

Delusions and beliefs as a symptom of illness¹

Eisuke Sakakibara

Abstract

According to a widely accepted definition, delusions are fixed false beliefs caused by faulty reasoning, and they have been considered one of the most severe symptoms of mental disorders. In this chapter, I will discuss three issues regarding the common understanding of delusions. First, is a delusion a belief of the person who holds it? On this point, I will review the philosophical debate between those who argue that delusions are not beliefs and those who propose otherwise. Second, what does it mean to say that a person's belief is considered a symptom of illness? I want to answer this question by clarifying the grounds for pathologizing a belief and the implications of pathologizing it. This will show that the extension of pathological beliefs and delusions do not coincide. Third, are delusions caused by faulty reasoning? I will illustrate the theory that delusions are caused by abnormal inference, abnormal experiences, and both, suggesting that the cause of delusions is likely to differ among different mental disorders.

Keywords: abnormal experience, anti-doxasticism, delusion, doxasticism, irrationality, symptom of illness, mental disorder, psychiatry, two-factor theory

Introduction

Delusions are a typical example of pathological beliefs, and the 5th edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines a delusion as follows (American Psychiatric Association, 2013, p.819).

A false belief based on incorrect inference about external reality that is firmly held despite what almost everybody else believes and despite what constitutes incontrovertible and obvious proof or evidence to the contrary. The belief is not one ordinarily accepted by other members of the person's culture or subculture (e.g., 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.

¹ This is a preprint of the manuscript published as a chapter in J. Musolino, J. Sommer, & P. Hemmer (eds.), *The cognitive science of belief: A multidisciplinary approach*. Cambridge University Press 2022, 440-461. This version is free to view and download for personal use only. Not for re-distribution, re-sale or use in derivative works.

However, the following questions have been raised regarding this definition. Is a delusion really a belief? Does the content of the delusion always have to be false? Are delusions the result of faulty reasoning? Furthermore, as added in the second sentence, one might wonder why beliefs shared by one's culture or subculture are not classified as delusions.

This chapter will broach these questions and review the debates on the philosophy and cognitive neuropsychology of delusions. In section 1, I provide examples of delusions to show their diversity and clarify their relation to various mental disorders. In section 2, I argue that delusions are not beliefs and review the points of contention with those claiming otherwise. Section 3 explains the grounds on which beliefs are considered symptoms of illness in psychiatry, that is, the judgment that they are "pathological," and its practical implications. In this section, the significance of the content being false and the proviso in the second sentence of the definition will be clarified. Section 4 deals with how delusions are formed, that is, their psychopathology. We introduce the theory that delusions result from errors in reasoning, the theory that delusions are the result of abnormal experiences, and the theory that delusions result from both. We will see that the psychopathology of delusion formation is likely to differ among different types of mental disorders.

1. Varieties of delusions

Delusions have been named variously based on their thematic content. Table 1 lists the major types of delusions, the mental disorders they are commonly found in, and some specific examples (American Psychiatric Association, 2013; Maher & Ross, 1984).

Table 1 Various themes of delusions

Classification of delusions based on their contents	Associated mental disorders	Examples
Persecutory delusion	Schizophrenia, Delusional disorder, Dementia, Organic mental disorder (due to a brain tumor, stroke, encephalitis, etc.)	"I am being chased by the mafia." "I have been poisoned." "I have been bad-mouthed."
Delusion of reference	Schizophrenia	"The TV is reporting on me." "The coughing of a passerby is a hidden message to me."

Grandiose delusion	Manic episode	“I have made a great invention.”
Thought insertion	Schizophrenia	“Other people’s thoughts are entering my mind.”
Thought broadcasting	Schizophrenia	“My thoughts are transmitted to others.”
Delusion of belittlement	Depressive episode	“My family is about to go bankrupt.” “I have an incurable disease.” “I have committed an irredeemable sin.”
Delusion of theft	Delusional disorder, Dementia (especially Alzheimer’s disease)	“A cosmetic of mine has been stolen by thieves.”
Somatic delusion	Schizophrenia, body dysmorphic disorder	“My nose is crooked.” “My brain is melting.”
Delusional jealousy (Othello syndrome)	Delusional disorder Schizophrenia	“My wife is having an affair with the man next door.”
Capgras delusion	Organic mental disorders, Schizophrenia	“My husband has been replaced by an imposter.”
De Clérambault’s syndrome (erotomantic delusion)	Delusional disorder, Schizophrenia	“I am secretly in love with that Hollywood actor.”
Cotard delusion	Depressive state, Schizophrenia, Organic mental disorder	“I am already dead.” “I cannot digest my food because I have no internal organs.”

Delusions can also be classified as polythematic (i.e., multiple subjects) or monothematic (i.e., single subject) delusions. Polythematic delusions are associated with functional psychiatric disorders, such as schizophrenia, depression, and bipolar disorder. In contrast, monothematic delusions can sometimes be seen in organic mental disorders (Davies et al., 2001). It is important to note that even polythematic delusions have a particular theme or trend for each patient at a specific time. For example, a patient with schizophrenia may have delusions of reference, such as “the TV is sending me messages” or “the newspaper is writing about me,” but not somatic or erotomantic delusions. The coherence in the themes of delusions

that individual patients have is an important starting point when considering the causes of delusions.

Types of delusions and the classification of mental disorders are loosely associated. In particular, the delusions seen in depressive episodes are pessimistic, while those seen in manic episodes are grandiose. Although schizophrenia is associated with diverse themes of delusions, the most “schizophrenia-like” delusions are delusions of reference, thought insertion, and thought broadcasting.

From the perspective of mental disorders, it is essential to note that delusions are a symptom that appears along with various other symptoms. Furthermore, these symptoms do not merely coexist; they seem to be internally interconnected. For example, in a depressive episode, symptoms such as a depressed mood, decreased motivation, loss of pleasure, and thought inhibition might be accompanied by pessimistic delusions, such as “I went bankrupt.” In such cases, the delusions appear to be congruent with the depressed mood. However, these associations are not absolute. The DSM-5 defines the notion of “mood-incongruent” delusions: persecutory delusions may appear in a patient in a manic episode.

Moreover, the DSM-5 defines the specifier of “psychotic features” as “features characterized by delusions, hallucinations, and formal thought disorder” (Op. Cit., p. 827). In other words, the presence of delusions is one of the signs indicating the aggravation of a mental disorder, and this symptom is located at the pinnacle of the progression of the disorder.

The fact that the theme of the delusion is tied to a specific mental disorder implies that the delusion is impersonal. There is a discontinuity between the patient’s premorbid personality and the delusion’s subject. Various symptoms emerge according to “the logic of the mental disorder,” at the culmination of which the delusion emerges. To those around the patient, it seems like the patient’s original personality recedes into the background, and the disorder takes over the person as it progresses. The process of a takeover may be reversible, as in mood disorders, or irreversible, as in dementia.

Nevertheless, there is diversity in the details of delusions that reflects the patient’s personal history. It can be understood by applying the dichotomy of “pathogenic” and “pathoplastic” factors (Birnbaum, 1974). The existence of mental disorders is a pathogenic factor of delusions that determines the occurrence of the delusion itself and the major theme of the delusion. On the other hand, the person’s experiences, general knowledge of the time, and sense of values are pathoplastic factors that lend variety to the specific content of the delusion and the person’s attitude toward it. For this reason, medieval patients with schizophrenia insisted that they were possessed by the devil, while modern patients complain that someone is attacking them with electromagnetic waves.

However, what has been described thus far does not properly apply to delusional

disorder, a condition for whose diagnosis the presence of delusions without other symptoms is sufficient. Section 3 addresses whether all cases of delusional disorder as defined by the DSM-5 should be considered illnesses.

2. Are delusions beliefs?

Delusions have been considered a kind of belief, as defined in the DSM-5. Nevertheless, some philosophers have challenged this conventional view, pointing out that delusions do not present the characteristic features of beliefs. The position that contends that delusions are not beliefs is called the anti-doxastic view of delusions. In contrast, the position that defends the claim that delusions are beliefs is called the doxastic view of delusions.

2.1. Belief's three norms of rationality

To understand the speculation that delusions may not be beliefs, we need to know what ordinary beliefs look like. Bortolotti (2010) summarized the three norms of rationality that characterize the expected behavior of beliefs.

Epistemic rationality: Beliefs are formed based on sufficient evidence and are corrected if there is contradictory evidence.

Procedural rationality: Beliefs are modified to maintain consistency with other mental states.

Agential rationality: Beliefs are combined with other beliefs and desires to produce action.

We can see that delusions do not meet some of the norms that beliefs should meet.

First, delusions do not satisfy the norm of epistemic rationality because they are characterized by their resistance to counterevidence. For example, a delusional patient complaining that he or she is being attacked with low-frequency sound waves from a neighboring house does not withdraw the delusion when told that a recorder cannot capture the sounds or that the neighbor is away from home at the time of the attack. A man described by Schneider (1959, p. 105) was convinced that he had received a divine revelation when he saw a dog sitting in front of a convent, making a gesture that looked like a greeting. In this case, which is called delusional perception, an extraordinary belief forms based on insufficient evidence.

Second, many delusions lack procedural rationality. They are inconsistent with other beliefs held by the person. Nevertheless, this inconsistency is disregarded. For example, a patient with Cotard delusion may refuse to eat, claiming that he or she has neither a mouth nor internal organs. However, the contradiction that if one has no mouth, one should be unable to talk is disregarded. In contrast, the patient may develop various “auxiliary hypotheses” to avoid the contradiction between delusions and ordinary beliefs. For example, a female patient who has

the delusion that a Hollywood actor loves her might explain that the actor does not contact her because her family interferes with their romantic relationship. However, even in such cases, the delusional system is not entirely consistent with the patient's other usual beliefs, and there are explanatory breakdowns in the delusional system.

Third, most delusions do not satisfy the norm of agential rationality because they often lack actions based on them, other than speech acts that express their conviction. For example, a patient with Capgras delusions who believes that his wife has been kidnapped and that the person in his home is an imposter who looks exactly like her may continue to live with the person he considers the imposter. Additionally, schizophrenic patients in the chronic stage often have a condition called "double bookkeeping." In the double bookkeeping state, the patient appears to be shuttling between the two unmixed worlds of delusion and reality. For example, a patient who falsely believed that her attending doctor was her ex-boyfriend recognized him as her attending and followed his instructions during a consultation (Bleuler, 1911, p. 47). However, we should not forget that delusions can sometimes lead to bizarre and severe conduct.

Delusions that lack procedural and agential rationality are called "circumscribed" delusions because they seem to be isolated in the economy of a person's mental states.

2.2. Anti-doxastic views

According to the causal-role functionalism of mental states, mental states such as beliefs are characterized by the causal roles they play. In this context, the three norms of rationality are necessary and sufficient conditions for a mental state to be considered a belief. In other words, beliefs are defined as the mental states that are formed based on evidence, such as perceptions and testimony, are consistent with other beliefs, and are combined with other mental states to guide actions. From this perspective, delusions cannot be beliefs because they do not fully meet the criteria of beliefs.

The anti-doxastic views of delusions are various positions motivated by this observation. The position that adheres most closely to the causal-role functionalist definition of belief is the "sliding scale" theory of belief, which insists that a mental state being a belief or not is not a matter of "all or nothing," but that there are intermediate mental states between beliefs and non-beliefs (Tumulty, 2012). According to this view, delusions are intermediate mental states of "not-quite-beliefs."

Other anti-doxastic theorists argue that delusions are closer to other well-known mental states than beliefs. Currie argued that delusions are imaginations (Currie, 2000). For example, you do not stop imagining that you are Napoleon when confronted with contrary evidence, and it does not matter if it is inconsistent with your other beliefs. Furthermore, imaginations that are contrary to facts do not usually lead to action. Given these observations,

delusions that do not satisfy epistemic, procedural, and agential rationality may be functionally similar to imaginations. However, people with a delusion that *p* differ from those with an imagination that *p* in that the former assert with certainty that *p* when asked by someone, while the latter do not make such assertions. Currie explains that this is because people with delusions have a false second-order belief that they believe that *p*.

Hohwy and Rajan (2012). argued that delusions are similar to illusions or abnormal perceptions. For example, the Müller-Lyer illusion does not dissolve even after confirming that the bars are of the same length. It would be somewhat similar to a delusion that does not disappear even when faced with contrary evidence. Furthermore, an illusion is similar to a delusion in that it is often circumscribed, but it sometimes can lead to action if one does not realize that it is an illusion.

The claim that delusions are imaginations or illusions is not merely a claim that these are functionally similar. These claims also hold implications for the etiology of delusions. In other words, the claim that delusions are imaginations emphasizes that they are the patient's active creation. On the other hand, arguing that delusions are more like illusions emphasizes that delusions are something patients passively receive. We will revisit this point in section 4.

2.3 Doxastic views

In contrast, Bortolotti (2010) defends the doxastic view of delusions. Her strategy is to point out that many everyday beliefs do not meet the three norms of rationality described above either. Her book is, as it were, an encyclopedia of human irrationality. Let us consider some examples. Studies on human irrationality have revealed that patterns of human preferences often contain contradictions (Ibid., p. 79f). It has also been found that highly educated people who believe in a scientific worldview also believe in many superstitions that contradict their scientific beliefs (Ibid., p. 85). It is common for false ideas with a strong racist bias to be firmly believed without sufficient evidence (Ibid., p. 149f). Hypocritical beliefs are widespread, and they are not accompanied by corresponding actions (Ibid., p. 172f). Finally, experiments have also shown that we often do not recognize the actual reasons for our actions, and when asked the reasons, we tend to provide false reasons without realizing it (Ibid., p. 198f).

Bortolotti argues that although the three norms of rationality are criteria for judging whether a belief is rational, they are not constraints determining whether a belief should be attributed to someone. Since delusions differ only in degree of irrationality from everyday beliefs, we should not go so far as to claim that delusions are not beliefs on that basis.

Miyazono (2015) attempted to buttress Bortolotti's position by resorting to the notion of "purpose" possessed by the organs of living beings. The essence of evolutionary theory is that the organs and anatomies of organisms were selected by nature because they had functions

that were useful for the survival and reproduction of their ancestors. Philosophers who support the so-called teleo-functionalism propose calling such “selected for” functions proper functions (Millikan, 1989). With this concept, we can concede that the actual organs or anatomies of an individual organism may fail to perform their proper functions.

For example, a heart with a congenital deformity may not adequately perform its proper function of pumping blood throughout the body. From the standpoint of causal-role functionalism, such a heart would have to be considered a “not-quite-heart.” In contrast, if we subscribe to teleo-functionalism, we could argue that a deformed heart is still a kind of heart, albeit a malfunctioning one. If we extrapolate this idea, could we not say that a delusion is a kind of belief, even if a malfunctioning one?

However, mental states cannot be considered in parallel with organs and anatomies. A deformed heart can be proved to be a deformed heart and not a deformed kidney by tracing the organ’s embryological lineage and ascertaining the corresponding ancestral organ. However, the “embryology” of mental states has not been established. Therefore, we cannot exclude the possibility that a delusion may be a deformed imagination or deformed perception rather than a deformed belief. The arguments of Bortolotti and Miyazono clarify how delusions *can be* beliefs but do not demonstrate that they *are* beliefs.

Bayne (2010) reminded us that the folk psychological practice around our mental states is not only descriptive, but also normative. To regard a mental state as a belief rather than an imagination is to regard it as aiming at truth. We apply the three norms of rationality described above to such mental states. When we find deviations from the norms, we work to resolve the deviations. For example, with those who hold irrational beliefs, we point out inconsistencies with their other beliefs, ask them to withdraw when there is contrary evidence, and encourage them to act on them. According to Bayne, whether a mental state is a belief is not determined by the causal role it plays or its evolutionary origin, but by how it is treated by its owner and the surrounding people.

We have seen that delusions deviate in many ways from the norms of rationality. Nonetheless, it is important to note that the existence of delusions is detected by the intentional stance, which seeks to understand a person’s words and actions by attributing various propositional attitudes to him or her (Dennett, 1987). In other words, delusions are usually discovered when their owners sincerely assert the content of their delusions. To consider a delusion a kind of belief is to seriously consider this first appearance and place it under the three norms of rationality.

Besides, Bayne’s argument sheds light on whether delusions are the beliefs of the person who holds them from a different perspective than the debate between doxastic and anti-doxastic theorists. To see this point, the next section will discuss the meaning of delusions

being regarded as symptoms of illness.

3. Delusions as a symptom of illness

It is uncomfortable to think about delusions as a symptom of illness because the possibility that the person who has delusions would recognize them as a symptom of illness is logically excluded. The insight that they result from illness is “*ex hypothesi*” impaired for delusions (Lewis, 1934). Discussing changes in symptoms is a common part of medical consultation. For instance, the physician asks, “How is your cough?” to which the patient replies, “My cough is getting lighter and lighter.” In psychiatry as well, it is possible to decide on a treatment plan collaboratively for a depressed mood or anxiety based on the patient’s complaints. However, this is not possible with delusions. If a psychiatrist asks, “How are your delusions?” the patient cannot answer, “My delusions have been getting worse and worse lately.” If the psychiatrist points out that the patient’s conviction is a delusion, a symptom of illness, the patient will probably try to object, “You may say I am sick, Doc, but it is true!” From the deluded person’s viewpoint, the delusion is not something that the person suffers from because of some illness, but is something that the person is actively committed to on his or her own. In judging delusions as pathological, we cannot rely on the subjective reports of the patient. Moreover, the pathologization of delusions must always be performed *despite* the person’s objections.

3.1. Grounds for pathologizing beliefs

On what basis, then, do psychiatrists judge delusions to be pathological? Delusions are irrational. However, being irrational is not synonymous with being pathological; as Bortolotti pointed out, even everyday “healthy” beliefs have considerable irrationality. Irrationality is a superficial feature of beliefs, defined by how a belief behaves in the psychological economy. In contrast, whether it is a symptom of illness depends on whether the behavior is caused by a harmful biological or psychological dysfunction (Wakefield, 1992). In the following, the factors that suggest the pathological nature of irrational beliefs will be illustrated based on Sakakibara (2016).

Un-understandability

Murphy (2012) maintained that the characteristic of pathological delusions is that they resist everyday explanations of belief formation, which he called folk epistemology. This claim conforms with Jaspers’ reasoning, who justified the pathological nature of schizophrenia based on our inability to understand it genetically. Genetic understanding is defined as comprehending one’s mental states as they arise from preceding mental states (Jaspers, 1963, p. 27). A person’s change in mindset is genetically understandable if you listen to his or her life history, put

yourself in his or her shoes, and feel that this change in mindset could also happen to you. Human beings sometimes behave irrationally, but many of these irrational behaviors are genetically understandable because to be weak-willed, narrow-minded, and self-deceptive is human, and we can relate to those irrationalities. On the other hand, if genetic understanding is not possible, it would suggest a dysfunction of some psychological or neural mechanisms that make ordinary mental life possible. For example, a sociable person who, at some point in his twenties, suddenly began to avoid people and developed the delusion that the older man next door was wiretapping him would be more symptom-like than a suspicious person who had an unstable childhood, gradually came into conflict with his neighbors for ten years, and came to believe that the older man next door was after his property.

Uniqueness

From the perspective of folk epistemology, it becomes clear why we should distinguish delusions from the beliefs shared by the culture or subculture to which a person belongs. Human beings are social animals, and it is a regular feature of our mind to assimilate the ideas shared among the people around us. Therefore, if a person's irrational belief is one of the shared beliefs within a culture, such as superstitions or some religious beliefs, it is likely that it results from society and not internal causes, such as biological or psychological dysfunction. On the other hand, if a person holds a false belief on his or her own, it is more likely that its cause exists within that person.

Coexisting psycho-physiological disturbances and/or decreased levels of functioning

As mentioned in section 1, we diagnose a mental disorder based on a combination of various symptoms, and delusions are only one of those symptoms. Therefore, irrational beliefs are likely to be a symptom of a mental disorder when they arise in conjunction or covariation with other psychological and physiological disturbances. For example, an unfounded paranoid belief would be more symptom-like if it occurred in conjunction with hallucinations, insomnia, loss of appetite, incoherent behavior, and the inability to perform a work task that was previously possible than if it occurred in isolation.

Preceding organic diseases known to be associated with irrational beliefs

For example, Kumral and Oztürk (2004) reported that out of 360 patients who had experienced a stroke, 15 had delusions, and all 15 had right hemispheric lesions. This report strongly suggests that right hemispheric stroke is associated with the formation of delusions. Therefore, if a person develops a delusion after a stroke in the right hemisphere, it would be reasonable to assume that the delusion is a symptom of the stroke.

Bizarreness of content

In the fourth edition of the DSM, the presence of bizarre delusions was considered a feature suggestive of a diagnosis of schizophrenia (American Psychiatric Association, 2000). For example, the delusion that “an outside force has removed the patient’s internal organs and replaced them with someone else’s organs without leaving any wounds or scars” is more symptom-like than, say, the delusion that a neighbor is saying bad things about you, because the former content is unrealistic and bizarre (American Psychiatric Association, 2013, p. 87). This is because bizarre beliefs are likely to be caused by abnormal and peculiar experiences, which in turn are a manifestation of some underlying dysfunction within the person.

Responsiveness to medical treatments

If an irrational belief is resolved by medical intervention for a mental disorder, such as medication, rest in a calm environment, or electroconvulsive therapy, this would suggest that the disorder caused the belief. For example, if a person’s excessive suspiciousness of others disappeared after taking antipsychotic medication, it would be reasonable to assume that the person had some dysfunction that the medication could remedy. Of course, the inverse is not the case; there are mental disorders resistant to medical treatment.

Note that none of these indicators is necessary for an irrational belief to be a symptom of illness. Nevertheless, the more an irrational belief satisfies these features, the more confidently we can diagnose the belief as pathological.

3.2. Are delusions co-extensive with pathological beliefs?

We judge delusions to be pathological based on the presence of indicators, as described in the previous section. Hence, it follows that not all delusions based on the DSM definition are symptoms of illness (Sakakibara, 2016).

For example, imagine a mother whose son has been convicted of murder. Suppose that the mother cannot believe that her son is guilty of the crime and continues to believe that he is innocent, focusing only on the evidence that suggests his innocence and disregarding the many pieces of clear evidence that indicate he is guilty. In this case, her thought that her son is innocent is, by definition, a delusion because it is idiosyncratic and resistant to counterevidence. Moreover, if it continued for more than a month, she would meet the diagnostic criteria of delusional disorder as defined in the DSM-5. However, this delusion is based on self-deception. It is understandable, if irrational, that a mother who loves her son deeply would think this way. It would be difficult to consider her belief a symptom of an illness because any other feature

that would suggest the belief is pathological is lacking.

In addition, it is not necessary for a pathological belief to be false or incorrigible. This is because a belief is judged pathological based not only on the properties of the belief itself, but also on the constellation of other states and events surrounding it. For example, let us consider the case of a woman illustrated by Jaspers (1963, p. 106), who is unusually jealous and whose husband is secretly having an affair. In this case, the woman's belief that her husband was unfaithful was actually true. However, if the belief emerged in conjunction with intense suspicious feelings in other areas and was accompanied by a simultaneous decline in her social functioning, we may judge it pathological, even if we disagree on whether it should be called a delusion.

Furthermore, pathological beliefs, unlike delusions, are not always held so firmly that they can be called convictions. In the terminology of psychiatry, thoughts that remain doubts rather than firm convictions are called "ideations" and are distinguishable from delusions. For example, a strong and false belief that one is being persecuted is called persecutory delusion, whereas a suspicion that one might be persecuted is called persecutory ideation.

Peters et al. (1999) considered delusions to be a continuum from weak suspicion to absolute conviction, with increasing certainty. While there may be some terminological disagreement regarding whether we should call something without conviction a "delusion," it is essential to point out that beliefs that are pathological but not so strongly held can appear before the development of full-blown delusions, or after the delusions are successfully treated and the disorder is partially remitted.

3.3 The implications of pathologization

Now, let us consider the practical implications that accompany the judgment that a belief is pathological. If an illness were to cause an event or condition, one would be exempted from the responsibility for its occurrence. For example, a person who cannot work because of a broken bone cannot be criticized for being absent from work, nor can a person who mishandles a machine because of an epileptic seizure be blamed for his failure. The difficulty with pathological beliefs is that they are usually a core component of one's personhood or agency. It is generally acknowledged that one should not judge a person by their appearance or origin. The person's appearance and origin are considered separable from his or her core or essence. However, it is impossible to say that one should not judge a person by their beliefs.

Psychiatry employs the concept of "inauthenticity" to classify delusions as a symptom of illness. In other words, a person P's delusion is not considered a belief of "true P." A delusion is not a belief autonomously adopted by the person, but a belief imposed by the illness. In other words, pathological delusions are held by a person in an inauthentic state, hijacked by the illness.

The previous section discussed whether delusions are really the person's *beliefs*, but the question that arises when discussing the pathological nature of delusions is whether they are really *the person's* beliefs.

When we judge a delusion as a symptom of illness, not a belief of "the person," it has various moral implications.

First, under normal circumstances, when a person holds irrational beliefs, they become the basis for negatively evaluating their personality. For example, a person who holds irrational beliefs would be considered "stupid," "thoughtless," or "self-centered." However, if the belief is a symptom of illness, it can no longer be considered the basis for evaluating one's personality. In other words, a person would not be considered "stupid" or "self-centered" just because they have pathological delusions.

Second, people usually try to correct others' irrational beliefs by themselves, but leave it to mental health professionals to treat pathological delusions. Moreover, the treatment strategies of mental health professionals are primarily physical, including pharmacotherapy, isolation from stimuli, rest, and electroconvulsive therapy. Of course, there have been attempts, such as cognitive behavioral therapy, to correct delusions with collaborative discussions based on the evidence contradicting them (Johns et al., 2014). Nevertheless, it must be emphasized that this is not the mainstay of treatment for delusions.

Third, we deny the effect of speech acts that reflect pathological delusions. A successful speech act is usually accompanied by various illocutionary effects. For example, an assertion of *p* generates accountability for the speaker to state the reasons for believing that *p*, and blameworthiness for the speaker when it is not that *p* (Searle, 1979). A promise to do *q* creates an obligation for the speaker to do *q* and blameworthiness for the speaker if *q* is not done. In contrast, when a patient with Capgras delusions says, "The woman in my house is my wife's fake, and she is a foreign spy," mental health professionals and family members who are accustomed to dealing with the patient will try to ignore it without showing agreement or disagreement. In addition, if a patient with delusions of grandeur says to us, "I will give you one million dollars next week," we will not consider it a real promise, and we will not get angry at or criticize the patient if the patient does not bring us one million dollars the following week. We tend to refrain from holding patients responsible for speech acts when they reflect their pathological beliefs. The patient's autonomy is partially restricted by the negation of the effects of their speech acts. However, this restriction of autonomy protects their reputation and property. For example, contracts entered into by patients lacking legal ability due to mental illness may be judged invalid in court (Rosner, 2000, pp. 314-15). Such judgments are based on similar considerations.

Fourth, patients may sometimes engage in invasive nonverbal acts based on their

pathological delusions (Wessely et al., 1993). Nonverbal acts, such as physical violence, cannot be prevented by changing how people accept them. When such a misfortune occurs, the judiciary consensus since the advent of the M’Naghten rules has been to apply the insanity defense for the deluded patients and not impose responsibility on them or reduce their responsibility (Rosner, 2000, pp. 213-15).

4. Psychopathology of delusions

How does a pathological delusion develop? When something is a symptom of illness, its cause is attributable to some physical abnormality. In the case of mental disorders, it is assumed to be an abnormality in the brain. Genetic, neuroimaging, and neurophysiological abnormalities associated with mental disorders that may accompany delusions have been vigorously investigated. In the case of abnormal experiences, such as hallucinations, or changes in capacity, such as a decline in cognitive functioning, there would be nothing left to clarify if the abnormalities at the sub-personal level that instantiate them are identified. However, even if the so-called neural substrates of pathological delusions are identified, it does not mean that we have a complete understanding of how delusions arise. This is because a delusion is not a passive experience; it is something to which the patient with delusions is actively committed as a person. Because of this, a personal-level question arises regarding *why* the person is committed to such irrational beliefs. Therefore, this section focuses on the psychologically traceable causes of delusions and reviews the debates in cognitive neuropsychology.

The mind, unlike machines, cannot be divided into clearly demarcated parts. Nevertheless, we can roughly divide the process of belief formation into two stages: the stage in which the material is provided and the stage in which the material is processed. Therefore, regarding the psychological causes of delusions, some have maintained that they are caused by abnormal experiences, others, by aberrations in inference, and still others, by the involvement of both.

4.1. Abnormal inference theory

The DSM’s definition indicates that a delusion is “a false belief based on incorrect inference about external reality.” Von Domarus’s theory that faulty reasoning causes delusions is a classical theory of delusion formation (Von Domarus, 1944). He proposed the hypothesis that the cause of delusion in schizophrenia is drawing the false conclusion “A is C” from the premise that “A is B” and “C is B.” For example, one who would make this type of faulty inference would conclude, “I am Christ” from the premises “I had supper” and “Christ had supper.” However, these theories fell out of favor when it was discovered that patients with schizophrenia were not more prone to syllogistic errors than physically ill patients with similar

intelligence quotients (Williams, 1964). The relationship between delusion formation and abnormal inferential thinking was again brought to our attention when Garety et al. (1991) found that delusional patients have the “jumping to conclusions” bias. Patients with delusions draw hasty conclusions based on less information, unlike non-delusional patients. The problems with considering the “jumping to conclusions” bias as a causal factor for the formation of delusions will be discussed later.

4.2. Abnormal experience theory

In contrast, Maher argued that delusions in schizophrenia are caused by abnormal experiences (Maher, 1974; Maher & Ross, 1984). Delusions are comparable to hypotheses conceived by scientists to explain anomalous data. Patients with delusions do not get false ideas because they make incorrect inferences from correct premises, but because they make correct inferences from incorrect premises. Maher (1974, p. 105) argued that delusions are like hypotheses devised by scientists to explain anomalous data and that they are “rational, given the intensity of the experiences that they are developed to explain.

Although hallucinations, mainly auditory hallucinations, are the most obvious basis of delusions in patients with schizophrenia, other candidates include experiences of abnormal saliency (Kapur, 2003) and experiences of alien control (Frith & Done, 1989). Experiences of abnormal saliency are those in which one feels that everything around him or her has special significance and is sensitive to even the slightest change, while experiences of alien control are those in which one feels that outside forces are manipulating their thoughts and actions. These experiences may be the origin of the delusions of reference and thought insertion in schizophrenia.

4.3. Two-factor theory

Maher’s position has been called the “one-factor” theory of delusion because it claims that delusions arise from abnormal experiences alone and it has been criticized by those who argue that a second factor is necessary for the formation of delusions (Davies et al., 2001; McKay, 2012; Stone & Young, 1997). The “two-factor” theory of delusion asserts that delusions cannot be formed or sustained without abnormalities in the process of belief formation or the capacity to reappraise once-formed beliefs, in addition to abnormalities in the input to belief formation mechanisms, such as perception and experience.

The two-factor theory relies on the fact that not all people with unusual experiences develop delusions (Davies et al., 2001). For example, researchers have found that patients with Capgras delusions have reduced emotional reactivity to familiar faces. It is assumed that the absence of the sense of familiarity that should accompany a familiar face is an unusual

experience from which arises the delusion that an imposter has replaced the loved one. However, this abnormality alone is insufficient for the formation of delusions because patients with frontal lobe injuries, which are thought to result in similar abnormalities, do not develop Capgras delusions.

Stone and Young (1997) pointed out that in forming beliefs based on experience, we must balance between the two principles of *observational adequacy* and *conservatism*. Observational adequacy is the principle that we should adopt beliefs that well explain our current experience. On the other hand, conservatism is the principle that we should adopt beliefs that are consistent with other beliefs we hold. Those who support the two-factor theory of delusion argue that a delusion is formed when one of the two principles is overemphasized by sacrificing the other. However, Miyazono (2020) argued that regardless of which overemphasis we may consider to contribute to delusion formation, we face what he called the “the sensitivity-insensitivity dilemma.”

Stone and Young (1997) and McKay (2012) argued that the overprioritization of the principle of observational adequacy, in addition to abnormal experiences, is relevant to the formation of delusions. They believed that the second factor causes delusional hypotheses based on anomalous experiences to overwrite the commonsensical beliefs that contradict the delusions. The “jumping to conclusions” bias described above is also evidence suggesting the overprioritization of observational adequacy as it implies that each new experience is given so much weight that the belief changes too hastily. However, there is a counterargument to their theory, namely, that if patients with delusions have a bias toward observational adequacy, then their beliefs would have to change periodically with each new experience. In other words, it would be impossible to explain why each patient with delusions is fixated on a particular content.

In contrast, Coltheart et al. (2010) argued that bias toward conservatism is vital for the maintenance of delusions, in addition to anomalous experiences. They assumed that it is reasonable for a delusional hypothesis to be adopted initially when an anomalous experience occurs. However, when much evidence against the delusional hypothesis is subsequently obtained, those who adhere to it fail to consider the evidence and give up the initial (delusional) hypothesis. The tendency to adhere to a once-adopted hypothesis and fail to consider later-found contrary evidence is called *bias against disconfirmatory evidence* (BADE). Researchers have found that the BADE is stronger in schizophrenic patients with delusions and schizoaffective disorders than in those with healthy controls or patients without delusions (Woodward et al., 2006). However, this theory also has drawbacks. Namely, if conservatism is overly strong, it becomes difficult to explain why a delusional hypothesis can override commonsensical beliefs in the first place.

If one is very sensitive to experience, one can explain why delusions are formed, but one cannot explain why they are maintained in the face of contrary evidence. Conversely, if one is insensitive to experience, one can explain why delusions resist and why they are maintained in the face of contrary evidence, but one can no longer explain why delusions are formed in the first place. This is the sensitivity-insensitivity dilemma.

To avoid this dilemma, we should consider that the patients cling to the delusional hypothesis not because they have a general cognitive tendency to overprioritize observational adequacy, but because the abnormal experience itself has the power to make them cling to it (Sakakibara, 2019). Maher's view is helpful here. He stated that it is not merely abnormal experiences but *intense* abnormal experiences that cause delusions. Intense experiences overwhelm the patients and force them to prioritize observational adequacy too much *only for that experience*. This is akin to a man standing in line and allowing a gang who shouted, "Get out of my way!" to interrupt him. He does not have a general tendency to value individual demands over social rules, but the intensity of the gang's threats forces him to yield to an individual demand for the moment.

4.4. Importance of sufficiently normal cognitive functioning

So far, we have discussed the theory that abnormalities in experience and deficits or biases in cognitive functions lead to the formation of delusions. However, it is often overlooked that "the third factor," so to speak, is essential to the formation of delusions; for delusions to develop, the mechanisms necessary to generate ordinary beliefs must be working properly to some extent (Sakakibara, 2019). Consistent with this, it is known that the prevalence of delusions decreases as dementia progresses (Boller et al., 2002). Conversely, it is known that among patients with schizophrenia, higher verbal intelligence and memory lead to the formation of more intricate delusions (Kremen et al., 1994). In light of this, it was appropriate for Maher to assimilate delusions into theories devised by scientists. Similar to the devising of a scientific theory, the formation of delusions requires substantial cognitive effort (Kapur, 2003).

On the other hand, it is incorrect to say that it is rational to persist in delusions even if we consider that the patients with delusions have abnormal experiences, for they ignore evidence that would contradict the delusional hypothesis. As discussed in section 2, delusions are beliefs that violate the norms of epistemic rationality. However, given that are overwhelmed by an intense experience and had to cling to a delusional hypothesis that explains it well, they are *excused*, if not *justified*, for having delusions (Sakakibara, 2019). Just as what one does under duress is not one's true deed, a belief that arises from an intense experience is not expressive of the true patient.

4.5. Variations in the psychopathology of delusions

Maher argued that intense and abnormal experiences cause the polythematic delusions seen in schizophrenia. In contrast, two-factor theorists maintain that the monothematic delusions associated with organic mental disorders are based on two components: abnormal experience and cognitive deficits. Although the pros and cons of these theories have been discussed earlier, it is not necessary to assume that either one or the other is correct because the psychopathology of delusion may differ for different mental disorders.

Delusions associated with mental disorders that proponents of either theory rarely mention may involve a psychopathology that is different from what they propose. For example, the decline of short-term memory undoubtedly contributes to the delusion of theft associated with Alzheimer's disease. Patients with Alzheimer's disease complain that daily commodities they have moved, consumed, or finished and thrown away have been "stolen." In this case, the inability to remember that their environment has changed and update their beliefs to match reality seems to cause their delusion.

Furthermore, in mood disorders such as depression and bipolar disorder, a depressed or elevated mood appears first, and in severe cases, delusions congruent with this mood are formed later. In general, one's mood has the power to distort one's beliefs in a particular direction. In the theory of cognitive therapy, symptoms of depression, including a depressed mood, are thought to activate self-referential, negative schemas that negatively bias a person's attention, reasoning, and recall processes, which then induces pessimistic thoughts about the self, others, and the world (Disner et al., 2011). The delusions of belittlement seen in patients with depression are arguably the result of an extreme form of this negative thought. If this is the case, then an individual delusion may be a "corollary" derived from the negative schema. Therefore, it calls for a top-down etiology, as opposed to a bottom-up one, in which abnormal experiences cause delusions.

As mentioned in section 1, delusions are one of the symptoms of many different types of mental disorders. Since different mental disorders have different causes and psychopathologies, it should be assumed that it is impossible to explain the formation of all delusions in a unified way.

References

- American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR*. American Psychiatric Publishing.
- American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. American Psychiatric Publishing.
- Bayne, T. (2010). Delusions as doxastic states: contexts, compartments, and commitments.

- Philosophy, Psychiatry, & Psychology*, 17(4), 329–336.
- Birnbaum, K. (1974). The making of a psychosis: the principles of structural analysis in psychiatry. In S. R. Hirsch, & M. Shepherd (Eds.), *Themes and variations in European psychiatry: an anthology* (pp. 197–238). John Wright & Sons.
- Bleuler, E. (1911). *Dementia Praecox oder Gruppe der Schizophrenien*. Franz Deuticke.
- Boller, F., Verny, M., Hugonot-Diener, L., & Saxton, J. (2002). Clinical features and assessment of severe dementia. A review. *European Journal of Neurology*, 9(2), 125–136.
- Bortolotti, L. (2010). *Delusions and other irrational beliefs*. Oxford University Press.
- Coltheart, M., Menzies, P., & Sutton, J. (2010). Abductive inference and delusional belief. *Cognitive Neuropsychiatry*, 15(1), 261–287.
- Currie, G. (2000). Imagination, delusion and hallucinations. *Mind and Language*, 15(1), 168–183.
- Davies, M., Coltheart, M., Langdon, R., & Breen, N. (2001). Monothematic delusions: towards a two-factor account. *Philosophy, Psychiatry, & Psychology*, 8(2), 133–158.
- Dennett, D. C. (1987). *The intentional stance*. MIT Press.
- Disner, S. G., Beevers, C. G., Haigh, E. a P., & Beck, A. T. (2011). Neural mechanisms of the cognitive model of depression. *Nature Reviews. Neuroscience*, 12(8), 467–477.
- Frith, C. D., & Done, D. J. (1989). Experiences of alien control in schizophrenia reflect a disorder in the central monitoring of action. *Psychological Medicine*, 19(2), 359–363.
- Garety, P. A., Hemsley, D. R., & Wessely, S. (1991). Reasoning in deluded schizophrenic and paranoid patients. Biases in performance on a probabilistic inference task. *The Journal of Nervous and Mental Disease*, 179(4), 194–201.
- Hohwy, J., & Rajan, V. (2012). Delusions as forensically disturbing perceptual inferences. *Neuroethics*, 5(1), 5–11.
- Jaspers, K. (1963). *General psychopathology* (J. Hoenig & M. W. Hamilton (Trans.)), Manchester University Press.
- Johns, L., Jolley, S., Keen, N., & Peters, E. (2014). CBT with people with psychosis. In W. Adrian & N. Grey (Eds.), *How to Become a More Effective CBT Therapist* (pp. 191–207). John Wiley & Sons.
- Kapur, S. (2003). Psychosis as a state of aberrant salience: A framework linking biology, phenomenology, and pharmacology in schizophrenia. *American Journal of Psychiatry*, 160(1), 13–23.
- Kremen, W. S., Seidman, L. J., Goldstein, J. M., Faraone, S. V., & Tsuang, M. T. (1994). Systematized delusions and neuropsychological function in paranoid and nonparanoid schizophrenia. *Schizophrenia Research*, 12(3), 223–236.
- Kumral, E., & Oztürk, O. (2004). Delusional state following acute stroke. *Neurology*, 62(1),

- 110–113.
- Lewis, A. (1934). The psychopathology of insight. *British Journal of Medical Psychology*, 14(4), 332–348.
- Maher, B. A. (1974). Delusional thinking and perceptual disorder. *Journal of Individual Psychology*, 30(1), 98–113.
- Maher, B. A., & Ross, J. S. (1984). Delusions. In H. E. Adams & P. B. Sutker (Eds.), *Comprehensive Handbook of Psychopathology* (pp. 383–409). Plenum Press.
- Mckay, R. (2012). Delusional inference. *Mind & Language*, 27(3), 330–355.
- Millikan, R. G. (1989). In defense of proper functions. *Philosophy of Science*, 56(2), 288–302.
- Miyazono, K. (2015). Delusions as harmful malfunctioning beliefs. *Consciousness and Cognition*, 33, 561–573.
- Miyazono, K. (2020). Delusion and evidence (Mousou to shouko) [in Japanese]. *Tetsugaku-Zasshi*, 134(807), 90–113.
- Murphy, D. (2012). The folk epistemology of delusions. *Neuroethics*, 5(1), 19–22.
- Peters, E. R., Joseph, S. A., & Garety, P. A. (1999). Measurement of delusional ideation in the normal population: introducing the PDI (Peters et al. Delusions Inventory). *Schizophrenia Bulletin*, 25(3), 553–576.
- Rosner, R. ed. (2000). *Principles and practice of forensic psychiatry* (2nd ed.). CRC Press.
- Sakakibara, E. (2016). Irrationality and pathology of beliefs. *Neuroethics*, 9(2), 147–157.
- Sakakibara, E. (2019). Intensity of experience: Maher’s theory of schizophrenic delusion revisited. *Neuroethics*, 12, 171–182.
- Schneider, K. (1959). *Clinical psychopathology* (M. W. Hamilton (Trans.)). Grune & Stratton.
- Searle, J. R. (1979). *Expression and meaning: studies in the theory of speech acts*. Cambridge University Press.
- Stone, T., & Young, A. W. (1997). Delusions and brain injury: the philosophy and psychology of belief. *Mind and Language*, 12(3&4), 327–364.
- Tumulty, M. (2012). Delusions and not-quite-beliefs. *Neuroethics*, 5(1), 29–37.
- Von Domarus, E. (1944). The specific laws of logic in schizophrenia. In J. S. Kasanin (Ed.), *Language and thought in schizophrenia* (pp. 104–114). University of California Press.
- Wakefield, J. C. (1992). Disorder as harmful dysfunction: a conceptual critique of DSM-III--R’s definition of mental disorder. *Psychological Review*, 99(2), 232–247.
- Wessely, S., Buchanan, A., Reed, A., Cutting, J., Everitt, B., Garety, P., & Taylor, P. J. (1993). Acting on delusions. I: prevalence. *The British Journal of Psychiatry*, 163(1), 69–76.
- Williams, E. B. (1964). Deductive reasoning in schizophrenia. *Journal of Abnormal Psychology*, 69, 47–61.
- Woodward, T. S., Moritz, S., Cuttler, C., & Whitman, J. C. (2006). The contribution of a

cognitive bias against disconfirmatory evidence (BADE) to delusions in schizophrenia.
Journal of Clinical and Experimental Neuropsychology, 28(4), 605–617.

Index

Alzheimer's disease

Authenticity

Belief

Bias against disconfirmatory evidence

Bipolar disorder

Conservatism

Delusion

- Capgras delusion

- Circumscribed delusion

- Cotard delusion

- Delusional disorder

- Delusion of belittlement

- Delusional perception

- Grandiose delusion

- Delusional jealousy

- Erotomaniac delusion

- Monothematic delusion

- Polythematic delusion

- Bizarre delusion

- Monothematic delusion

- Mood-congruent delusion

- Mood-incongruent delusion

- Persecutory

- Polythematic delusion

Depression (depressive episode)

Diagnostic and statistical manual of mental disorders (DSM)

Double bookkeeping

Doxasticism

- Anti-doxasticism

Experience

Folk epistemology

Functionalism

- Causal-role functionalism
- Teleo-functionalism
- Ideation
 - Persecutory ideation
- Illness
- Illocutionary effect
- Illusion
- Imagination
- Inference
- Irrationality
- Jumping to conclusions bias
- Manic episode
- Mental disorder
 - Organic mental disorder
 - Functional mental disorder
- M’Naghten rules
- Observational adequacy
- Pathogenic and Pathoplastic factors
- Proper function
- Rationality
 - Agential rationality
 - Epistemic rationality
 - Norms of rationality
 - Procedural rationality
- Schema
- Schizophrenia
- Self-deception
- Sensitivity and insensitivity dilemma
- Speech act
- Symptom of illness
- Two-factor theory
- Understanding
 - Genetic understanding
 - Un-understandability
- Bayne, Tim
- Bortolotti, Lisa

Currie, Gregory
Coltheart, Max
Garety, Philippa A.
Hemsley, David R.
Hohwy, Jacob
Jaspers, Karl
Maher, Brendan A.
Miyazono, Kengo
Peters, Emmanuelle R.
Rajan, Vivek
Sakakibara, Eisuke
Schneider, Kurt
Stone, Tony
Tumulty, Maura
Von Domarus, Eilhard
Young, Andrew W.