'bias' from the existing literature. Whether these ways of reasoning constitute biases—deviations both from the general population and from normative standards—, and what conception of bias is at play, are interesting questions on which my discussion in §3 will bear.

Second, such generalizations (like any scientific generalization) are not exceptionless. Not all patients exemplify these, and not all exemplify them to the same extent. Further, these results are unlikely to capture the most extreme cases of delusion in schizophrenia, because getting such patients to participate in the sorts of studies I discuss below is extremely challenging. For this reason, the discussion in this paper does not apply to *all* delusions in schizophrenia, or to all people with schizophrenia who come to develop delusions. Nevertheless, the discussion illuminates central cases of delusions in schizophrenia.

Let's begin. The jumping to conclusions bias consists in reaching conclusions on the basis of little evidence, i.e., of less evidence than healthy control subjects would in the same situation. One paradigmatic way to study whether a subject exhibits this bias is the *draws to decision* procedure. In this procedure, subjects get presented with two jars of beads. They get told that one of them has more beads of color A than of color B (90% orange in one vs. 90% black in another, say), while the opposite is true of the other jar. They are also told that these beads have been mixed and will be randomly drawn. A bead is drawn from one of the jars, and the subject is given the option to either decide which jar it is (the 90% orange or the 90% black jar), or to ask for additional draws if they feel they don't yet have enough information to decide.[1]

A subject displays the jumping to conclusions bias to the extent that they need fewer draws to decide which jar is at play than control subjects. At the limit of the Jumping to Conclusions Bias, subjects decide based on one draw. And, indeed, people with schizophrenia (especially those with delusions) tend to decide in significantly fewer draws than control subjects, with a substantial number reaching a decision after a single draw (Dudley et al. 2016, Garety et al. 2011, Moritz and Woodward 2005, Ross et al. 2015). Note that the draws to conclusion task is on a neutral topic (beads drawn from a jar). This result therefore provides evidence for a domain-general tendency to jump to conclusions in people with delusions, and in people with schizophrenia who are delusion-prone.
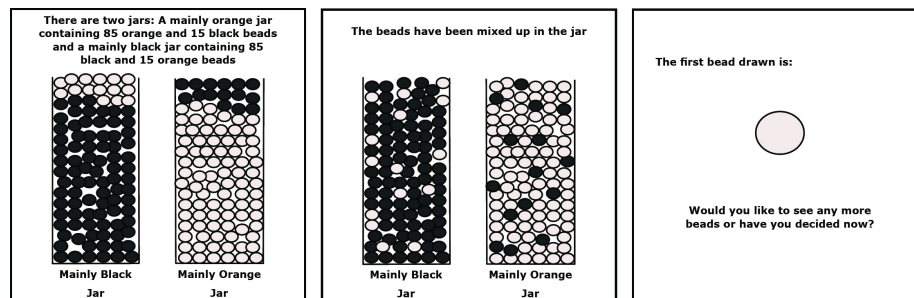

Figure 1: The beads task as viewed on screen by participants (Garety et al. 2011).

The bias against disconfirmatory evidence consists in resisting counter-evidence to one's beliefs. More specifically, people with this bias are slower to abandon their

---

1. Variations on this paradigm ask subjects for estimates of how likely the draw is to be from jar 1 vs. jar 2 at each stage. The results are similar.

beliefs (or reduce the strength of those beliefs) when offered counter-evidence than healthy control subjects. They need more (strong) counter-evidence to perform such updates.

The paradigmatic task used to study whether a subject displays this bias is the following. Subjects are offered a scenario (either a verbal description or a picture). This scenario has 1 true interpretation, 2 lure interpretations, and 1 absurd interpretation. The task is designed so that the true interpretation initially appears implausible but becomes more reasonable as more information is revealed. The opposite is true for the lure interpretations: they become less plausible as more information is revealed. The absurd interpretation appears implausible all along. A subject displays the Bias Against Disconfirmatory Evidence to the extent that they stick to one of the lure interpretations as they receive more information that supports the true interpretation. Numerous studies by Woodward and collaborators show that delusion-prone people with schizophrenia (e.g., Moritz and Woodward 2006, Moritz and Woodward 2006, Woodward et al. 2008) and with schizotypal traits (Buchy et al. 2007, Bronstein and Cannon 2017) display this bias. Much like the Jumping to Conclusion Bias, this bias is content-neutral. It shows up on topics that are not related to the delusion.

The liberal acceptance bias consists in entertaining a wider range of possibilities (and, in particular, of possible explanations) than healthy control subjects. To test for this bias, researchers offer subjects cards from the Thematic Apperception Test (TAT) and ask them to rate different interpretations of the pictures on the cards. Subjects with schizophrenia give relatively high plausibility ratings to interpretations that control subjects judge to be implausible. There is no difference on plausible interpretations. Subjects with schizophrenia fail to rule out explanations that control subjects exclude as too implausible. They display willingness to consider interpretations that common sense or prior knowledge of the world would lead one to exclude (Moritz and Woodward 2004, Moritz et al. 2008, Moritz et al. 2009).

In recent work, Miyazono and Salice (2020) have explored the role of a more social bias in the emergence and maintenance of delusions in schizophrenia: testimonial discounting. The testimonial discounting bias consists in discounting others' testimony, , i.e. in updating one's beliefs less than ordinary control subjects. Miyazono and Salice (2020) hypothesize that this bias appears partially because schizophrenia often results in failures of group identification with other people. Group identification is important for generating trust, and trust underwrites accepting others' testimony (Tajfel et al. 1971). As a consequence schizophrenia leads to testimonial discounting. In addition, many people with schizophrenia develop paranoid or grandiose thoughts and feelings (Freeman et al. 2002). This leads them to underestimate others' sincerity and competence (respectively). As a consequence, they disregard or discount others' testimony.[2]

These differences in reasoning are not mere quirks that correlate with delusions

---

2. Subjects with schizophrenia display a range of other cognitive differences from non-schizophrenic subjects. They often show theory of mind impairments, i.e., difficulty understanding other people's thoughts, feelings, and motives (Penn et al. 2008). And subjects with schizophrenia who develop persecutory delusions typically display an externalizing attribution style, being more likely than healthy control subjects to attribute negative events to others as opposed to themselves (Bentall et al. 1994, Freeman et al. 2002, Freeman 2007). I won't focus on these factors in my discussion. They should be seen as additional explanatory factors to the explanation of reasoning in schizophrenia that I offer below.
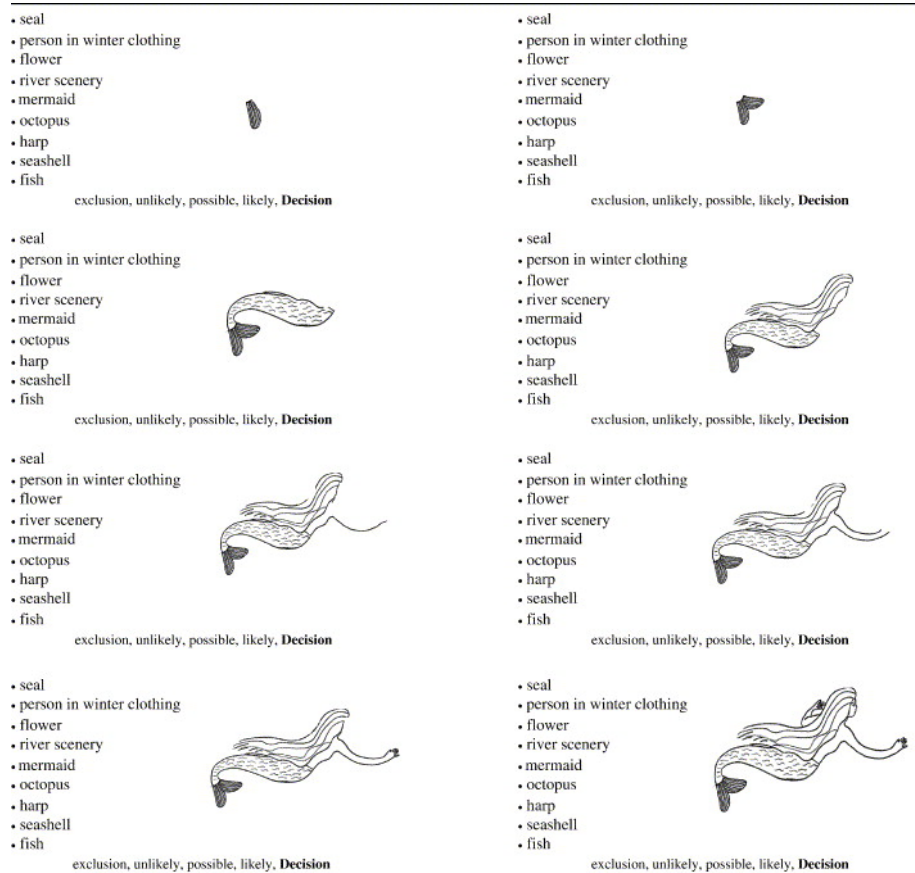
Figure 2: Example of the task used to study the Bias Against Disconfirmatory Evidence. Pictures were successively presented to subjects in a computer screen (Moritz and Woodward 2006).

in schizophrenia. They are meant to partially explain the formation and maintenance of delusions in schizophrenia. Specifically, they are meant to explain how subjects arrive at delusions from their experience.

Here is a sketch of the role that they are meant to play. Subjects with schizophrenia have unusual experiences which they want to explain. To do so, they consider a range of possible explanations. Due to the liberal acceptance bias, they consider implausible explanations for their experiences. Because they jump to conclusions, they then endorse implausible explanations out of the ones they generate. Finally, due to their bias against disconfirming evidence and testimonial discounting, they hang on to their delusions in the face of counter-evidence. Counter-evidence in general gets integrated more slowly, and testimony in particular is discounted.

This explanation raises additional questions. What is the role of the subjects' experience, on top of their reasoning, in leading to delusions? What is the root cause of these different biases, and are they related? To what extent is the way in which people with schizophrenia reason discontinuous from that of healthy subjects? And to what extent are these ways of reasoning irrational? The rest of this paper addresses these questions.

3 Reasoning in Schizophrenia Expresses Enlightenment Values

It is easy to read the discussion in the last section as a laundry list of disconnected forms of irrationality. Indeed, describing the patterns of reasoning at play as "biases" heavily encourages such an interpretation. On the dominant understanding, describing something as a bias is already to see it as irrational (Holroyd et al. 2017).

In this section, I will offer a more nuanced and integrated reading of the results above. I will argue that these biases are best understood as the result of the subject setting epistemic parameters—roughly, the kinds of parameters that express what one values as an inquirer—in specific ways. I will argue that these ways of setting epistemic parameters are unified into an *epistemic style*: a unified way of interacting with evidence that expresses a recognizable epistemic personality (Flores 2021a).

In other words, instead of making a range of disconnected systematic mistakes in reasoning, subjects in schizophrenia reason in ways that express a unified epistemic personality. This is not to say that they reason in rational ways: one can reason in ways that express a distinctive personality while reasoning irrationally. However, it makes it much less obvious that they are reasoning irrationally—a question I will return to in §4. Equally as importantly, it reduces the gap between "us" (healthy control subjects) and "them" (patients with schizophrenia). Our reasoning, whether rational or irrational, is controlled by how we set the very same parameters. As I will argue in §4, the reasoning differences between control subjects and subjects with schizophrenia are differences in the values we assign to those parameters.

The significance of understanding reasoning patterns in schizophrenia as constituting an epistemic style is perhaps best introduced through an analogy.

Consider reading a novel in which the author uses only an overly narrow, im-

poverished lexicon. On one way of looking at it, you might think that this reflects the author's lack of knowledge or skill. It is a limitations to be corrected. Suppose, however, that this choice is part of a literary style—a way of writing that expresses a certain personality (Robinson 1985). Perhaps it is part of a style that expresses an austere personality and limpid, untroubled perspective on the world. If that is right, your assessment of this feature of the writing will change. You might still not like it. You might still have good arguments for the claim that this choice is an aesthetically bad one. Be that as it may, the text's limited lexicon will no longer appear as a mere foible, but as the expression of an authorial personality. And this makes a serious difference to how one engages with the text.

Similarly, seeing reasoning patterns in schizophrenia as constituting an epistemic style matters for how we understand patients with schizophrenia. The same shift from mere mistake to expression of personality is at play.

To get to that, I will first argue that the liberal acceptance bias can help explain both the jumping to conclusion bias and the bias against disconfirming evidence.[3] This will set the stage for considering the deeper shared roots of the patterns of reasoning we see in schizophrenia.

As Moritz et al. (2007) establish, the results in the draws to conclusion task are best explained in terms of liberal acceptance. The explanation goes like this.

Patients with schizophrenia have lower evidential thresholds for accepting a hypothesis than control subjects (i.e. they require less evidence to do so). This is just what the liberal acceptance bias amounts to. And this tendency plays out in interesting ways when subjects receive scant evidence and are figuring out what to believe. Where there is only one hypothesis that surpasses the evidential threshold, patients come to endorse that hypothesis—even if there is little evidence for that hypothesis. Because the evidential thresholds that control subjects set are higher, they require more evidence before settling the matter. Therefore they attempt to get more information.

The draws-to-conclusion tasks that are employed to study the jumping to conclusion bias have precisely this shape. They are ones where there is only one hypothesis (that the bead was taken from Jar A, say) that surpasses a low evidential threshold. In contrast, it has been found that, in situations where there is more ambiguity—where there is more than one hypothesis that surpasses this low evidential threshold—patients with schizophrenia do not jump to conclusions. For instance, when patients are given a task with four jars instead of two, and where more than one jar remains a plausible candidate, subjects with schizophrenia behave similarly to control subjects (Moritz et al. 2007).

This pattern of results heavily suggests that liberal acceptance explains the jumping to conclusions results. Lower evidential thresholds for acceptance lead patients to accept hypothesis that others would not; where only one hypothesis is acceptable, acceptance turns to belief.

As for the bias against disconfirming evidence, I have, in previous work (Flores 2021b), argued that it can be explained in terms of liberal acceptance and run-of-the-mill motivated reasoning.

---

3. See Parrott (2020) for a different argument for the importance of this bias in understanding schizophrenia.

The explanation goes as follows. In general, we are motivated to generate alternative explanations for counter-evidence to our beliefs. If, on top of this, a subject displays the liberal acceptance bias, they will accept more of the explanations that cross their mind as plausible than other people. As a result, from their perspective, the counter-evidence does not look decisive because it can be explained away in a wide range of ways. This leads them to adjust their beliefs to counter-evidence less than other subjects. In other words, it leads them to display a bias against disconfirming evidence.[4]

There is some internal unity in how patients with schizophrenia interact with evidence, then. I will now argue that we can understand this way of interacting with evidence in terms of having certain epistemic preferences, values, and policies.

What makes a preference, value, or policy 'epistemic' is highly contested in philosophy. For our purposes, an *epistemic* preference, value, or policy is one that expresses views about how one can come to accurately represent the world, or to acquire knowledge. The idea is not that subjects have such explicit preferences, values, or policies, but that their behavior expresses implicit preferences, values, or policies. The claim here is that we can understand how subjects interact with evidence in terms of implicit preferences, values, or policies that express views about how to acquire knowledge.

A few examples of epistemic parameters will help.

Consider, first, the kind of evidence that seems most persuasive to you (your *evidential preferences*). Different people have different such preferences. Some prefer testimony, especially if weaved into a narrative; others trust hard data much more. Some prefer information that comes from institutions, others from people who they personally know. These are epistemic preferences: they express views about how to acquire knowledge.

Consider, second, *evidential thresholds*. People have different policies when it comes to such thresholds. For instance, Paul and Morton (2018) argue that gritty people (compared to ordinary and defeatist people) set high evidential thresholds for beliefs about their chance to succeed at a difficult endeavor. As a result, it is hard to get them to believe that they are not likely to succeed. Note that, in other ways, their policy might resemble that of others: they might revise their other beliefs on just as much convincing evidence. Their policy differs locally, when it comes to beliefs that are relevant to whether they ought to persist at a difficult endeavor.

Finally, consider tolerance for risk in the epistemic domain. How willing are you to risk having false beliefs for the sake of acquiring true beliefs? If you were offered 101 true beliefs about the world and 100 false ones, or staying in the same state you are in right now, would you take the gamble? Agents clearly differ along this dimension as well: Fraser (2020) argues that conspiracy theorists are highly risk-seeking in the epistemic domain. Such risk preferences reflect different views about good epistemic states to be in.

Insofar as the experimental results in §2 apply to them, patients with schizophre-

---

4. More strongly, one may think that, taking into account the wider range of alternative explanations they consider, people with a BADE respond rationally to counterevidence. Specifically, if one thinks that how confident one should be in a belief in the face of relevant evidence depends on the space of alternative explanations for that evidence of which one is aware, then displaying a BADE may be rational given the wider range of alternative explanations considered.

nia tend to behave in ways that express the following epistemic preferences, policies, and values:

- **Evidential preferences**: strongly preferring first-hand experience to testimony.

- **Evidential threshold policy** (Paul and Morton 2018): low evidential thresholds for acceptance.

Obviously, strongly preferring first-hand experience to testimony can explain why one would discount others' testimony. Setting low evidential thresholds for acceptance just is what the liberal acceptance bias consists in.[5]

Given that liberal acceptance explains both jumping to conclusions and the bias against disconfirming evidence, these epistemic preferences and values offer a unified explanation of reasoning in schizophrenia. To sum up: their evidential preferences explain the way in which patients with schizophrenia discount testimony, and their evidential threshold policy explain liberal acceptance, in turn explaining jumping to conclusions and the bias against disconfirming evidence.

Appealing to epistemic preferences, values, and policies to explain subjects' behavior is not *ad hoc*. Such preferences, values, and policies are *always* at play in how subjects interact with evidence. We always have to set our evidential thresholds some way or another, and to assign some comparative weight to testimony vs. what our senses offer.

The result we arrive at is this: patients with schizophrenia systematically differ from control subjects in some of their epistemic preferences, values, and policies. The differences in their way of reasoning outlined in §2 are due to differences in settings of deeper epistemic parameters. They are not due to a fundamental breakdown of the cognitive machinery that is involved in reasoning.

If this explanation is along the right lines, subjects with schizophrenia are still fundamentally in the same game of trying to form an accurate representations of the world as healthy subjects. It is just that they have different (implicit) views about how to arrive at such representations.

But we can go deeper still than simply ascribing to subjects some set of epistemic preferences and values. In particular, these deeper cognitive parameters "hang together". Setting one's epistemic parameters in these ways constitutes a distinctive—and familiar—epistemic personality. These parameter settings express an intelligible way of being an epistemic agent. To use theoretical terminology I develop elsewhere (Flores 2021a), the way of reasoning constituted by the patterns of reasoning described in §2 constitute an *epistemic style*. They form a unified way of interacting with evidence that expresses an epistemic personality.

What is the epistemic style that is at play? As I will argue, I think it merits the label '*Enlightenment style*'. To be more specific: subjects interact with evidence in ways that

---

5. This may be underwritten by a high tolerance for epistemic risk. An agent who is willing to risk coming to have false beliefs but does not want to miss out on true beliefs will be willing to accept many things on scant, but suggestive, evidence. However, it is an open question whether this is the ultimate explanation for liberal acceptance. Specifically, agents with a high tolerance for epistemic risk are expected to perform more experiments/engage more in evidence-gathering. It is unclear whether patients with schizophrenia engage in more evidence-gathering than average given their doxastic state Glöckner and Moritz (2008).

Enlightenment epistemic values, preferences, and policies would recommend. The style they adopt is one that Enlightenment thinkers aspired to.[6]

Thinkers in the Enlightenment tradition placed great value on intellectual autonomy. As Kant (1999) famously put it, "'Have the courage to use your own understanding,' is the motto of the Enlightenment.'. Taking this advice involves relying more strongly on one's own experience than on testimony. It also involves a willingness to intellectually transgress against common sense or what others think. Specifically, it involves being willing to consider hypotheses that common sense would rule out, or that those around us would consider absurd or sacrilegious. Beyond this, the tradition is characterized by intellectual tenacity. Enlightenment thinkers continue to pursue their own lines of thought even in the face of harsh criticism, trying hard to develop them into a cohesive view of the world, one which fits all the data from their experience.

As we have seen, these seem to be precisely the guiding threads in reasoning in schizophrenia. Patients discount testimony in favor of their own senses, and they are willing to seriously consider ideas that common sense would rule out. As we have seen, this allows them to resist disconfirming evidence. In other words, the patterns of reasoning we see in schizophrenia are well-explained by the hypothesis that subjects take up the epistemic style of the Enlightenment.

Offering further support to this interpretation, subjects with schizophrenia embody some surprising epistemic dispositions associated with the Enlightenment. Because they are less swayed by intuitive or common sense views, they outperform control subjects on a range of logic and probabilistic reasoning tasks. They are in some ways *more rational* than control subjects (Cardella 2020). In particular, in cases where the intuitive answer to a problem conflicts with the normatively correct answer, they are less likely to offer the intuitive, but incorrect, answer.

For this reason, subjects with schizophrenia often outperform control subjects in deductive logic tasks. People with schizophrenia are more likely to recognize the validity of syllogisms with a counter-intuitive conclusion than control subjects. And they are better at correctly falsifying conditional rules (e.g. at constructing a scenario that falsifies "If there is a red square on the left, then there is not a yellow circle on the right"; Mellet et al. 2006). Being good at logical reasoning is also one of the ideals set by the Enlightenment tradition.

In sum, the claim that subjects with schizophrenia adopt an Enlightenment epistemic style elegantly explains all of these facts—the biases I outlined in §2 and their performance at these reasoning tasks—in a unified manner.

This is surprising: we often think of the Enlightenment as an especially intellectually virtuous period, something to aspire to. Yet we do not aspire to reasoning like someone who has schizophrenia. I do not take this to be an objection to my claim. Instead, this result should lead us to re-consider our assessment of the ways of reasoning we find in schizophrenia—a task I turn to in §4.

Before that, I want to qualify and clarify the central claim of this section. As I

---

6. Fully substantiating this claim would require a deeper investigation of the epistemic ideals set by Enlightenment figures. And, of course, thinkers in the tradition had disagreements about epistemology: there isn't one single epistemic style that everyone in this tradition recommended. Below, I will outline the epistemic style that is implicit in one common stereotype of what the Enlightenment recommended.

noted early in §2, not all patients with schizophrenia who develop delusions display the patterns of reasoning I outlined in that section, and they may display these biases to different extents. Further, some extreme cases of delusion in schizophrenia might not be explainable by appeal to patterns of reasoning from the patient's experience. Sometimes, patients with schizophrenia make claims that are hard to make sense of in a literal sense (e.g. "I am the hand of God"). It is hard to see how experience and reasoning could lead to such a belief.

Because I take the heterogeneity of schizophrenia seriously, I am not here claiming that there is one single way of setting epistemic preferences, values, and policies that is definitional of schizophrenia. The claim is more modest.

First, I am not claiming that all patients with delusions in schizophrenia have this epistemic style. I am claiming only that, insofar as their delusions are partially explained in terms of the reasoning patterns described in §2, they inhabit the Enlightenment epistemic style I have described.

Second, it is plausible to think that the same epistemic style is compatible with a range of ways of setting epistemic parameters. The claim that patients share an epistemic style does not commit us to strong claims about all setting their epistemic parameters to the very same values, but only to values that correspond to the same personality. Further, the epistemic personality described is fairly bare-bones. It can be complemented by different weighings of theoretical values, epistemic risk preferences, and other epistemic factors. It can also be shaped by a range of non-epistemic dispositions, such as the externalizing attribution style that is well-documented in the case of paranoid delusions (Bentall 2019). We should understand the Enlightenment epistemic style as a genus with multiple species.

4 Reasoning in Schizophrenia (Partially) Rehabilitated

The last section leaves us very far from traditional conceptions of schizophrenia. Early thinking about schizophrenia—which, arguably, has remained culturally dominant—emphasized the fraying and fragmentation of thinking in patients (Andreasen 2000). On this traditional view, schizophrenia is "a peculiar destruction of internal connections of the psychic personality" (Kraepelin 1919) which interrupts the "associative threads that guide our thinking" (Bleuler 1950).

If delusions in schizophrenia result from reasoning in the Enlightenment epistemic style, this view is clearly false. Schizophrenia does not interrupt inferential connections. It involves inferences from the patient's experience. It is just that these inferences are governed by different parameter settings than inferences in control subjects. Similarly, schizophrenia does not destroy the patient's psychic personality. Instead, it reshapes it, partially by resetting the patient's epistemic values, preferences, and policies. Against Shea (2013). patients can be understood at the personal level, as people drawing inferences from their experiences in an attempt to understand the world.

But we can and should go even further from traditional conceptions of schizophrenia. In this section, we arrive at the big pay-offs of the interpretation of reasoning in schizophrenia that I have defended in §3. First, I will argue that this interpretation supports the claim that reasoning in schizophrenia is on a continuum with reasoning

in healthy subjects. More provocatively, I will argue against the view that reasoning in schizophrenia is profoundly irrational. By this I mean two things. First, the epistemic style that patients take up is rational in some contexts. It is not an intrinsically epistemically bad style. Second, if patients' strange experiences (including, notably, experiences of salience) were veridical, adopting such an epistemic style would be rational.

4.1 The Continuum View

I have argued that reasoning in schizophrenia is the result of setting up certain epistemic parameters (namely, evidential preferences and evidential threshold policy) in specific ways. These settings are more extreme than those found by averaging the control population. Subjects with delusions in schizophrenia have more of an inclination towards their own experience as opposed to testimony as a source of evidence and lower their evidential thresholds. Nevertheless, the parameters themselves that are shared with ordinary, non-psychiatric subjects. Their reasoning is governed by the same machinery, but with different values punched into parameters that determine its operation.

To put it another way: the differences in reasoning between subjects with schizophrenia and ordinary subjects are a matter of setting certain parameters that govern interactions with evidence in a more extreme way than the average control subject. These are differences of degree, not of kind, between patients' and control subjects' reasoning.

This amounts to an endorsement of the Continuum View of reasoning in schizophrenia. According to this view, such reasoning is not qualitatively different from reasoning in non-psychiatric subjects (Van Os et al. 2009). It is just at the end of the population spectrum, where there is also variation in the non-psychiatric population in how these parameters are set.

The Continuum View fits well with the fact that there are less severe and more common psychiatric diagnoses that overlap with schizophrenia. Schizotypal personality disorder is estimated to have lifetime prevalence of around 4% (Rosell et al. 2014) (as opposed to schizophrenia's 1% (Andreasen 2000)). It also fits naturally with the fact that psychotic experiences and delusions are commonly found in the non-clinical population. Subclinical psychotic experiences have a median prevalence rate of around 5% (Van Os et al. 2009). And approximately 6–9% of the population have been found to have a delusion (albeit often of less severity than clinical cases), with a further 10–15% of the non-clinical population displaying fairly regular delusional ideation (Freeman 2006), for example, feeling that they are being spied on or persecuted by others. These facts suggest that schizophrenia is not an island apart from the continent of ordinary cognition, but a peninsula stretching out from it.

More strongly, we have reason to think that some non-clinical subjects reason in ways that are very similar to what we have seen in the case of schizophrenia.

As we have seen, patients set epistemic parameters is ways which Enlightenment thinkers would recommend. Indeed, we can see reasoning with some of these features at play in good science. Good scientists often hold on to their theories and work on elaborating them in the face of counter-evidence (Fleisher 2018). They consider

hypotheses that are at odds with dominant paradigms (Kuhn 1970). And they reason through the evidence by themselves, not relying on others' say-so or existing assessments of the evidence.

The similarities between reasoning in schizophrenia and that of conspiracy theorists are perhaps even more interesting. Fraser (2020) proposes that "contemporary conspiracism is a coupling of Cartesian paranoia ["a refusal to allow that the evidence really guarantees what it appears to show''] with a very unCartesian passional structure: epistemic fear of missing out, or FOMO," which she characterizes in terms of extreme epistemic risk-seeking. We can understand reasoning in schizophrenia in similar terms. Patients with delusions in schizophrenia are also willing to take extreme epistemic risks, thereby considering hypotheses and endorsing beliefs that others would not. And, in considering such a wider range of hypotheses, they refuse to allow that the evidence really guarantees what it appears to show to everyone else.

It seems, then, that we can say something more surprising than the claim that reasoning in schizophrenia is at the extreme of a statistical distribution with normal subjects in the middle. Reasoning in schizophrenia might, in fact, overlap with that of different sorts of non-psychiatric subjects, ranging from scientists to conspiracy theorists. This would, of course, not show up in averages of a control population in simple tasks.[7]

This raises an important question. If they reason in similar ways to some members of the non-clinical population, why do people with schizophrenia end up with such bizarre beliefs?

Obviously, offering a full explanation of delusions in schizophrenia is beyond the scope of this paper. But one lesson of the project is precisely that we must look to factors other than reasoning to explain why people with schizophrenia arrive at such strange views of the world. In particular, we must look to their *experience* of the world, not to how they reason from this experience. If the minds of people with schizophrenia differ radically from those of non-clinical subjects, the source of discontinuity will lie in experience, not reasoning.

Perhaps the most well-documented experiential disturbance in schizophrenia has to do with the misallocation of salience (Kapur 2003). Patients in schizophrenia experience ordinary aspects of the world as unusual, important, and salient (and may, conversely, fail to register the importance of important aspects; see Sass and Pienkos (2013) for more detail on the experience of schizophrenia). For a patient,

> A dog, a horse, and an old lady were no longer just objects among many others within a certain natural perceptual context, but especially accentuated elements against a more or less meaningless background (Matussek et al. 1987, 90)

---

7. This might seem in tension with the differences from the control population I discussed in §2. But the tension is illusory. To find the similarities between clinical cases and some non-clinical ones, we need to take the approach I take here, and consider how specific sub-groups reason in specific contexts. Further, it is an open question whether (some) scientists and conspiracy theorists set their epistemic parameters as extremely as patients with schizophrenia. Sameness in parameters is arguably not necessary for sameness in style, however. Styles encompass ranges of epistemic parameters, as long as something we would count as the same epistemic personality is expressed by those parameters.

Their experience provides them with input to reasoning that is extremely different from that of control subjects. And the input that we start from makes a big difference to the output of reasoning processes. If there are radical discontinuities between the non-clinical population and people with schizophrenia, I contend that they will be found in differences in experience.

4.2   Rationality?

I have argued that reasoning in schizophrenia is not radically discontinuous from reasoning we would deem ordinary. People with schizophrenia are "in the space of reasons" (Sellars 1956). They interact with evidence in genuinely inferential ways, governed by epistemic parameters that they share with ordinary believers.

This rehabilitates reasoning in schizophrenia—and reasoners with schizophrenia—to some extent. But inclusion in the space of reasons does not imply that one is rational, or that one's reasoning is rational. Is the epistemic style that I claimed to be at play in schizophrenia epistemically rational? And is it epistemically rational for people with schizophrenia to adopt such an epistemic style?

My focus is on epistemic, as opposed to instrumental or practical, assessment. In other words, I won't be interested in whether it is practically useful for patients to adopt this epistemic style, whether it helps them cope, or other such questions. The term 'epistemically good' is meant to function as a placeholder. There are different kinds of "epistemic gold stars" that we award to agents, their mental processes, and their mental states: rationality, reasonableness, justification, and so on. What is required for each of these statuses is highly contested. So as to avoid wading into such debates, I will focus on truth-conduciveness, criticizability, and intuitive verdicts on epistemic goodness.[8]

The Enlightenment epistemic style I have described is clearly not always epistemically bad. At least in some circumstances, we would praise scientists for adopting this style in conducting their research. Specifically, we sometimes praise scientists for persisting in exploring a line of inquiry that flies in the face of dominant paradigms, and reasoning through the evidence by themselves without relying on the status quo. Indeed, adopting such an epistemic style might be necessary for arriving at new, better, theories. And, regardless of what we think about the epistemic goodness of individuals who reason in these ways, it is plausible that is kind of conduct is beneficial to scientific progress (Fleisher 2018).

In other cases, however, we are highly critical of this epistemic style. For instance, beliefs in conspiracy theories are criticizable, and so are the habits of reasoning that lead to such beliefs. We think it is epistemically vicious of conspiracy theorists to not rely on relevant epistemic authorities; to fail to sufficiently avoid false beliefs; and to not trust straightforward interpretations of the evidence they receive.

These two cases suffice to illustrate that there is no straightforward answer 'yes/no' to whether the Enlightenment epistemic style is epistemically good or bad. Whether it is good or bad to adopt this style depends on the circumstances of its adoption.

---

8. See Flores and Woodard (ms.) for justification of this methodology.

The style itself is neither good nor bad. But is it epistemically good for patients to adopt this style?

Clearly, applying the Enlightenment epistemic style to their experience is not truth-conducive. It leads to delusions —false, indeed wildly implausible, beliefs held against the available evidence.[9] It is not epistemically good for patients to adopt this style.

Nevertheless, there is a sense in which it is reasonable for patients to adopt this epistemic style. To see this, suppose that their experience were veridical. Suppose that the things that they experience as salient and in need of explanation were indeed puzzling, odd, endowed with a sense of fearfulness, and so on. In other words, adopt the perspective of someone who experiences the world in these ways and takes their experience at face value. What epistemic style would you adopt in such circumstances?

Plausibly, you would adopt something like the Enlightenment epistemic style. If your unique experiences that everyone denies were accurate, you would have good reason to dismiss their testimony. From your perspective, they would be getting it wrong when it comes to their basic experience of the world. This should make you distrust their epistemic abilities. Further, if your strange experiences were veridical, you would have good reason to consider "out-there" hypotheses. After all, you would already know that you are in an epistemic bad place if you stick with common sense. Desperate measures are needed to get out.

In sum, in such circumstances, it would be natural to set your evidential preferences and evidential threshold policy in ways characteristic of the Enlightenment epistemic style. Note that it would be natural to do so from the perspective of a rational, or at least non-clinical, agent who has these experiences and takes them at face value. The agent's experiences make it reasonable to adopt this epistemic style.

Whether it is actually rational to adopt this epistemic style hangs on contentious questions in epistemology. Specifically, it hangs on your take on the internalism vs. externalism debate. More intuitively, it depends, as I will now explain, on whether rationality is determined by the agent's perspective.[10]

Internalists (BonJour 1980, Cohen 1984, Feldman and Conee 2001) think that rationality is a function of how things look from one's perspective. To test for whether adopting the Enlightenment epistemic style is rational, we do not need information about the context of its application. We do not need to know, for instance, whether employing that style is truth-conducive given the way the world is. We just ask some version of: given facts about the agent's evidence (and perhaps other mental states), should the agent reason in these ways? Given the thought experiment I have suggested through above, internalists will tend to agree that adopting the Enlightenment epistemic style is rational for these patients. It makes sense in light of their experience.[11]

---

9. There is disagreement about whether delusions are beliefs. Elsewhere, I argue that they are (Flores 2021b). For an overview of the debate, see Bortolotti and Miyazono (2015).

10. The debate is usually framed in terms of justification. But justification applies to beliefs, and I am here concerned with the assessment of the adoption of an epistemic style.

11. It might be the case that the way patients set their epistemic parameters is too extreme, even in light of their experience. For this reason, internalists might end up classifying adopting this epistemic style as

In contrast, externalists hold that rationality is at least partly a function of facts beyond one's own mental states. Rationality partially depends on external context and on how the agent relates to it. The fact that the patient's experience licenses adopting this epistemic style does not suffice to make adopting that epistemic style rational. Popular versions of externalism hold that rationality is a matter of employing reliable (Armstrong 1973, Goldman 1979) or safe (Pritchard 2005, Sosa 2007, Williamson 2002) methods to arrive at one's beliefs. Eliding differences that do not matter for my purposes, whether a method is reliable or safe is a matter of its truth-conduciveness in a relevant range of circumstances.

As we have seen, employing the Enlightenment epistemic style in the context of schizophrenia systematically leads to epistemically bad beliefs. It is not truth-conducive in actual circumstances or in the modal neighborhood. For the externalist, then, it will be natural to think that adopting this epistemic style is irrational.

Nonetheless, even externalists will want to go easy on their judgment of patients with schizophrenia. Patients are doing the best they can given the distorted connection to the world that their experience affords. For this reason, the patient with schizophrenia may be excused for being irrational in this way.

Ultimately, providing a full epistemic assessment of reasoning in schizophrenia requires taking a stance on the specifics of epistemic assessment. One would need to get clear on exactly what parameter settings are reasonable in light of different kinds of experience. One would have to settle on one specific version of internalism or externalism about epistemic assessment. And, given that epistemic styles are packages of dispositions, one would need a detailed account of how to assess epistemic dispositions, such as Lasonen-Aarnio (2020)'s.

However, this short discussion licenses some significant conclusions.

First, epistemic styles are not epistemically good or bad in and of themselves. Their value depends on the context of application. The Enlightenment epistemic style is epistemically good in some contexts of application (scientific inquiry), and epistemically toxic in others (conspiracy theorizing).

Second, adopting the Enlightenment epistemic style in schizophrenia is rational from an internalist point of view, and irrational but excused according to externalists. No matter which way one goes, the epistemic standing of reasoning in schizophrenia emerges as somewhat rehabilitated. Even externalists agree that there is something significant going for it from the subject's perspective.

This should encourage some humility on our part. As we saw in §4.1, patients with schizophrenia are not reasoning in ways that are radically different from our own. Instead, they have found themselves having strange experiences, and are trying to manage their take on the world in light of such de-stabilizing experiences. From this angle, it is hard to sustain a sense of steady epistemic superiority. The appropriate attitude seems to be one of 'there but for the grace of God go I'. If we were unlucky enough to experience the world as they do, our reasoning powers would not save us. Whether we are tethered to the world is fragile, and good reasoning cannot guarantee such a connection. We are hostage to the proper functioning of the psychological mechanisms behind our experience of the world. Looking outward, acknowl-

---

irrational nonetheless. This requires more detailed investigation.

edging this point should facilitate empathy and discourage stigmatizing patients with schizophrenia.

This result also has implications for studying and treating schizophrenia. In agreement with an influential recent line of work emerging from Kapur (2003), we should see schizophrenia as fundamentally a disorder of salience and experience, not of reasoning. Research and treatment should focus on those aspects of the mind. At a normative level, it emerges that the fundamental epistemic mistake at play in schizophrenia is not at the level of reasoning, but at the level of experience and salience.

In a sense, then, the view sketched harks back to experiential abnormality accounts (Maher 1974, Kapur 2003) according to which delusions arise as the result of abnormal perceptual experiences. In agreement with such accounts, I think we should not pathologize the reasoning at play in schizophrenia. However, such accounts deny the the relevance of the way in which patients reason from these experiences. In contrast, my account (like two-factor accounts; Coltheart 2007, Coltheart et al. 2011, Davies and Coltheart 2000, Davies and Davies 2009, Stone and Young 1997) holds that both experience and reasoning from that experience are relevant explanatory factors (and merit detailed investigation).[12]

Finally, this discussion suggests some intriguing lines of research on epistemic pathologies other than schizophrenia. I have argued that patients with schizophrenia adopt an epistemic style that helps make sense of their experience of the world. Generalizing from this, perhaps individuals quite generally adopt epistemic styles that suit their experience of the world. Ways of reasoning that appear as mere biases—in conspiracy theorizing, for example—may in fact be adaptations to aspects of the agent's experience, such as the information they receive and how it is structured with respect to salience.

If this is true, then preventing the spread of bad beliefs will involve attending carefully to experience and salience. Focusing on the agent's reasoning on its on will not take us very far. And, to the extent that we want to promote specific ways of reasoning, we need to attend to the context of employment. Epistemic styles that are a good idea in one context may lead us badly astray in another. This puts some pressure on applied epistemology projects that focus on promoting context-general virtues. Perhaps we would be better off focusing on curating and disseminating suites of context-specific epistemic styles.

5   Conclusion

On the surface, reasoning in schizophrenia is beyond the bounds of sense. It is "confusing, off-putting, nonsensical, unpredictable, inexplicable, and just plain bad" (Wang 2019). By analyzing empirical results on reasoning in schizophrenia, I have argued that this popular impression is wrong. Reasoning in schizophrenia is the result of setting epistemic parameters in familiar ways, indeed, in ways that we praise in other contexts. It has much in common with ways of reasoning promoted by the Enlighten-

---

12. My account connects reasoning and experience: reasoning in schizophrenia is adopted in response to the patients' experience. This leaves open that, as the predictive error account holds, the same process—prediction error disruption.

ment tradition. Once we see this, it is hard to maintain that patients with schizophrenia reason in radically different ways from our own, or that their reasoning displays deep irrationality. Schizophrenia emerges as, primarily, a disturbance at the level of salience, with subjects doing the best they can to make sense of their unusual experiences.

Works Cited

Nancy C Andreasen. Schizophrenia: the fundamental questions. *Brain Research Reviews*, 31(2-3):106–112, 2000.

David Malet Armstrong. *Belief, truth and knowledge*. Cambridge University Press, 1973.

Richard P Bentall. Cognitive biases and abnormal beliefs: Towards a model of persecutory delusions. In *The neuropsychology of schizophrenia*, pages 337–360. Psychology Press, 2019.

Richard P Bentall, Peter Kinderman, and Sue Kaney. The self, attributional processes and abnormal beliefs: Towards a model of persecutory delusions. *Behaviour research and therapy*, 32(3):331–341, 1994.

Eugen Bleuler. Dementia praecox or the group of schizophrenias. 1950.

Laurence BonJour. Externalist theories of empirical knowledge. *Midwest studies in philosophy*, 5:53–73, 1980.

Lisa Bortolotti and Matthew R Broome. Delusional beliefs and reason giving. *Philosophical Psychology*, 21(6):821–841, 2008.

Lisa Bortolotti and Kengo Miyazono. Recent work on the nature and development of delusions. *Philosophy Compass*, 10(9):636–645, 2015. doi: 10.1111/phc3.12249.

Michael V Bronstein and Tyrone D Cannon. Bias against disconfirmatory evidence in a large nonclinical sample: Associations with schizotypy and delusional beliefs. *Journal of Experimental Psychopathology*, 8(3):288–302, 2017.

Lisa Buchy, Todd S Woodward, and Mario Liotti. A cognitive bias against disconfirmatory evidence (bade) is associated with schizotypy. *Schizophrenia research*, 90 (1-3):334–337, 2007.

Valentina Cardella. Rationality in mental disorders: too little or too much? *European Journal of Analytic Philosophy*, 16(2):13–36, 2020.

Stewart Cohen. Justification and truth. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition*, 46(3):279–295, 1984. ISSN 00318116, 15730883. URL http://www.jstor.org/stable/4319711.

Max Coltheart. Cognitive neuropsychiatry and delusional belief. *Quarterly Journal of Experimental Psychology (2006)*, 60(8):1041–1062, 2007.

Max Coltheart, Robyn Langdon, and Ryan McKay. Delusional belief. *Annual review of psychology*, 62:271–298, 2011.

Anne M. Aimola Davies and Martin Davies. Explaining pathologies of belief. In Matthew Broome and Lisa Bortolotti, editors, *Psychiatry as Cognitive Neuroscience: Philosophical Perspectives*. Oxford University Press, 2009.

Martin Davies and Max Coltheart. Pathologies of belief. In Martin Davies and Max Coltheart, editors, *Pathologies of belief*. Wiley-Blackwell, 2000.

Robert Dudley, Peter Taylor, Sophie Wickham, and Paul Hutton. Psychosis, delusions and the "jumping to conclusions" reasoning bias: a systematic review and meta-analysis. *Schizophrenia bulletin*, 42(3):652–665, 2016.

Richard Feldman and Earl Conee. Internalism defended. *American Philosophical Quarterly*, 38(1):1–18, 2001.

Will Fleisher. Rational endorsement. *Philosophical Studies*, 175(10):2649–2675, 2018.

Carolina Flores. Epistemic style. *Philosophical Topics*, 49(2):35–55, 2021a.

Carolina Flores. Delusional evidence-responsiveness. *Synthese*, 199(3):6299–6330, 2021b.

Carolina Flores and Elise Woodard. Epistemic norms on evidence-gathering. ms.

Rachel Fraser. Epistemic FOMO. *The Cambridge Humanities Review*, 2020.

Daniel Freeman. Delusions in the nonclinical population. *Current psychiatry reports*, 8(3):191–204, 2006.

Daniel Freeman. Suspicious minds: the psychology of persecutory delusions. *Clinical psychology review*, 27(4):425–457, 2007.

Daniel Freeman, Philippa A Garety, Elizabeth Kuipers, David Fowler, and Paul E Bebbington. A cognitive model of persecutory delusions. *British Journal of Clinical Psychology*, 41(4):331–347, 2002.

Philippa Garety, Daniel Freeman, Suzanne Jolley, Kerry Ross, Helen Waller, and Graham Dunn. Jumping to conclusions: the psychology of delusional reasoning. *Advances in psychiatric treatment*, 17(5):332–339, 2011.

Andreas Glöckner and Steffen Moritz. A fine-grained analysis of the jumping to conclusions bias in schizophrenia: data-gathering, response confidence, and information integration. *MPI Collective Goods Preprint*, (2008/48), 2008.

Alvin I Goldman. What is justified belief? In *Justification and knowledge*, pages 1–23. Springer, 1979.

Jules Holroyd, Robin Scaife, and Tom Stafford. What is implicit bias? *Philosophy Compass*, 12(10):e12437, 2017.

Immanuel Kant. *Practical philosophy*. Cambridge University Press, 1999.

Shitij Kapur. Psychosis as a state of aberrant salience: a framework linking biology, phenomenology, and pharmacology in schizophrenia. *American journal of Psychiatry*, 160(1):13–23, 2003.

Emil Kraepelin. *Dementia praecox and paraphrenia*. Livingstone, 1919.

Thomas S Kuhn. *The structure of scientific revolutions*, volume 111. Chicago University of Chicago Press, 1970.

Maria Lasonen-Aarnio. Perspectives and good dispositions. *Philosophy and Phenomenological Research*, 2020.

Brendan A Maher. Delusional thinking and perceptual disorder. *Journal of individual psychology*, 30(1):98, 1974.

P Matussek, J Cutting, and M Shepherd. Studies in delusional perception. *The clinical roots of the schizophrenia concept*, pages 89–103, 1987.

Emmanuel Mellet, Olivier Houdé, Perrine Brazo, Bernard Mazoyer, Nathalie Tzourio-Mazoyer, and Sonia Dollfus. When a schizophrenic deficit becomes a reasoning advantage. *Schizophrenia research*, 84(2-3):359–364, 2006.

Kengo Miyazono and Alessandro Salice. Social epistemological conception of delusion. *Synthese*, pages 1–21, 2020.

S Moritz, TS Woodward, L Jelinek, and R Klinge. Memory and metamemory in schizophrenia: a liberal acceptance account of psychosis. *Psychological medicine*, 38(6):825–832, 2008.

Steffen Moritz and Todd S Woodward. Plausibility judgment in schizophrenic patients: evidence for a liberal acceptance bias. *German Journal of Psychiatry*, 7(4):66–74, 2004.

Steffen Moritz and Todd S Woodward. Jumping to conclusions in delusional and non-delusional schizophrenic patients. *British Journal of Clinical Psychology*, 44(2):193–207, 2005.

Steffen Moritz and Todd S Woodward. A generalized bias against disconfirmatory evidence in schizophrenia. *Psychiatry research*, 142(2-3):157–165, 2006.

Steffen Moritz, Todd S Woodward, and Martin Lambert. Under what circumstances do patients with schizophrenia jump to conclusions? a liberal acceptance account. *British Journal of Clinical Psychology*, 46(2):127–137, 2007.

Steffen Moritz, Ruth Veckenstedt, S Randjbar, Birgit Hottenrott, TS Woodward, FV v Eckstaedt, Christiane Schmidt, Lena Jelinek, and TM Lincoln. Decision making under uncertainty and mood induction: further evidence for liberal acceptance in schizophrenia. *Psychological medicine*, 39(11):1821–1829, 2009.

Sylvia Nasar. *A beautiful mind*. Simon and Schuster, 2011.

Josef Parnas, Julie Nordgaard, and Somogy Varga. The concept of psychosis: a clinical and theoretical analysis. *Clinical Neuropsychiatry*, 7(2):32–37, 2010.

Matthew Parrott. Bayesian models, delusional beliefs, and epistemic possibilities. *The British Journal for the Philosophy of Science*, 2020.

Sarah Paul and Jennifer Morton. Grit. *Ethics*, 129(2):175–203, 2018. doi: 10.1086/700029.

David L Penn, Lawrence J Sanna, and David L Roberts. Social cognition in schizophrenia: an overview. *Schizophrenia bulletin*, 34(3):408–411, 2008.

Duncan Pritchard. *Epistemic luck*. Clarendon Press, 2005.

Jenefer M. Robinson. Style and personality in the literary work. *The Philosophical Review*, 94(2):227–247, 1985.

Daniel R Rosell, Shira E Futterman, Antonia McMaster, and Larry J Siever. Schizotypal personality disorder: a current review. *Current psychiatry reports*, 16(7):1–12, 2014.

Robert Malcolm Ross, Ryan McKay, Max Coltheart, and Robyn Langdon. Jumping to conclusions about the beads task? a meta-analysis of delusional ideation and data-gathering. *Schizophrenia bulletin*, 41(5):1183–1191, 2015.

Louis A Sass and Elizabeth Pienkos. Delusion: The phenomenological approach. *KWM Fulford*, 2013.

Wilfrid Sellars. Empiricism and the philosophy of mind. *Minnesota studies in the philosophy of science*, 1(19):253–329, 1956.

Nicholas Shea. Neural mechanisms of decision-making and the personal level. In K. W. M. Fulford, M. Davies, G. Graham, J. Sadler, G. Stanghellini, and T. Thornton, editors, *Oxford Handbook of Philosophy and Psychiatry*, pages 1063–1082. Oxford University Press, 2013.

Andrew Sims. *Symptoms in the mind: An introduction to descriptive psychopathology*. Bailliere Tindall Publishers, 2003.

Ernest Sosa. *A virtue epistemology: Apt belief and reflective knowledge, volume I*, volume 1. OUP Oxford, 2007.

Tony Stone and Andrew W Young. Delusions and brain injury: The philosophy and psychology of belief. *Mind & Language*, 12(3-4):327–364, 1997.

Henri Tajfel, Michael G Billig, Robert P Bundy, and Claude Flament. Social categorization and intergroup behaviour. *European journal of social psychology*, 1(2):149–178, 1971.

Jim Van Os, Richard J Linscott, Inez Myin-Germeys, Philippe Delespaul, and LJPM Krabbendam. A systematic review and meta-analysis of the psychosis continuum: evidence for a psychosis proneness–persistence–impairment model of psychotic disorder. *Psychological medicine*, 39(2):179–195, 2009.

Esmé Weijun Wang. *The collected schizophrenias: Essays*. Graywolf Press, 2019.

Timothy Williamson. *Knowledge and its Limits*. Oxford University Press on Demand, 2002.

Todd S Woodward, Steffen Moritz, Carrie Cuttler, and Jennifer C Whitman. The contribution of a cognitive bias against disconfirmatory evidence (bade) to delusions in schizophrenia. *Journal of clinical and experimental neuropsychology*, 28(4):605–617, 2006.

Todd S Woodward, Steffen Moritz, Mahesh Menon, and Ruth Klinge. Belief inflexibility in schizophrenia. *Cognitive neuropsychiatry*, 13(3):267–277, 2008.

J. Yager and M.J. Gitlin. Clinical manifestations of psychiatric disorders. In B.J. Sadock and V.A. Sadock, editors, *Kaplan and Sadock's comprehensive textbook of psychiatry: Vol. 1*. Lippincott, Williams & Wilkins, 2005.