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Exploring the Rationality of Patients with Delusions through Semi-Structure Discourse

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Abstract

What patients reveal in their first person verbal accounts forms the basis of the clinical assessment (e.g. PANSS) and Diagnosis (DSM) upon which all subsequent research hinges. Much of the rich experience (phenomenology) of someone with psychosis does not lend itself to objective methods, yet these experiences are those we need to understand if psychological and neuroscientific theories are to advance.

In this paper I propose a method, knowledge elicitation, to systematically explore patient's verbal reports of their delusions and other beliefs. The method has been well used in psychology to reveal the processes used by experts when making decisions in naturalistic situations. The assumption is that patients are also experts in how they proceed in evaluating the truth of their own and other peoples' beliefs. Utilizing two case studies it is shown that this method can turn up rich information concerning a patient's skills in deliberating about truth and falsity of beliefs and the likelihood that the use of such skills may be context specific. When asked to evaluate the beliefs of others, even if these include a delusional belief identical to their own, then there is considerably more deliberation and greater use of established procedures that expert decision maker's use, resulting in the presentation of greater rationality than would otherwise be assumed.

Keywords: Delusions; Rationality; Decision making; Heuristics

Introduction

For Jaspers the essential feature that distinguished a delusion from an overvalued idea was the lack of understandability for the listener [1]. But how has communication broken down in such situations? Unlike thought disorder the verbal descriptions are linguistically intact but the listener cannot determine whether the patient is describing a belief, desire, perceptual distortion or alternatively whether this is an error of reasoning [2]. Such a difficulty for the listener means that a key criterion of rationality has not been met [3] such, delusions are typically regarded as a failure of rationality for example the definition of delusion in the DSM-V glossary.

'A false belief based on incorrect inference about external reality that is firmly held despite what almost everyone else believes and despite what constitutes incontrovertible and obvious proof or evidence to the contrary. The belief is not ordinarily accepted by other members of the person's culture or subculture (ie it is not an article of religious faith). When a false belief involves a value judgment, it is regarded as a delusion only when the judgment is so extreme as to defy credibility. Delusional conviction can sometimes be inferred from an overvalued idea in which case the individual has an unreasonable belief or idea but does not hold it as firmly as is the case with a delusion'.

In the light of this perceived irrationality , research designed to understand the psychological processes producing , and maintaining, delusions has resorted to using well established psychological tests of reasoning and decision making [4,5]. Yet we have progressed little in addressing the issue raised by Jaspers that, 'If we want to get behind these mere external characteristics into the psychological nature of delusion, we must distinguish the original experience from the judgment based on it [6] Studying phenomenology (nb the original experience Jaspers refers to) presents serious difficulties for scientific psychology, since the essence of a phenomenological experience is that it is a personal experience (subjective) which is unavailable to any external verification (objectification). Hence we are dependent on what the patient reports about their experiences.

The current paper evaluates the reasoning skills of patients who have been diagnosed with some form of psychosis and where a cardinal symptom is delusion. The recruitment strategy also involved achieving at least a 3 rating on the PANSS P1 scale (delusions) , and with minimal , or no, disorganization of speech , behavior or affect. This last criterion was chosen since the main method, described below, involved a semi-structured interview and as such marked disorganization would have resulted in poor quality of interviews. Through semi-structured interviewing the intention was to examine how rational deluded patients can be when evaluating the veracity of their beliefs or those of other people, including other people holding the identical delusional beliefs as the patient.

We have followed a well established methodology, namely knowledge elicitation [7], which has been utilised with good results to elicit the thinking processes used by expert decision makers (e.g. fire officers) [8,9,10]. I would argue that just as experts can reveal the rationality behind their decisions then so too can people shed light on the degree of rationality, or irrationality that leads to one holding

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a belief to be true, or false. Indeed as noted by [11]'… subjective experience is ordinarily treated as a realm whereby each person has authority over themselves ' . The counterargument is that such authority will be absent in psychotic patients who lack insight, or who have deficient met cognitive capability [12]. Hence the validity of this method will be returned to in the discussion.

Method

In studies of experts, the participant is presented with a typical situation (e.g. a description of a fire) and through probe questioning the interviewer endeavors to elicit from the interviewee the decision making steps that were taken when coming to a decision. From these case studies it is found that expert decision makers adhere only loosely to normative models of decision making. Klein and colleagues have put together a model of decision making in naturalistic environments [8] called Recognition-Primed Decision (RPD) making. Typically experts, such as fire fighters, have to find a balance between the times spent deliberating to ensure an optimal solution and the need for rapid judgment since the problem is likely to worsen with delay. RPD can be described as a stepwise process:

Step 1: Pattern matching to a schema followed by schema based processing : if the expert is able to match the problem to a typical representation in memory (pattern match to schema) then the course of action to be taken becomes readily available from information associated with that schema (schematic processing).

Step 2: If the situation is unclear then the expert:

i) Seeks more information (evidence accrual) until clarity is realized

ii) If this information search fails then use 'assumption based reasoning', that is match to a likely schema and fill in the knowledge gaps from the rich pool of information associated with that schema. Others have called this 'elaborative coding' [13].

iii) If pattern matching remains unsatisfactory then the expert uses a story building strategy to mentally simulate the likely events leading up to the current situation (mental modelling).

Step 3: Frequently the decision maker will then weigh up the pros and cons of the chosen model at this stage, or do so after the simulation in Step 4 [13].

Step 4: (mental stimulation). Following Step 2/3the course of action for a mental model will be tested out through mental simulation in order to consider likely consequences, more particularly whether the desired goal(s) will be realized, and whether there are likely to be unintended consequences. Further models and simulations will be tested until one is judged satisfactory. However there is little direct comparison of options, unlike the Bayesian model of reasoning. When a model and its consequences seem satisfactory then that forms the basis of the decision.

Psychotic patients asked to evaluate the veracity of the delusional beliefs of other patients have been reported to have better insight into the irrationality or pathological nature of delusional beliefs, even when the other 'patient' is the interviewer in a role reversal situation [14,15,16]. Thus we sought to evaluate how well patients with delusions adhere to a RPD type model.

Procedure

Each patient was initially familiarized in the use of a 5 point scale. Above the scale was written 'How convinced are you that these ideas/beliefs are true?. The scale itself consisted of 5 numbers, 0-4, together with the definition of each number. So 0 was defined as 'Definitely False' and 4 'Definitely True' with the middle point 2 defined as 'Unsure if True or False'. The familiarization was achieved through the interviewer referring to 4 different beliefs about common knowledge (e.g. I believe that the sky is blue and trees are green). Once the interviewee was familiar with using the scale they were then presented with their primary delusional belief (Scenario 1 – Own Delusional Belief in 1st person) and asked initially 'How convinced are you that your belief that (interviewer describes the primary delusional belief) is true?'. A few probe questions were then asked starting with the question, "You've given it X, which means Y. Can you tell me why you gave it an X rating? (X= the number indicated on the scale and Y the definition of that number). Thereafter probe questions following the guidelines of [7] were asked. A key principle of choosing probe questions is to ensure that they are likely to elicit, from the interviewee, their own reasons, or decision making strategies, without cueing the interviewee for particular reasons or decision making procedures. For example use of questions such as "Can you tell me why you chose this number rather than a higher number?" are structured to call for reasons without cuing a particular reason whereas "Would you change your decision if provided with more information? "Could not be used to indicate whether the interviewee had adopted the RPD decision making strategy of 'seeks more information until clarity is realized', since this strategy has been cued.

This same procedure was then used with all , or some of the following additional scenarios, in each of which the interviewee is being asked to judge the truth of someone else's belief , be it the interviewer's belief or a stranger, and hence referred to as '3rd Person'.

Scenario 2 (Own Delusional Belief in 3rd person): 'I meet you (in a familiar place to the patient) and we are having a chat and I say to you that I believe that (patient's primary delusional belief presented as a key belief of the interviewer). How convinced are you that my belief is true? '. Scenario 3 (Different Delusional Belief in 3rd person): 'So we are still sitting talking (in familiar place) and I also tell you that I believe that (interviewer introduces a delusional belief of another patient). How convinced are you that my belief is true? '

Scenarios 4 and 5: The interviewer creates an imaginary scene in which the patient is on a train in a country he has never visited. A stranger gets on the train at a station, sits opposite the patient, and they begin to chat. During the conversation the stranger reports some of his beliefs which include the patient's own belief (Scenario 4) or a different delusional belief (Scenario 5).

A scoring scheme has also been developed using a 0-10 scale to rate the use of Steps 1- 4 of the RDP model referred to above. However, these results will not be presented here. Instead two case studies will be described to demonstrate how this method can be used to elicit important information about the natural decision making capabilities of deluded patients when evaluating the veracity of their own delusions.

Results

Case study 1

This patient had a diagnosis of schizophrenia (DSM-IV criteria) which included the following delusions: he believes in the Devil, who does not like him, and had 7 visitations from the Devil , even in the hospital , and the Devil has caste excrement all over the place. His neighbor tried a frontal lobotomy on him. Films frighten him and he was watching two films on TV when demons physically threw him off the bed, after which he felt a presence, of these demons, which was an evil presence.

Scenario 1 - Own delusional belief – 1st person: Interviewer: 'How convinced are you that your beliefs, namely that demons threw you off your bed and that when this occurred there was an evil presence in your room, are true?'

Patient: 'Definitely true …. (Indicates 4 on the scale) …. It happened twice.'

Interviewer: 'You've given it 4 which means definitely true… can you tell me why you gave it this rating?'

Patient: 'Why? Its true….cos I said its true. Never told a lie in my life. There are lies and damn lies. We all tell white lies for the greater good ….. Not a belief ….it's the truth.'

Interviewer: 'Why this number, why not unsure?'

Patient: 'Cos it's true ... cos it happened ...'

Interviewer: 'Can you provide any more details?'

Patient: 'No….I was the only witness...you can check that the 'Seven psychopaths' was on the TV two weeks ago and 'Ghost' was on with Demi Moore….'

Scenario 3 - Different delusional belief - 3rd people: Interviewer: (relates a story about the two of them meeting in a familiar place and then introduces the following narrative), 'So, I meet you (in familiar place) and we are having a chat and during this chat I say to you that I believe that I am under surveillance and people are using electronic devices called radionics to read my mind and control my thoughts.' Using that scale how convinces are you that that's true

Patient: 'To the best of my knowledge that doesn't exist but what the Americans are doing …what people are up to nowadays ... I wouldn't…..it's a possibility….it's not probably true …its difficult cos none of these (indicates the ratings on the scale provided) actually cover it ..It's a possibility …I would rate it between a 2 and a 3(ie 'Unsure' or 'Probably True')'

Interviewer: '2 and a half?'

Patient: '……we only use 10% of our brain…actually I change that from 2.5 to 2 ... I think I have good perception of what people are thinking its only body language.'

Interviewer: 'What would have to happen to make that definitely false?'

Patient: 'You know how the brain works ...its neurons and receptors nothing more than a mass of electric circuits... You… if you could tune in ….there is a possibility you could ……well in a way they do it already in medicine …. Radio scanning don't they...You can see in Alzheimer's what areas are active and what not.'

Interviewer: 'So why not a 4 on that basis?'

Patient: 'It's not measuring thinking its only measuring activity of the brain'

Independent observers , asked to rate the degree of rationality , or quality of decision making in the patients responses in Scenarios 1 and 3 (above) invariably report that the rationality or reasoning given in response to Scenario 3 is superior . Not only does this example empirically demonstrate what many clinicians report anecdotally, namely domains of rationality mixed together with others of irrationality it provides a systematic method to assess the degree of rationality that a deluded patient is capable of. As such it is a useful clinical tool to explore the natural decision making skills available to the deluded patient.

Referring to the RPD model we can map out what processes the patient uses well and not so well. For example despite the use of probe questions in Scenario 1, there was no attempt to go beyond Step 1 in the RPD model, and there was no deliberation. Similar to a confident expert there was instant pattern matching and an intuitive judgment followed, without deliberation [17,18].

In Scenario3 we see the patient using greater reflection or thoroughness, a mark of deliberate decision making [13]. We can observe good examples of Step 2 of the RPD model namely i) seeking more information in order to make a definitive judgment and ii) assumption based reasoning when the patient says ,'…To the best of my knowledge that doesn't exist but what the Americans are doing … what people are up to nowadays ..' . This phrase indicates uncertainty due to recognition of the limits of his knowledge of current advances in technology. It also indicates 'assumption based reasoning' followed by elaborative encoding insofar as the patient has activated schemas of the form 'current forms of available electronic devices ' from which we can presume he elaborates along the lines 'can any of these devices read someone's mind and control their thoughts ?'. We then see an example of the results of Step 4 (simulation) when he says 'well in a way they do it already in medicine …. Radio scanning don't they... You can see in Alzheimer's what areas are active and what not '.

Although the RPD model stresses that experts do not explicitly compare alternative models, I would conjecture that what we observe here is implicit comparison of two hypotheses. Implicit in the phrase 'they can do it already in medicine ……' is the hypothesis, let's call it H1, that there are technologies that can read someone's mind and control their thoughts together with its null hypothesis, or H0, indicated in the phrase'It's not measuring thinking its only measuring activity of the brain ', which can be taken to mean that brain scanners do not measure thought, or read peoples' minds, instead they measure brain activity only.

Case study 2

The patient also met DSM-IV criteria for schizophrenia. His delusions were multiple. He thought he was under police surveillance and that the next door neighbors were doing the surveillance for the police. He had delusions of telekinetic skills, for example when talking about the police he caused the police siren to wail (in actuality

a police siren did wail at just this time). Clouds were attracted to him. Because of these abilities he had a grandiose delusion that he was akin to Jesus. Also he had robots, or computers, in his head, as well as some GPS device so that his neighbors were able to communicate with these robots/computers through the GPS tracking device. This patient warranted a maximum rating of 7 on the P1 (Delusions) scale of PANSS. The delusional theme chosen, that seemed the most primary, was that he had robots in his head and his neighbors are using GPS to control him.

Scenario 1 - Own delusional belief – 1st person: Interviewer: "How convinced are that your beliefs are true that you have robots in your head and your neighbors are able to control you by using GPS?

Patient (points to 4) '150%'

Probe questions:

Interviewer: "Can you tell me why you are so convinced that these beliefs are true?"

Patient: "It's because I'm not crazy at all. I've never had problems of being crazy."

Interviewer: "Are there things you see that help confirm your belief?"

Patient: "There are some things I see, but I can't tell you because you won't believe me. Sometimes when I say things, things happen, like a bird flapping in the window. And like the police, when I started talking about the police you could hear the siren, and there's no police round here." (Police siren in the distance)

Scenario 2 - Own delusional belief in 3rd person: Interviewer: 'I meet you (in a familiar place to the patient) and we are having a chat and I say to you that I believe that I have robots in my head and my neighbors are able to control me with GPS. How convinced are you that my belief is true? ' .

Patient: "I'd want to know why they are doing it. First impression is that I know there are robots or computers and I'd ask your questions to see if you've had the same experiences as me with these robots."

Interviewer: "So there would be some doubt, right?"

Patient: "Yes"

Interviewer: So would you say probably false? Unsure?

Patient: "Unsure '(indicates 2).

After several minutes of further interviewing the interviewer then presents Scenario 4.

Scenario 4 - Own delusional belief in 3rd person in unfamiliar context: Interviewer: 'Suppose you are on a train traveling across the flat Steppes of Russia and the train pulls into a station and a passenger gets into your carriage and starts up a conversation with you, and in the process he mentions that he has robots in his head that use GPS to control him. How convinced would you be that these beliefs are true?'

Patient: 'It depends'

Interviewer: 'What does it depend on?'

Patient: Is he a spy?

Interviewer: Suppose he is.

Patient: I would rate it as 4 definitely true.

Interviewer: 'Suppose he was dressed in a grey suit and he was an English businessman come to Russia for work purposes.'

Patient: Definitely zero then

The analysis of this patient's ratings and subsequent probe questioning again suggest a fairly good adherence to the RPD model just when judging the veracity of the other person's delusional belief. When asked about his own delusion a spontaneous intuitive judgment appears to have been made without deliberation. However when presented with the 3rd person situation in the familiar setting (Scenario 2) the patient seemed to recognize the lack of clarity, need for more information followed by 'assumption based reasoning, namely 'if you've had the same experiences as me with these robots. In the unfamiliar setting (Scenario 4) he is also aware of the uncertainty inherent in the situation when he says, 'It depends 'followed by assumption based reasoning when asking the question, 'Is he a spy?'. We can therefore assume pattern matching to an internal schema (being a spy) and although the alternative option of being a businessman was proffered by the interviewer, the patient responded immediately with a completely different rating suggesting that he was readily able to match this to a different schema, namely a 'businessman' schema. Furthermore the pros and cons of different schema could be compared (Step 3), albeit with prompting, given the robust ratings of 4 followed by 0 respectively for "Is a spy" and 'Is a businessman'. I would argue that it is this adherence to the RPD model that confers greater rationality for 3rd person situations compared to the 1st person situation.

What is challenging here is the reference to 'Is he a spy'. Few mentally healthy controls would pattern match to this schema, but then few would assume that the conclusion (he has robots in his head) could possibly be true.

Discussion

Human decision making in day-to-day situations appears to depend on whether intuitive or deliberate modes of decision making are required [17,18]. Frequently the normative model of decision making e.g. Bayesian hypothesis testing is either avoided, as in intuitive judgment, or is but one part of a series of processes used when making a deliberate decision. In many situations people use heuristics, that is they match the situation to an internal schema, and if there is a good fit then that forms the basis of their judgment [18]. For the 2 patients presented in this paper I would suggest that when making judgments about their own belief then an intuitive or heuristic based judgment is used, whose habit-like quality has arisen from being repeatedly positively reinforced, since it provides a satisfactory account. When it came to judging the veracity of other peoples' beliefs, including when this 'other person' was reporting the patients' own delusional belief, e.g. Case study 2, then a deliberate decision making strategy was adopted that involved several steps outlined in the RPD model of natural decision making. Thus these deluded patients have many of the necessary skills required in order to make rational judgments about beliefs, albeit when judging other peoples' beliefs, since they can adhere too many of the steps that expert decision makers use.

One caveat mentioned earlier was the use of self report of decision making. Introspection about reasons for one's actions have frequently been criticized for their inaccuracy [19]. However using knowledge elicitation has revealed much about naturalistic decision making that laboratory based experiments was unable to reveal.

It is very possible that these 2 case studies were exceptional. Indeed there is evidence that people with good working memory and executive ability engage more in deliberate decision making and are more likely to adopt normative decision making techniques such as directly comparing the expected utility of options [13]. As a result we might expect poor use of an RPD type approach in a significant proportion of psychotic patients when making judgments in these third person situations.

Nevertheless the approach taken here has been able to demonstrate that the communication disorder that leads to judgments about the irrationality of patients with delusions should be restricted to certain domains of belief and the domains of rationality and irrationality can be explored using knowledge elicitation methods.

Finally a comment on the method used to learn how deluded patients go about evaluating the truth or falsity of their beliefs. I argued that we can consider that one's evaluation of the truth of a belief can be thought of as a cognitive process similar to decision making, an approach that has frequently entered cognitive theories of psychosis [7,5] more particularly those that Endeavour to explain the positive symptoms of hallucination, and delusion. Nearly all of this research has opted for contrived laboratory based tasks in order to control the multiplicity of potential independent variables. I argued in the Introduction that there is a fundamental flaw in this method and that a more naturalistic approach might offer one alternative approach, but that the method needed to be systematic in order to apply the Recognition-Primed Decision (RPD) model to evaluate the quality of decision making of deluded patients when reasoning about their beliefs. I would argue that the case studies presented here demonstrate the merits of both the systematic interview method together with the RPD model to explore the decision making skills of deluded patients when they evaluate the truth, or falsity, of their beliefs. This is but one goal when interviewing patients to understand the psychological processes that cause delusional beliefs. Alternative hermeneutic approaches have studied very different research questions ranging from patient perceptions of the causes of their paranoid beliefs [20], through personal meanings of their delusional experiences [21] to the social constructionist position in which the plausibility or implausibility of delusional beliefs is shown to result from the reality negotiated between patient and clinician, rather than an objective external reality unavailable to the patient [8]. Each approach explores, with deluded patients, their interpretation of their delusional belief, or the experience leading to this belief, but since the research questions at outset are different then so too do the content and form of the interviews, together with the associated analyses, differ in order to address the particular research questions [22]. One weakness of the current semi-structured interview is that it is unable to determine what experiences might have provided the relevant material upon which the belief has been formed, and hence whether the reasons offered for that belief are consistent with that experience. If the qualitative differences between experiences in the 1st and 3rd person contexts are so distinct, then this may well provide the explanation for why patients adhered to the RPD model to evaluate their delusional belief when presented in the third person context, but not when they Endeavour to explain their first person world.

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