



RATIONALITY IN MENTAL DISORDERS: TOO LITTLE OR TOO MUCH?

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ABSTRACT

The idea that mental illnesses are impairments in rationality is very old, and very common (Kasanin 1944; Harvey et al. 2004; Graham 2010). But is it true? In this article two severe mental disorders, schizophrenia and delusional disorder, are investigated in order to find some defects in rationality. Through the analysis of patients' performances on different tests, and the investigation of their typical reasoning styles, I will show that mental disorders can be deficits in social cognition, or common sense, but not in rationality (Sass 1992; Johnson-Laird et al. 2006; Bergamin 2018). Moreover, my claim is that psychopathological patients can also be, in some circumstances, more logical than normal controls (Kemp et al. 1997; Owen et al. 2007). From a philosophical point of view these data seem to be very relevant, because they help us to reconsider our idea of rationality, and to challenge the common way to look at sanity and mental illness.

Keywords: *Rationality; schizophrenia; delusional disorder; common sense*

1. Introduction

What is meant by 'rational?' Whatever it is, mental disorders are shortcomings or departures from it, and only those disorders which involve the absence of it are to count as mental disorders. (Edwards 1981, 314)

In this essay, significantly called "Mental Health as Rational Autonomy", Edwards displays the common conceptualization of madness shared by

both psychology and philosophy: in people with mental disorders reason is severely affected, and, on the other side, emotions are abnormal and unrestrained (Edwards 1981). The idea that in mental disorders there is a loss of reason is very old and dates back at least to the Enlightenment. The prevailing paradigm of insanity, back then, was that people with mental disorders had to be treated like beasts (tied up with stripes and chains, beaten, constantly terrorised, forced to endure inhuman treatments like surprise baths and so on), because they *were* beast, in some sense. Actually, the conception of madness, as noted by Scull, was characterized by almost exclusive emphasis on disturbances of the reason, and this “was to imply that in losing his reason, the essence of humanity, the madman had lost his claim to be treated as a human being” (Scull 1981, 108).

For this reason, psychopathological subjects have always been considered as people who lack autonomy, rationality, responsibility, and, in some sense, discipline, because they are not able to control their reactions and emotions. As stated by Edwards:

Mental illness means only those undesirable mental/behavioral deviations which involve primarily an extreme and prolonged inability to know and deal in a rational and autonomous way with oneself and one’s social and physical environment. In other words, madness is extreme and prolonged practical irrationality and irresponsibility. (Edwards 1981, 312)

This idea is perfectly consistent with the attitude of common people who still consider patients with mental disorders as weak, unpredictable, irrational, irresponsible, and even dangerous.

The cognitive version of this ancient idea, which dates back to Beck’s work (1976), is well conceptualized by Harvey et al. (2004). The authors aim to identify the cognitive impairments shared by psychological disorders, and that clearly characterize mental disorders in general, thereby creating a sharp line between normal and pathological subjects. The central idea of this paper is that psychopathologies imply various deficits in different cognitive abilities, such as reasoning (interpretative biases), memory (selective retrieval), attention (self-focus), thought processes (rumination), beliefs (confirmation bias) and behaviour (avoidance, safety conducts). For example, the authors describe the case of a schizophrenic patient, Henry, who interprets the coughing of strangers around him as a signal that his thoughts have been broadcast, and starts to avoid looking at anybody because this feeling makes him very anxious. The patient concentrates on his own thoughts in order to avoid every external signal, and ends up never leaving his home for several days. The case is described as a series of

attentional anomalies: an attentional bias (selective attention) makes Henry select certain stimuli (coughing) instead of others (conversation), while another attentional bias (avoidance) causes Henry to escape environmental cues, and this avoidance at last produces another anomaly, namely self-focused attention. In this perspective, the different mental disorders' features are conceived as the result of different impairments at the cognitive level, and therapy would thus consist in correcting the errors committed by psychopathological subjects.

Thus, people with mental disorders usually make many mistakes, which, besides impairing their different reasoning and cognitive abilities, make the way they think and reason essentially different from the 'normal' one. A large amount of recent research, though, has started to challenge this view in a significant way. On the one hand, studies on reasoning in very different disorders (anxious disorders, mood disorders, psychoses) seem to show that people who suffer from psychological disorders are not bad at reasoning, but rather they follow the same rules as healthy people (Smeets et al. 2000; Harvey et al. 2004; Mancini et al. 2007).

On the other hand, the idea that 'normal' people are usually rational has been disputed. Starting from the pioneering work of Wason (1966), a wide range of experiments and tasks show that if we consider rationality as a possible synonym of logic, we are actually largely irrational, because we usually don't follow the formal rules of logic (Kahneman et al. 1982; Johnson-Laird 1983, 2006; Evans, 1989, 2002; Johnson-Laird and Byrne 1991; Rips 1994; Baron 2000; Smeets et al. 2000). It seems that our way of thinking is heavily influenced by our beliefs, by the aims we have, by the context in which the performance occurs, and thus, we commit more logical errors than expected.

But, is rationality just a matter of formal logic? In other words, how can we define rationality in a broader sense? This will be the topic of the next section.

2. What Does it Mean to be Rational?

Rationality is an umbrella term that obviously encompasses many different aspects. I will start with another quotation by Edwards, who focuses on the common notion of rationality, that is what matters the most here, and tries to highlight its defining elements:

[...] there is widespread agreement among both philosophers and non-philosophers that rationality involves (1) being able to

distinguish means from ends and being able to identify processes and manifest behaviors which likely will result in the realization of consciously envisioned goals; (2) thinking logically and avoiding logically contradictory beliefs; (3) having factual beliefs which are adequately supported by empirical evidence, or at least avoiding factual beliefs which are plainly falsified by experience; (4) having and being able to give reasons for one's behavior and beliefs; (5) thinking clearly and intelligibly, and avoiding confusion and nonsense; (6) having and exhibiting a capacity for impartiality or fat mindedness in judging and adopting beliefs; (7) having values which have been (or would be) adopted under conditions of freedom, enlightenment, and impartiality. (Edwards 1981, 314-15)

This seems to be what common people think of rationality, and everyone can see himself/herself in this definition. Or can s/he not? Actually, definitions like number 6 leave some of us a bit uncomfortable. Are we always impartial in judging beliefs? Or do we have the tendency to judge in a more positive way the beliefs that match the most what we already think? Even if we are not experts in cognitive psychology, we find the idea that we treat the beliefs we share and those we don't in the same way difficult to sustain. The elements contained in definition 7 are also controversial. Do we adopt our values freely or have our values been, for the most part, instilled in us by our parents either directly or indirectly? And what about number 5, according to which rationality involves thinking clearly and intelligibly? Yes, we try to avoid nonsense, and yes, we try to think clearly, but none of us could be sure to always succeed in this task. And being able to give reasons for what we believe or do, as stated in number 4, is not so simple, and often the reasons we adduce don't correspond to the truth, because we often don't know what we want, and we act under the power of unconscious desires and forces. I will omit the comments on the definition number 3 for now, because cognitive and experimental psychology have many things to say on the way in which we confirm and maintain our beliefs, as we will see in the third section.

But those objections are only philosophers' concerns, and are too specious, too contorted, as claimed by Edward himself, and can be easily sidestepped. We can make mistakes, we can be confused or biased, at times, but we are not irrational. And if we think of people suffering from mental disorders, they seem to violate all of these defining elements.

Most people are not very rational, but most people are nevertheless sane. Extreme departures from sanity are not as

difficult to identify in practice as some sceptical critics, especially lawyers and philosophers who have never spent any time around mentally disturbed persons, would have us to believe. Cases on the borderline of such extremities are the ones which understandably give headaches to mental health professionals, but such professionals can also cite many clear cut cases involving extreme and prolonged incompetence and self-defeating performances in selecting effective means to avowed ends, of radically inconsistent practical belief systems, items of which are plainly controverted by empirical facts, of inability to cite reasons for belief and behavior, of persisting and pervasive conceptual confusions, and of entrenched inabilities to adopt fair minded perspectives on either factual or valuational beliefs. (Edwards 1981, 315)

Philosophers seem to doubt the possibility of drawing a sharp line between madness and sanity, but philosophers doubt everything, says Edwards, it's their vocation, while in most cases recognizing mental disorder and its irrationality is rather easy (Edwards 1981). Thus, since rationality seems to be clearly affected in mental illness, irrationality should be one of the core features of mental disorders' very definition. After all, mad people are mad because they are irrational, and madness is the realm of nonsense, so irrationality is supposed to be a crucial part of the definition of madness. Let's now have a look at the way in which mental illness is defined in different professional diagnostic manuals, such as DSM-5 or ICD-10. Let me say something first; the definitions I will discuss have been conceived only for practical (medical) purposes, because it is not clear that the category of mental disorder corresponds to a natural kind (for discussion, see Beebe and Sabbarton-Leary 2010; Kendler et al. 2011; Kohne 2015; Zachar 2015). So, I will not assess the validity of such definitions here, as it lies outside the scope of this paper. I will only investigate the role of rationality in some of the descriptions of mental disorders.

I will begin with the 'Bible' of psychiatry, the Diagnostic and Statistical Manual of Mental Disorders, published by the American Psychiatric Association (APA 2013). Here, one can find the following definition of mental disorder:

A mental disorder is a syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning. Mental disorders are usually associated with significant distress or disability in social, occupational, or

other important activities. An expectable or culturally approved response to a common stressor or loss, such as the death of a loved one, is not a mental disorder. Socially deviant behaviour (e.g., political, religious, or sexual) and conflicts that are primarily between the individual and society are not mental disorders unless the deviance or conflict results from a dysfunction in the individual, as described above. (APA 2013, 20)

This definition clearly reflects the neurobiological perspective which has increasingly gained popularity within American psychiatry. The basic claim is that in mental disorders there is always some kind of dysfunction that, in a bottom-up fashion, causes the clinical symptoms. As one can see, this description refers to many aspects of human cognition and behaviour, like emotion, distress, disability in social activities, deviant conduct, while rationality is not mentioned. It is worth noting that the most important thing in defining mental disorder is, apart from the set of symptoms, the degree of distress created by them, and the amount of freedom they leave to lead an ordinary life.

This more subjective element is particularly stressed in another perspective which deals with mental illness, that of psychopathology. While psychiatry aims at treating people suffering from mental disorders, psychopathology has a more theoretical approach, in that it investigates the nature and origin of mental disorders, as well as the possibility of understanding them. In his *General Psychopathology*, Scharfetter (1980) claims that the core elements of mental illness are the following three: suffering, failure, and alienation. First of all, suffering from a mental disorder means suffering, indeed; the ill person “suffers from himself and from the world to an extent that is qualitatively and quantitatively beyond the average” (Scharfetter 1980, 8). The second aspect is failure: people with mental disorders, whilst often coping with not very extreme circumstances, fail to conduct themselves in life and in the world (*ibid.*). But the third aspect is also important, and that is alienation. A mentally disordered person is not normal, and this is often immediately recognized; as pointed out by almost every exponent of philosophical psychiatry, their deep alterity makes people with mental disorders very isolated, and prevents them to establish vital contacts with other people.

But what exactly makes the mentally disordered people so extraneous and so different? A possible answer is the lack of rationality. People with mental illnesses are alone, extraneous, failing to live in the world because they are irrational, they can't think properly, and we can't predict their actions and feelings because they have no sense, they lack an inner reason.

Man is a rational animal, and a mad man is not. Scharfetter (1980) doesn't mention rationality, yet, and generally speaking it is very hard to find a scientific definition of mental illness which refers to illogicality or irrationality.

There are two kinds of reasons behind this absence. First, man is not a rational animal, after all. Irrationality is widespread in the general population. We are far from being rational, especially if by rationality we mean logic. When we reason, we make errors, which are not rare, but rather systematic, because our rationality is bounded (we don't have enough cognitive resources to always apply correct strategies, see Simon 1991), and because we use heuristics, i.e. quick mental shortcuts which reach satisfactory, even if not rational, solutions (Kahneman et al. 1982; Girotto 1994).

But also if by rationality we mean other things, as those suggested by Edwards (1981), like having beliefs that are consistent and supported by facts, it seems that the vast majority of us, not to say all of us, is not rational. We hold beliefs that are not supported by evidence, or that break the norms of rationality: superstitious beliefs, racist beliefs, magic beliefs, paranoid beliefs. As claimed by Bortolotti (2013), although these beliefs are not supported by evidence, and fail to meet the criteria of epistemic rationality, they are not pathological. Therefore, it is not in our supposed rationality that we can find the demarcation line between sanity and madness.

But, even if we have to face the fact that we are not as rational as we thought, the idea that, however irrational we are, people with mental disorders are much more irrational than us, still lingers on. This is exactly what I will call into question here. Rationality and mental sanity do not overlap in this way either, because one can find many cases, much more than expected, of people who are perfectly rational while being affected by some kind of mental disorder. And this applies not only to mild mental disorders but also to severe psychoses, like schizophrenia and delusional disorder, as I show in the next sections.

3. Too Rational to be Sane, Part 1: Schizophrenia

The typical features of schizophrenia, such as hallucinations, delusions, disorganized speech and behaviour, make this mental disorder one of the most severe, to the point that people with schizophrenia embody the common representation of irrationality: schizophrenics say things that make no sense, believe in unbelievable things, behave in a bizarre and

often incomprehensible way. Thus, the answer to the question “are schizophrenic patients irrational?” seems to be crystal clear. And admittedly, the first studies on reasoning abilities in schizophrenia seem to confirm the presence of an impaired logic in those patients. The works by von Domarus (1944), corroborated by Arieti (1964), showed that schizophrenics break the rules of conventional logic, like the principle of non-contradiction, or the identity principle, and for this reason have many difficulties in deductive reasoning.

But more recent studies failed to validate these data (Williams 1964; Belvin 1964; Wason 1966; Maher 1992; Kemp et al. 1997), showing no significant differences in performances on syllogistic reasoning between schizophrenic patients and control subjects. It seems that when schizophrenic patients make mistakes about the judgment of a syllogism’s validity, they do it because of a general weakness in cognitive performance (e.g., a lower I.Q.), rather than because of a specific impairment of schizophrenia (cf. Mirian et al. 2011; Revsbeck et al. 2015). The same applies to conditional reasoning, that is, the form ‘if p, then q’, which is very frequent in everyday situations. For instance, the work by Kemp and colleagues (1997) showed that, when the tasks’ content on conditional reasoning was neutral, there was no relevant difference in the performance of schizophrenic patients and controls.

Furthermore, the vast majority of studies on reasoning abilities in schizophrenia focuses on probabilistic reasoning, because the tendency to ‘jump to conclusions’, used to explain delusional thinking in those patients, seems one of the core features of schizophrenics’ reasoning style (Garety et al. 1991; Bentall 1994; Garety and Hemsley 1994; Bentall et al. 2001; Freeman et al. 200; Garety et al. 2005; Freeman 2008). Delusional patients seem to show the tendency to request minimal information in situations where information is available, and to report a high level of confidence in their decisions. But also in this kind of reasoning, the differences in performances between patients and controls usually disappear when other variables, like memory, are included in the tasks. This probabilistic bias might be due to impairments in working memory or executive functions, rather than schizophrenia (Cardella and Gangemi 2014).

Thus, recent studies are beginning to show that there are no comparable reasoning deficits in schizophrenia, and that, when these are present, they are linked to a more general cognitive deterioration. But the most relevant fact is that, in some cases, schizophrenic people seem to reason even better than control subjects, or, in other words, they seem to be more rational than healthy people. For example, with respect to deductive reasoning, Owens and colleagues (2007) tested both “pure reasoning”, using valid and invalid

sylllogisms, and common sense, using syllogistic content that conformed to practical knowledge or departed from it. The tasks contained syllogisms that were valid but against common sense, and invalid but commonsensical. In these experiments, the idea was to see how schizophrenic subjects behave when common sense and logic conflict. Results show that people with schizophrenia perform even better than controls in the first series of syllogisms, the non-common sense ones, since they succeed in recognizing the validity of an argument also when its conclusion goes against common sense.

Better performances have been shown by schizophrenic subjects in conditional reasoning, as well. Mellet and colleagues (2006) administered a reasoning task to schizophrenic patients and healthy participants, where the subjects had to falsify conditional rules. The results showed that control subjects exhibited a reasoning bias linked to the formulation of the conditional rule, while schizophrenics didn't get diverted by the formulation and didn't get caught in the heuristics traps that lead normal subjects to give the incorrect answer.

Another case where schizophrenics' performances are better than those of healthy people regards probabilistic reasoning. Kemp et al. (1997) administered a probabilistic task to both control and schizophrenic subjects, where, after hearing a description of four people, subjects were asked to judge the likelihood of different alternatives regarding their possible employment. Control subjects use the representativeness heuristic to make judgments (Tversky and Kahneman 1982), that is, tend to choose the alternative that most closely matches the description, but in doing so, they fall victim to the conjunction fallacy, because they tend to value the conjunction of two events as more likely than one of the events alone. Schizophrenics gave more correct responses, because they didn't value the representativeness of the descriptions and proved therefore to be less sensitive to the conjunction fallacy.

But why are schizophrenic people more logical than healthy ones in those cases that encompass many different kinds of reasoning? My claim is that what represents a severe impairment in schizophrenics' daily life, namely the loss of common sense, becomes an advantage in the experimental conditions involving the tasks I described above. The fact is that, when common sense conflicts with logic, as one can see not only in the experiment by Owen et al. (2007), but also in everyday life, we tend to privilege common sense. But common sense is exactly what is at stake in schizophrenia. The typical schizophrenic attitude towards the self, the others and the world is marked by a detachment from common sense, or, in other words, from the web of beliefs, attitudes and categories which

represents, on the one side, the grounds of the self, and, on the other side, the background of everyday life. Thus, schizophrenia can affect the inner sense of self, as showed by the following remark made by a schizophrenic patient:

I am no longer myself (...) I feel strange, I am no longer in my body, it is someone else (...) I walk like a machine; it seems to me that it is not me who is walking, talking, or writing with this pencil. (Parnas and Handest 2003, 126-127)

Or it can involve the world, as in this example:

I live in a sort of bubble, where the world does not matter. I lack synchrony with the people around me. (Henriksen and Nordgaard 2014, 437)

Blankenburg (1971) claimed that the central deficit of schizophrenia, that is usually hidden by the more striking positive symptoms like hallucinations or delusions, regards the loss of natural evidence. What would normally seem self-evident causes amazement and perplexity in schizophrenic subjects that find it very hard to cope with everyday practical and social activities. As declared by a schizophrenic patient “I have to do everything anew from the beginning” (Nagai 1990, 363). Anna Rau, the patient made famous by Blankenburg, says:

It is just a matter of mere feeling, sensing what is appropriate. One has this from nature...it is such a strange feeling, when one doesn't know the simplest of thing! (Blankenburg 1971, 308)

But what I would like to stress here is that these patients, in order to *compensate* this detachment from common sense, rely precisely on rationality. In other words, the reaction to the loss of this intuitive attunement is “an intellectual, introspective, metacognitive type of hyper-reflexivity” (Pérez-Álvarez et al. 2016, 2). Some examples will clarify this crucial point.

C. D. B. is a 27-year-old insightful man with schizophrenia. He says that nothing is obvious to him; everything can be uncanny. The world is complicated, difficult to understand: ‘Why does this happen? What does that mean? How to explain these facts? Why?’ Facts are not self-evident. Only explanations can give a shape to his experiences. He feels the need for a general theory

that makes the world understandable and his actions possible.
(Stanghellini 2000, 777)

I study people. I am curious. I want to understand how they are
inside. (Mancini et al. 2014, 431)

In my case, everything is just an object of thought. (Blankenburg
1971, 79)

This reliance on rationality, this intellectual attitude toward the world, is something that the philosophical perspective on psychopathology has stressed in different manners. Minkowski (1927) called morbid rationalism “the effort to submit some or all aspects of life under schematic and often algorithmic rules, [...] deviating from a common sense attitude” (Urfer-Parnas 2019, 104). Binswanger (1956) pointed out that it is the excess of logic that often leads schizophrenic patients to act in a very bizarre way. Sass stated that schizophrenia, and its typical hyper-reflexivity, is “an alienation not from reason but from the emotions, instincts and the body” (Sass 1992, 4).

Thus, we can say that the problem of schizophrenics is not that they are irrational. Schizophrenia, the most severe among the most severe mental disorders, i.e. psychoses, doesn’t seem to affect rationality after all, and, on the contrary, schizophrenics can be more logical than healthy people, and often rely on their intellectual faculties to compensate the deficits typical of the disorder itself.

4. Too Rational to be Sane, Part 2: Delusional Disorder

Mrs. A, a subject with delusional disorder, was examined by a forensic psychiatrist after she had killed her infant. This is how she justified this action:

1. When we die our souls are judged,
2. They are judged on the basis of our actions and decisions,
3. My baby has neither made decisions nor performed actions.
4. Therefore she did not have a soul.
5. Therefore it did not matter that I killed her. (Gillett 1990, 319)

The author comments this example with those words: “this chain [...] is itself clearly insane despite the fact that the irrationality is hard to discern”, and concludes this way: “an abiding theoretical problem for psychiatry and philosophy is that, on most accounts of rationality, a severely deluded

patient may qualify as quite rational” (Ibid.). This could seem a paradox, because delusions, by definition, seem to be the typical example of irrationality. So, how could it be possible for delusional patients not to be irrational?

Let’s begin with the definition of the disorder itself. The main criteria for delusional disorder are the following:

- A. The presence of one (or more) delusions with a duration of 1 month or longer.
- B. Criterion A for Schizophrenia has never been met [that is, apart from delusions, no other symptoms of schizophrenia, like hallucinations, disorganized speech or behaviour, are present].
- C. Apart from the impact of the delusion(s) or its ramifications, functioning is not markedly impaired, and behavior is not obviously bizarre or odd. (APA 2013, 297.1)

Delusions are fixed beliefs that are not amenable to change in light of conflicting evidence. Depending on its content, delusional disorder can be of the persecutory type (the individual believes to be conspired against, cheated, spied on, followed, poisoned, maligned, harassed and so on), erotomantic type (the central theme of this delusion is that another person is in love with the individual, usually of higher status), grandiose type (the conviction of having some great, but unrecognized, talent or insight), or jealous type (the belief that the spouse or lover is unfaithful).

Delusions could also be bizarre, that is, clearly implausible, and not deriving from ordinary life experiences, like the conviction to be able to read other’s thoughts, or to have one’s internal or external organs replaced by persecutors. While in these cases it’s easy to recognize that someone is delusional, in other cases the “distinction between a delusion and a strongly held idea is [...] difficult to make and depends in part on the degree of conviction with which the belief is held despite clear or reasonable contradictory evidence regarding its veracity” (Ibid.).

At any rate, apart from the theoretical difficulties regarding the definition of delusion, it is sure enough that, when facing someone who holds delusional beliefs, we can often discern them as suffering from delusions. How is it possible? Is it because we immediately recognize the irrationality of these kinds of beliefs?

At first glance, an unusual belief, that is poorly supported by evidence and resistant to change, seems a clear example of irrationality. Many authors (see for instance Bermudéz 2002; Gilleen and David 2005; McKay et al.

2005) interpret this feature as the proof that delusions are typical cases of epistemic irrationality. Irrationality, in other words, doesn't concern the delusion's content *per se* (in delusional disorder the content is often plausible), but the way in which the individual holds it and maintains it despite contradictory evidence. As claimed by Speechley and Ngan:

The hallmark of delusional beliefs is their persistence in the face of overwhelming contradictory evidence. It is this feature that sets them apart from normal erroneous beliefs, and it is this feature that sets them apart from normal psychology, moving delusional belief systems into the realm of psychiatric and medical pathology. (Speechley and Ngan 2008, 1211)

In other words, delusional beliefs appear to be experienced as self-evident, and patients seem unable to even contemplate the idea that their beliefs might be incorrect. To give a clearer idea of how delusional patients behave when asked to talk about their delusions, or when the content of their delusional beliefs is challenged, I will present a few examples:

Psychiatrist (PS): How did you realize that you were decomposing?

Patient (PA): Because of the strong smell.

PS: Ok, but if one is decomposing, parts of the flesh should be missing, should they not? Because when the worms enter a dead body, I don't know, in a forest, and nobody finds it there, for three months, the worms....

PA: I put hydrochloric acid on it, the bleach kills them.

PS: Where do you put it?

PA: On those parts where they grow.

PS: Did you put hydrochloric acid on your skin?

PA: Yep.

[...]

PS: So... do these worms eat organs too?

PA: I think so.

PS: How do you survive then, when these worms eat your organs?

PA: Well, how do I know?

[...]

PS: Your parents, what do your parents for example say?

PA: They say that it is not true...

PS: Okay, they say that it is not true. And the fact that they say that it is not true, does not make you think that it is possible that it is not true, that it is perhaps rather your perception that you have worms in the body?

PA: I am decomposing.

PS: Why did you feel at the centre of attention? What did you notice that gave you the impression that you were the centre of attention?

PA: Well, I felt like that for very long time, and now I understand.

PS: What made you understand it?

PA: From the content of my thoughts.

Ps: Do you think there is any slightest chance that this is something you are exaggerating? Or that you are possibly wrong?

Pa: Nooo... I am not wrong at all. (Zangrilli et al. 2014, 3-6)

The way these patients react when questioned about the validity of their beliefs, that are obviously not supported by evidence, is always the same. They put themselves in a defensive position, don't consider any different explanations for their experience, regard their feelings and thoughts as evidence of their beliefs, and don't reject their beliefs even when they realize the others couldn't share them, like in this example:

PS: So, they wanted to kill you and sell your organs?

PA Yes, and... sell the meat to restaurants where cannibals go...

PS: Are there restaurants for cannibals?

PA: Yes, these are secrets that the police do not know

PS: Really?

PA: This seems to be a bit difficult to believe, honestly... . (Ibid., 5)

Thus, this patient recognizes his belief as unusual, yet keeps on holding it. This seems clearly an irrational behaviour that 'normal people' wouldn't display. But things are much more complicated than expected. Normal subjects, actually, are not in general or epistemically rational as one would think. Clinical delusions are rare enough, but the world is full of beliefs which share the same epistemic features as delusions. I will show a few examples of this kind of beliefs, that are not supported by evidence and that are impervious to new counter-evidence.

An example involves positive illusions or the tendency to over-estimate our capacities and abilities, and to adopt an optimistic vision of the future (Taylor 1989; Jefferson et al. 2017). The vast majority of us has many illusions, like thinking that our future will be rich of positive events, or that we are above average in different domains, or that we are able to control the most important events of our lives. This kind of beliefs are epistemically irrational. We often don't possess the requested evidence to hold them, we tend to ignore counter-evidence or alternative descriptions of our successes, and systematically remember positive outcomes and forget our failures (Sharot et al. 2011). In other words, when it comes to our vision of ourselves, we seem to be irrational. The curious fact is that

there is a subset of people who don't hold these optimistic illusions, and that therefore are more rational, but these very subjects are affected by another kind of severe mental disorder: depression (Alloy and Abramson 1979; Moore and Fresco 2012). Once again, pathological subjects are more rational than us, but this is not an advantage for them (Cardella and Gangemi 2018).

There are other, even more striking, examples of irrational beliefs that are widespread in the general population. For example, paranormal or superstitious beliefs are very common. In the Gallup Survey (Moore 2001) 41% of Americans showed to believe in extrasensory perception (ESP), 37% in haunted houses, about 30% in ghosts and telepathy, 25% in clairvoyance and astrology, about 20% in witches, reincarnation and mental communication with dead people. The cumulative percentage showed that more than one-fifth of all Americans, 22%, believe in five or more of the items listed above, 32% believe in at least four items, 57% believe in at least two paranormal items, and 73% believe in at least one of them. In a more recent analysis on the presence of conspiracy theories among Italian people (Mancosu et al. 2017), four conspiracy theories have been presented: moon landings never happened, vapour trails left by aircraft are chemical agents deliberately sprayed, vaccines harm the immune system and expose it to diseases, the Stamina method has been obstructed by big pharmaceutical groups. About half of the sample considered one of the theories proposed plausible, 30% of the sample does so for two or more conspiracy theories, and about 10% of the sample considers all four stories likely to be true.

Thus, we can believe in things which are not that different from those believed by delusional patients. At any rate, these beliefs are not different in the way they are endorsed and preserved in spite of counter-evidence. As claimed by Bortolotti, the most likely scenario is

a picture of continuity between so-called *normal* and *abnormal* cognition. Irrationality is a feature of normal cognition, and as such it cannot be the criterion of demarcation between beliefs that are 'healthy' and beliefs that are 'pathological'. (Bortolotti 2018, 113; see also Lancelotta and Bortolotti this issue)

But now we can come back to the initial question. How is it possible that we can often readily discern when someone is delusional? If it's not the irrationality of the beliefs that distinguish 'normal beliefs' by 'pathological ones', what is?

An interesting way to answer this question is the one suggested by Rhodes and Gipps (2008; see also Wilkinson this issue). Following Wittgenstein's observations included in his *On Certainty* (1969), the authors claim that delusional patients question what we can call bedrock beliefs. This kind of beliefs don't need justification, because they are foundational, and we hold them with certainty. For instance, propositions like 'I have a body', 'there are other people in the world', 'physical objects can't speak', 'this is my hand', are bedrocks beliefs. But the curious thing is that, even if we are absolutely sure of these beliefs, or maybe exactly because we are absolutely sure of these beliefs, we are not able to provide evidence, or arguments, in their favour. As Wittgenstein put it:

If someone said to me that he doubted whether he had a body I should take him to be a half-wit. But I shouldn't know what it would mean to try to convince him that he had one. And if I had said something, and that had removed his doubt, I should not know how or why. (Wittgenstein 1969, §256)

The impossibility to provide grounds for these beliefs is due to the fact that "such propositions convey our direct, pre-reflective and practical *grasp* of the world" (Rhodes and Gipps 2008, 298), and if someone expresses doubts about them, we can't appeal to other beliefs with a higher grade of certainty to justify them. In other words, it is impossible to justify what stands beyond the need for justification. So, how do I know that this hand is my hand, and not a robot hand which my persecutors implanted on me while I was sleeping? Am I able to provide some sort of justification for this kind of knowledge? What would it be to find some evidence for it? Is it logically impossible to have a hand that is identical to a human hand but is actually a robot hand? Is it logically impossible that someone has replaced my hand with a robot hand while I was sleeping? The answer is no, it's not a kind of logical impossibility, but something very different. In delusional patients, bedrock beliefs are damaged, and, as observed by Rhodes and Gipps, this results in two things:

a lack of constraint in acquiescing in beliefs which would normally be regarded as incredible, or a willingness to entertain doubts about everyday certainties that would normally be regarded as unassailable (Rhodes and Gipps 2008, 301).

Thus, once again, even in subjects with delusional disorder, what is affected is not rationality or logic, but natural evidence, or common sense, in other words what everyday experience of the world had taught us. I showed, in the previous section, that schizophrenic people, far from being irrational, lean on rationality and logic in order to compensate their lack of

common sense. Patients with delusional disorder, on the other hand, rely on their delusions, to give a new meaning to a world that has suddenly lost its evidence. But rationality plays an important role in this disorder, too, because they use all their reasoning abilities to protect their delusional beliefs. As one can see in the first quote of this section, logic and reason are used by these patients to justify their ideas, a mechanism previously detected by Jaspers, who, already in his *General Psychopathology* (1963), observed that delusions are frequently accompanied by the fully preserved capacity for reasoning and formal logic. The following example will clarify this point. A paranoid patient is sure that his neighbour entered his room one night and installed a tracking device in his abdomen. He then describes the reaction of his doctors:

The doctors latched on to this story, eager to show me the irrationality of it all. How could he have gotten in? My door and windows had been locked, and there was no sign of tampering. I answered from the Deep Meaning that had revealed it to me.

“He atomized himself.”

“Atomized?”

“Yes. You know—when you dismantle something into its component atoms, pass these tiny pieces through the barrier, and reassemble them again on the other side.” Didn’t physics have some similar concepts?

“And the tracker in your abdomen?”

“Atomization again. Otherwise there’d be an incision,” I reasoned, rational. But the doctors concluded differently. Delusion and paranoia were their words, their explanations. (Stefanidis 2005, 422-3)

This patient, who, by the way, was a graduate student in the neuroscience program at the University of British Columbia, strives to be rational. Diving in his world of auditory hallucinations and delusions, he tries to rely on his reasoning abilities to make sense of it all. Logic is not lost, it remains the last bastion.

I was in fact fighting to preserve my rationality in the face of the irrational. I valued my logical mind so dearly that when it began to be challenged by schizophrenic hallucinations, delusions, and disorders of the ability to ascribe meaningfulness, I used everything available to me to try and figure out what were the most rational explanations. I craved rationality, and rationality to me was taking all evidence and making conclusions. Even if they didn’t conform to everyone

else's ideas of what was rational, I was fighting to maintain, at the very least, the integrity of my own rationality. (Stefanidis 2005, 423)

5. Conclusions: The Slippery Bounds of Rationality

I started this paper with the following quote by Edwards: “What is meant by ‘rational?’ Whatever it is, mental disorders are shortcomings or departures from it”. These words equate irrationality and abnormality as used in psychiatric discourse. The general view in classic psychiatry is that psychopathologies are marked out by their association with different kinds of reasoning mistakes and logical errors. In order to challenge this widespread opinion, I chose to focus on two cases of severe mental disorders, schizophrenia and delusional disorder. It seems uncontroversial to think that, for example, subjects with anxiety disorders for the most part do not exhibit failures in their reasoning abilities. However, other disorders, such as psychotic disorders, seem to clearly affect the ability to reason. As stated by Parnas and colleagues:

in the common sense understanding, which precedes and helps founding psychiatric terms, psychosis is a predicate that we ascribe to a person who has seriously transgressed the intersubjective bounds of rationality. (Parnas et al 2010, 32)

But when we pay close attention to schizophrenia and delusional disorder, the picture is very different, and, in some sense, exactly the opposite of what we could think. Those disorders show that, both in experimental settings and in everyday life, rationality and logic are fundamentally preserved, and used to compensate impairments in other areas, like common sense and social knowledge. In sum, one can learn two lessons from these examples. First, rationality is an important component of our cognition, but we don't use it as much as we think, because we often rely on other strategies when we have to judge or believe or decide something. Second, we intuitively attribute irrationality to mental disorders, but this attribution lacks any evidence, since both the experimental tasks and the autobiographical reports of single patients outline a different, even opposite, picture. Thus, why do we keep considering irrationality a crucial feature of mental disorder? Maybe we have the tendency to call madness what we don't understand, and to stop considering madness what we are able to comprehend. In other words, maybe the problem is of a conceptual kind; irrationality is a crucial part of our common conception of madness, for reasons that are historical, psychological and sociological. And it's very

hard to change a notion that lies so deeply inside us. As perfectly expressed by Frith:

Neuroscience research has had considerable success in elucidating and sometimes curing various disorders, but after each success the disorder either becomes invisible or ceases to be considered an example of madness. So it seems strangely inevitable that madness can only ever be associated with disorders that we do not understand. It is not the patients' reason that has failed, it is ours. But then reason has never been a strong point with mankind, however civilized. (Frith 2016, 639)

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