

Delusions as performance failures

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Delusions are explanations of anomalous experiences. A theory of delusion requires an explanation of both the anomalous experience *and* the apparently irrational explanation generated by the delusional subject. Hence, we require a model of rational belief formation against which the belief formation of delusional subjects can be evaluated. *Method.* I first describe such a model, distinguishing procedural from pragmatic rationality. Procedural rationality is the use of rules or procedures, deductive or inductive, that produce an inferentially coherent set of propositions. Pragmatic rationality is the use of procedural rationality *in context*. I then apply the distinction to the explanation of the Capgras and the Cotard delusions. I then argue that delusions are failures of pragmatic rationality. I examine the nature of these failures employing the distinction between performance and competence familiar from Chomskian linguistics. *Results.* This approach to the irrationality of delusions reconciles accounts in which the explanation of the anomalous experience exhausts the explanation of delusion, accounts that appeal to further deficits within the reasoning processes of delusional subjects, and accounts that argue that delusions are not beliefs at all. (Respectively, one-stage, two-stage, and expressive accounts.) *Conclusion.* In paradigm cases that concern cognitive neuropsychiatry the irrationality of delusional subjects should be thought of as a performance deficit in pragmatic rationality.

On some conceptions of rationality, a rational subject is one whose reasoning conforms to procedures, such as logical rules, or Bayesian decision theory, which produce inferentially consistent sets of propositions. However, in a significant number of cases, delusional beliefs are embedded in chains of valid, or probabilistically justified (once idiosyncratic evidential weightings are taken into account) inference. This finding is reinforced by experimental results which show that some delusional subjects perform as well (or as badly) as normal subjects on standard tests of procedural rationality, that is, the ability to reason

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in accordance with logical rules or the Bayesian probability calculus (Huq, Garety, & Hemsley, 1988; Kemp, Chua, McKenna, & David, 1997).¹ Thus there is an interesting body of cases in which procedural rationality does not distinguish the delusional from the normal subject. How then should we account for delusional belief?

One-stage theorists of delusion, like Brendan Maher, argue that the difference between normal and delusional subjects consists in perceptual or other malfunctions which produce anomalous experience (Maher, 1999). We can see Maher as arguing that the anomalous experience of delusional subjects gives them good evidence for their delusional belief. So much so that the delusional hypothesis is justified by the application of procedural rationality to this evidence. This is the one-stage theory of delusion. Other, two-stage, theorists such as Hadyn Ellis, have argued that the explanation of delusion requires additional hypotheses about the abnormal way the delusional subject reasons about his/her experience (Ellis, 1998; Stone & Young, 1997). Still others (e.g., Berrios, 1991) have suggested that delusions are not beliefs at all because a proposition so clearly falsified by other facts available to the subject, and hence disqualified by the proper application of procedural rationality, cannot be sincerely believed.

In this paper I shall suggest that both Maher and Ellis are correct. Maher is right that, in the cases I discuss, the delusional belief is justified by the application of unimpaired procedural rationality to an anomalous experience. Ellis is, however, also right to say that the delusional subject is irrational. I reconcile this apparent conflict by showing that the difference between delusional and normal subjects is not typically a matter of procedural rationality but of pragmatic rationality. Pragmatic rationality is what the normal subject uses to decide which of two or more hypotheses equally consistent with an item of prima-facie evidence should be adopted. Pragmatic rationality resolves issues as these. What counts as good evidence? How far should we search for further evidence? How should we decide which of two hypotheses that are equally consistent with the evidence and have an equal procedural valence (i.e., which produce equally consistent, though not identical, sets of beliefs) to adopt? How are initial probabilities assigned? Answers to these questions vary from context to context and (so far) evade formal capture.

Thus, the rational subject is one who can decide which hypothesis, justified by rules of procedural rationality, is appropriate in a given context. Or, to put it another way, the rational subject is one who knows how to use procedural rationality in context. This ability I shall call Pragmatic Rationality. The irrationality of delusional subjects resides in this aspect of his/her psychology.

¹Of course many delusional patients also perform poorly on these tests. In these cases, however, the hypothesis is that the poor performance is due to impairment in intelligence (Maher, 1999; Stevens, Crow, Bowman, & Coles, 1978).

Humans seem to rely on a network of implicit background assumptions to solve these problems and one way of characterising the irrationality of delusion is that these *pragmatic* aspects of reasoning, seem quite deviant. In trying to characterise the nature of this deviance the distinction between performance and competence first made in Chomskian linguistics is helpful. That distinction is often made in discussions of rationality but it is usually restricted to procedural rationality (Stanovich, 1999; Stein, 1996). I shall argue that we need to apply the distinction to pragmatic rationality as well, and that, once we do so, we can characterise the irrationality of the delusional subject as a failure of pragmatic performance rather than competence. My reasons are:

- (i) the course of those delusions which resolve;
- (ii) the evidence from cognitive psychology on reasoning biases and strategies; and
- (iii) the potential such a conception offers for an integrative account of delusion which reconciles the arguments given by one- and two-stage theorists and expressivists.

In the rest of the paper I explain why procedural rationality alone is insufficient to account for the apparent irrationality of delusional subjects. I then explain the performance/competence distinction and apply it to the delusional cases. Finally, I argue that the above considerations support the conclusion that the irrationality of delusional subjects is a matter of pragmatic performance not competence.

PROCEDURAL AND PRAGMATIC RATIONALITY

To see, initially, how these rather abstract considerations function in the explanation of delusional reasoning, consider a system that models inductive reasoning using the axioms of probability theory. This type of Bayesian system represents a network of propositions and their interrelations of probabilistic confirmation and disconfirmation (Fischhoff & Beyth-Maram, 1983). As a proposition is confirmed or disconfirmed the degree of credence assigned other propositions to which it lends support is modified accordingly. The result is a network of propositions in a coherent and consistent web of probabilistic justification. It is a characteristic of such systems that the degree of confirmation assigned to any particular proposition depends on its relations with others in the system. Furthermore, every proposition stands in potential relations of confirmation or disconfirmation with *all* the others. Thus, the system is procedurally rational and inferentially holistic.

If our problem is to determine what is wrong with the reasoning of a delusional subject who, say, assigns an initial 98% probability to the proposition that her husband has been replaced by a replica this model does not help. The Bayesian theory nicely models the probabilistic recalibration of the web of

interrelated propositions (Hemsley & Garety, 1986) but is silent on crucial issues: How the subject came by the delusional belief in the first place and why she assigns it such high initial probability.

Or, to take another relevant case, our problem might be to decide why two people, or one person at two different times, adopt different, equally rational (in the sense of having the same procedural valence) explanations of the same experience. Person 1 might explain a distressing experience, perhaps unhappiness following losing a job, in terms of the influence of the external world, her biased colleagues. Person 2 tends to blame herself, accusing herself of incompetence or laziness. Both explanations might be equally supported by the evidence. (A person might be both incompetent and the victim of a conspiracy. Australian dockworkers are a case in point.) There is good evidence that people tend to fall into one or other attributional styles (externalising or introjective) in cases such as this. Furthermore, those styles are implicated in the rationalisation of the anomalous experiences which give rise to delusions and help to explain their content. (See the discussion of Bentall in the next section, Beck, 1989, and Candido & Romney, 1990, for introjective attributional styles.)

In each case, the adoption of the delusional hypothesis and the unusual patterns of evidential weighting that maintain it, cannot be explained *within a theory of procedural rationality*. Typically, we find the explanation in the life history, perhaps cultural background, and emotional profile of the subject, but these are not things that can be modelled as part of a theory of procedural rationality.

Attributional styles are part of the pragmatic aspect of rationality. They explain why some propositions will be initially adopted or require higher standards of disconfirmation than others. If these intuitions could be systematised into a theoretical model perhaps we would have the basis for a comparison of deluded and normal subjects along this dimension of inference. Pragmatic rationality notoriously eludes theoretical capture (Fodor, 1987, 2000) but, even in the absence of a final theory or formal model, we can find a principled basis for comparison of the deluded and nondeluded subject.

THE PERFORMANCE/COMPETENCE DISTINCTION

We owe to Noam Chomsky a distinction between linguistic performance and competence. Competence is what one must know in order to use language. Performance is the use one makes of that knowledge in order to understand and produce language. What we see in normal and abnormal language use is performance (Chomsky, 1988; Smith, 1999, pp. 28ff.).

Smith gives the example of someone who due to a stroke is unable to speak (Smith, 1999, p. 28). Their linguistic performance is affected, but not their competence. They can still read, understand spoken language and think in *foro interno*. Other acquired deficits produce various types of aphasia and

agrammatism which destroy competence (Shallice, 1988, pp.180–182). That these disorders produce impaired competence *is a conceptual as well as an empirical truth*. The hypothesis that, say, agrammatism impairs linguistic competence amounts to saying that, even if all performance systems associated with the relevant grammar module were functioning normally, language ability would be nonetheless impaired.

Whether linguistic competence should be characterised as propositional knowledge is difficult issue (which the notion of I-language, introduced as a technical term, evades. (Chomsky, 1980; Knowles, 2000) but the distinction between competence and performance is intuitively clear. It is equally clear for inference. If you ask me what the highest mountain in Africa is I can tell you that it is Mt Kilimanjaro. Furthermore if you then tell me that <Mt Kilimanjaro is in Kenya> I can infer that <the Highest Mountain in Africa is in Kenya>. Knowledge is not the same thing as *the use we make of it in thought*.

Of course, if I have poor attention or memory I may be unable to focus on the question, or retain relevant information long enough to give you the right answer. These are performance failures: I am unable to *use* the knowledge I possess because of damage to the mechanisms on which my ability to make use of that knowledge depends.

In the linguistic case, competence is abstract and idealised, as it models the functioning of a system which operates without interference to produce error-free performance. The degree of idealisation required to model rationality is more controversial. Certain patterns of reasoning error appear to be a systematic part of human psychology. Consequently, some theorists have argued that we should conceive of reasoning competence in terms of procedures which produce these characteristic patterns of error (Nisbet & Ross, 1980; Stanovich, 1999; Stich, 1996; Stich & Nisbet, 1980; Tversky & Kahneman, 1974). Thus, for these theorists, logic and probability theory, which are procedures for producing consistent sets of beliefs, are not models of human inferential competence at all.

In this paper we do not need to determine how closely human rational competence approximates logic or the probability calculus. The reason is that our focus is the difference in reasoning between delusional and normal subjects *however the procedural competence of normal subjects is characterised*. If it is the case (Huq et al., 1988) that the procedural competence of normal and delusional subjects does not vary in ways which can plausibly account for the content of delusions, the vexed issue of how to characterise normal competence is beside the point.

Certainly, in the two cases discussed below, procedural competence seems unimpaired. My argument depends on the idea that the subjects have a grasp of the requirements of procedural rationality (i.e., they understand that their delusional belief would be judged by the normal subject to be inconsistent with other beliefs). However, for some reason, they are prevented from adopting the normal conclusion. Because that difference is not a matter of procedural

competence it must be either a matter of procedural performance or something outside the scope of a theory of procedural rationality. Namely, I argue, the pragmatic aspect of rationality.

This conclusion is consistent with tests of the relative abilities of delusional and nondelusional subjects to use content information to improve their performance on the Wason selection test. Typically, normal subjects improve their performance when the task (recognise and apply *modus ponens*) is presented as a decision in a social context rather than the abstract apprehension of a procedural rule. Interestingly, delusional subjects did not improve their performance when the task was presented with a social content and a concrete context. Dudley and colleagues concluded that the best explanation of this apparent deficit of procedural rationality was “some form of performance failure in people with delusions, rather than an absolute inability to reason” (Dudley, John, Young, & Over, 1998, p. 256).

Rather than think of this type of failure as solely a performance deficit in procedural rationality I suggest that we think of it as further evidence of the inability of delusional subjects to apply procedural rationality in context. That is, as a failure of pragmatic rationality.

In the final sections I consider whether the differences in pragmatic rationality between delusional and normal subjects should be explained as the result of impaired pragmatic competence or performance.

EXPLAINING DELUSIONS

Resolution and restoration

Recall Smith’s example of the person who loses and regains linguistic performance following a stroke:

People are often rendered speechless and appear to lose their language faculty, yet they may subsequently recover and show no ill effects of their trauma. Those who appear to regain their competence this way must be assumed to have retained their competence (Smith, 1998, p. 28).

The ability to speak a language, an ability with a complex and temporally extended developmental profile, would not reappear intact if competence was impaired, seems to be his reasoning. The reason is presumably that the neuroanatomical structures which implement linguistic competence were not permanently damaged by the stroke.

In cases where delusions resolve and normal inferential performance returns, it is reasonable to assume that the neuroanatomical basis of inferential competence is unimpaired. It follows, of course, that where that performance never returns and we can rule out explanation in terms of anomalous experience, or performance interference, the best assumption is that inferential competence

has been damaged. Such seems to be the case in genuinely dementing disorders.² Which of these two options is the case is an empirical matter.

Further support for the idea that delusions do not damage inferential competence is given by explanations of their experience offered by delusional subjects, even during the course of delusion. Consider this report by Young and Leafhead of their conversation with J.K., a patient with the Cotard delusion, in which patients claim that they have died or have no bodily existence:

We asked her during the period in which she claimed to be dead whether she could feel her heart beat, whether she could feel hot or cold and whether she could feel whether her bladder was full. JK said that since she had such feelings even though she was dead they clearly did not represent evidence that she was alive. She said she recognised this was a difficult concept for us to grasp and one which was equally difficult for her to explain, partly because the experience was unique to her and partly because she could not fully understand it herself. We then asked J.K. whether she thought we would be able to feel our hearts beat, to feel hunger and so on if we were dead. J.K. said that we wouldn't and that this experience was unique to her (Young & Leafhead, 1996, p. 158).

Here, J.K.'s procedural rationality seems undisturbed. She instantly reorganises her beliefs to accommodate the one she holds most strongly (that she is dead). But she also seems aware of the abnormality of her pragmatic assumption that the delusional belief is the one to which others must be accommodated by procedural rationality, rather than the other way around.

In another case, a patient with the Capgras delusion (of replication of familiars) admits that he finds it hard to credit his own delusion even as it comes out of his mouth.

E: isn't that [two families] unusual?

S: It was unbelievable.

E: How do you account for it?

S: I don't know. I've tried to understand it myself and it was virtually impossible.

S: What if I told you I don't believe it?

E: That's perfectly understandable. In fact, when I tell the story, I feel that I'm concocting a story ... it's not quite right, something is wrong.

E: If someone told you the story what would you think?

S: I would find it extremely hard to believe. I should be defending myself.

(Alexander, Stuss, & Benson, 1979, p. 335)

In both of these cases subjects are aware that their conclusion is not one that would be reached by a normal reasoner yet are blocked from reaching the

²And, perhaps, in those cases of delusional disorder where poor performance on tests of procedural rationality is correlated with low intelligence (Stevens et al., 1978).

normal conclusion themselves. Thus, I claim their pragmatic competence is intact. In effect this reinforces the point that the test for pragmatic competence is the ability, not only to make inferences on the basis of one's own experience, but to understand the inferences required by normal rationality in that context. The requirement of rationality in these cases, no matter how extreme the anomalous experience, is to draw the nondelusional conclusion, that is, that the subject's experience is "as if" she were dead or her family had been replicated, rather than the delusional one of death or replication. Both subjects seem aware of this requirement. In cases where the ability to make this type of judgement is destroyed then a conclusion that pragmatic competence has been lost seems more appropriate.³

Cognitive psychology

My second reason for thinking that delusions are best thought of as leaving inferential competence intact is the work in cognitive psychology on reasoning biases and attributional styles in delusional and normal subjects. The work on reasoning biases fits nicely within the Bayesian framework described above. A series of studies on probabilistic reasoning tasks have demonstrated convincingly that some delusional patients have a tendency to "jump to conclusions", that is, to adopt an hypothesis on the basis of less evidence than is required by normal subjects⁴ (Dudley, John, Young, & Over, 1997a,b; Garety, 1991; Garety & Hemsley, 1994; Huq et al., 1988; Peters, Day, & Garety, 1997). Summarising these results, Garety and Freeman put the point this way:

These results should not be interpreted as evidence of a deficit, an inability to reason probabilistically or to test hypotheses, but rather of a tendency or bias to the early acceptance and, to a lesser extent, the early rejection of hypotheses (Garety & Freeman, 1999, p. 127).

³Note here that when I say that the subject is aware of a difference between her conclusion and the normal one I do not mean that it is a necessary condition for the possession of pragmatic competence that the subject can make the distinction explicit in propositional terms. Competence is something that may be possessed by the subject, and present in behaviour, as an ability or skill, although it is the job of the theorist to try and give a theoretical/propositional account of it. The parallel with linguistic and procedural competence is makes this clear. People possess grammatical or inferential competence without conscious access to rules of grammar or of probabilistic inference. The logician's or linguist's theory is not available to subjects in that form. Otherwise almost no one could be said to have grammatical or linguistic competence. This is a way to reiterate the point made earlier, that competence is an abstract and idealised description of an ability normally possessed tacitly.

⁴Jumping to conclusions in this literature is an index of three factors. How quickly delusional subjects adopt an hypothesis, their tenacity in holding it in the face of disconfirming evidence, and their estimates of the probable truth of the hypothesis. Results in the studies cited vary but one consistent result is the rapidity with which an hypothesis is adopted. These results are summarised and discussed in Garety and Freeman (1999).

Or, within the framework of this paper, delusional subjects have intact procedural rationality and intact, but unusual, pragmatic rationality.

A second set of studies on attributional style reinforces this conclusion. Attributional style is the tendency to explain experience in terms of the subject's own agency (internalising or introjective), or forces and causes, personal or environmental, external to him/her (externalising). Clearly, the dichotomy is not absolute because it makes sense for someone concerned to protect their self-esteem to adopt internalising explanations for positive experience and externalising ones for negative experience. This pattern has been observed in some studies (Candido & Romney, 1990; Kaney & Bentall, 1989).

Although the link between levels of self-esteem and attributional style is not conclusively established (Garety & Freeman, 1999), one result which is well-confirmed by these studies is an externalising bias in subjects with persecutory delusions (Bentall, Kaney, & Dewey, 1991; Fear, Sharp, & Healey, 1996; Kinderman & Bentall, 1997; Lyon, Kaney, & Bentall, 1994; Sharp, Fear, & Healey, 1997).

If it is the case that attributional style contributes to the content of a paranoid and persecutory delusion in cases where procedural competence is unaffected, then we can conceive of that attributional style as a way of assigning initial probabilities and foreclosing a search for counter evidence: In other words, as an aspect of pragmatic rationality.

Integrating different accounts of delusion

According to Brendan Maher, there is essentially no difference between the reasoning processes of normal and deluded subjects. He or she is thus a one-stage theorist, who explains delusional belief entirely in terms of the anomalous experience of the subject.

The processes by which deluded persons reason from experience to belief are not significantly different from the processes by which non-deluded persons do ... a critical difference between delusional and non-delusional beliefs is the nature and intensity of the phenomenological experience that is being rationalised (Maher, 1999, pp. 550–551).

Surely, both one- and two-stage explanations have something going for them. Maher is correct that the phenomenology of delusion is intense, disturbing, and intractable. Equally, however, two-stage theorists are right that there is something abnormal about the reasoning of people like J.K. who believe that they are dead. And yet J.K. seems to be able to reason, procedurally, as well as, if not more ingeniously than, the rest of us.

This apparent anomaly has led some (Berríos, 1991; Sass, 1994) to adopt an expressive account, according to which the delusional subject is not expressing beliefs at all, but using what we might call the language of belief to express the

bizarre and disorienting nature of her experience. For a proposition which is so clearly falsified by the rest of her knowledge cannot be sincerely believed by someone whose inferential competence is unimpaired. Nonetheless, the subject is saying something is true to her experience (it *seems* as if I'm surrounded by imposters, I *feel* as if I have no bodily existence) which she knows not to be true *simpliciter*.

The apparent conflict between, one-stage, two-stage, and expressive accounts of delusion can be reconciled if we distinguish competence from performance for pragmatic and procedural aspects of rationality. Delusional subjects whose inferential capacities appear intact (as seems to be the case with J.K.) may, as one-stage theorists emphasise, have intact procedural competence but some interference with the pragmatic aspect of reasoning. I interpret J.K. this way because it does seem that she is aware of the inferences *others* would make if her case was described but is unable to draw the same conclusions herself. The same is true of Alexander's Capgras patient. Furthermore, this explains the central intuition behind the expressive account, which is that delusional subjects who know that their delusion would not be judged true by others applying normal standards, cannot really be expressing a belief. Rather, perhaps, any delusional subject capable of making this judgement must have intact pragmatic competence, but be blocked from applying that competence in the normal way. Such subjects have a performance deficit possibly based in the cause of her anomalous experience, which, as one-stage theorists often emphasise, is both extremely distressing and cognitively intractable.

PRAGMATIC COMPETENCE OR PERFORMANCE?

My final claim is that the pragmatic difference between delusional and normal subjects is a matter of performance not competence.

The issue can be addressed by considering an analogy with procedural rationality. Conceptually, procedural rationality is inferential consistency and coherence. At the very least, procedural competence is that capacity which enables us to grasp the concept of consistency and coherence and, hence, of an ideally rational system, even if we only ever approximate such a system (Macnamara, 1986). There is evidence that delusional and normal subjects do not differ in their tacit or explicit grasp of the concept of inferential consistency. Cases like J.K.'s suggest that her procedural competence is unimpaired because her grasp of what is required by procedural rationality is intact. Note that this would remain the case even if it were impossible to produce a theoretical model of procedural rationality. That is to say consistent and coherent thinking and our grasp of the concept thereof, exists prior to the models we make of it. There is an instructive analogy with the linguistic case here. Linguistic competence exists, irrespective of whether we can model it, and conditions, such as aphasia, clearly damage it. So the distinctions between competence and performance and normal

and abnormal performance can be made even in the absence of a determinate models of competence.

The same holds for pragmatic rationality. Conceptually, it is whatever is required to fix beliefs in context, and both we and delusional subjects have a grasp of when that concept is being applied correctly. Alexander's Capgras patient is a case in point. His grasp of the distinction between what is rationally required to believe in his context and what he actually believes is intact. In order to treat delusional beliefs as failures of competence I think we would need cases where the subject is genuinely unable to grasp that his/her beliefs are not those which the normal subject should reach in his/her situation.

It may be the case that, for some delusional subjects, their grasp of the distinction has disappeared (Stevens et al., 1978). But, once again, this is a question susceptible of empirical investigation. I have not tried to foreclose any empirical questions but to provide a framework in which to think about the disparate set of empirical and theoretical issues raised by the explanation of delusion.

CONCLUSION

Within this framework, conceiving of delusions as the result of performance failures has several advantages. It explains cases where delusional subjects, during the progress of their delusions, seem aware of the unusual nature of their belief and cases where delusions resolve restoring normal belief fixation. It allows us to incorporate recent work in cognitive psychology on the nature of belief fixation and its role in delusion formation. Finally, it integrates one-, two-stage, and expressive accounts of delusion⁵ while preserving the apparently irreconcilable intuitions that give rise to them, each of which do capture something important about the phenomenology of delusional disorders.

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⁵If this seems doubtful we should remember that even normal people can arrive at beliefs by the operation of normal processes of belief fixation, but refuse to believe them. Perhaps Schreber, Sass's (1994) case study was such a case. He arrived at his delusional beliefs using processes of belief fixation distorted by performance failures, the hallucinations, and affective disturbances characteristic of schizophrenia, but in the end did not believe them. Nonetheless, in order to realise that his delusions would not be believed by others he must have retained intact competence.

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