



**Adrianna Smurzyńska**  
Jagiellonian University

## THE ROLE OF EMOTIONS IN DELUSION FORMATION

**Abstract.** The text concerns the role of emotions in delusion formation. Provided are definitions from DSM-V and DSM-IV-R and the problems found in those definitions. One of them, the problem of delusion formation, is described when providing cognitive theories of delusions. The core of the paper is a presentation of the emotional and affective disorders in delusions, especially Capgras delusion and Cotard delusion. The author provides a comparison of the kinds of delusions and the conclusions taken from neuroimaging studies. As a result of the fact that an explanation of delusion formation focusing on emotional problems turns out to be insufficient, the author provides examples of the reasoning impairments which coexist with them. At the end of the article, some hypotheses are proposed concerning the role of emotions and reasoning in delusion formation and the relation between belief disorders and emotional disorders.

*Keywords:* delusions, beliefs, emotional disorders.

Delusions are defined as disordered beliefs. Scientists and philosophers in dealing with beliefs very often focus on the cognitive anomalies in such beliefs – in reasoning and perception. Based on that, there are established cognitive theories of delusions which will be briefly described in my paper. There is the conviction that apart from the cognitive aspects of delusions, the emotional and affective elements are also very important. This can be seen in research in which scientists use neuroimaging and when they ask patients to describe subjective feelings. Such research suggests that emotions and affect should be taken into consideration when exploring delusions. Apart from a better understanding of mental disorders, the results of such research may have also philosophical implications. This is possible when treating mental disorders as some kind of natural experiment. It is probably not possible to separate emotions and reasoning in experimental design. However, exploring mental disorders can lead to observation of this kind of situation. Basing oneself on that assumption some conclusions about the nature of beliefs and the nature of cognition can be drawn.

In my paper, I will present the role of mood and emotions in delusion formation. I will focus on two well described types of delusions – Cotard syndrome and Capgras syndrome. I will present the results of both theoretical and empirical studies on these kinds of delusions. At the end, I will try to infer some philosophical conclusions – on the nature of belief disorders and on the nature of emotional disorders.

## **Delusions**

It is widely accepted that delusions are difficult to define (Stephens, 1999). In philosophical debates researchers often use psychiatric manuals, especially DSM-V and previously – DSM-IV-TR. The newest definition says that delusions are “fixed beliefs that are not amenable to change in light of conflicting evidence” (American Psychiatric Association, 2013). Analysis of that definition provides us with some important information. First of all, delusions are thought to be beliefs. This can be of course questioned – for example, it can be doubted how we understand the term “belief”. Unfortunately, in such definitions this is not explained. Second of all, such beliefs are thought to be fixed and impossible to change despite the appropriate evidence. Although there is no strict definition of belief provided, it can be inferred that this kind of mental entity is very permanent. In further analyses it would be helpful to provide a definition of the term “belief”. From the philosophical perspective “beliefs” are thought to be propositional attitudes (Schwitzgebel, 2015). This understanding of the term provides the information that beliefs are attitudes (opinion/stance) taken when something is regarded to be true. If person A believes in B, then person A thinks that B is true. It is also sometimes added that beliefs should be intelligible (reasonable, connected with experiences and actions) (Davies & Coltheart, 2000). These statements describe normal, non-pathological beliefs. Delusions, when treated as pathological beliefs, are defined by adding new features – for example intractability to be changed or by indicating disorders in the mentioned features – for example, impairments in making inferences from experience.

The previous definition of delusions, in DSM-IV-R, brought more information, but on the other hand consisted of some problematic terms (Bortolotti, 2016; Kapusta, 2010). It was said that delusions are “false beliefs based on incorrect inference about external reality that persist despite the evidence to the contrary” (American Psychiatric Association, 2000). As can be seen – these kinds of belief are false, are based on inaccurate inference,

are about an external reality and, as in the DSM-V, are not possible to be changed. Some problems can be found with that definition. Apart from the problems with terms (e.g. what kind of inference? / what is external reality?), there can be found some delusions which occur to be true, which are not about external reality and which are connected with normal reasoning.

When providing the definitions, it is worthwhile mentioning that when describing delusions as beliefs, scientists and philosophers concentrate on first-person reports about opinions and phenomenal states. They consider special kinds of beliefs to be delusional, even though patients suffering from delusions may not realise this. Not only are people with mental diseases unable to discriminate between normal and pathological beliefs but the definitions in DSM-IV-TR and DSM-V are also not sufficient to distinguish between delusional and non-delusional beliefs (Bortolotti, 2016). Basing on them, it is impossible to provide an answer to the question “What is the source of delusions?” (Bortolotti, 2016). The answer to that question is also a mystery for psychiatrists, who try to reconstruct the process of delusion formation, trying to indicate the significant events which cause them (Seeman, 2015). Theoreticians who develop cognitive theories of delusions try to provide an answer to that question, indicating more basic processes of belief formation.

### **Cognitive theories of delusions**

Cognitive theories of delusions are focused on the cognitive aspects of delusion formation. They can be divided into top-down and bottom-up theories. Sometimes they are called ‘cognitive’ and ‘perceptual’ (Fotopoulou, 2010).

In top-down theories, delusions are treated as the result of impairments in reasoning and language which influence perceptual experience and types of preferred actions (Bortolotti, 2016; Campbell, 2001). This approach is more concentrated on the types of reasoning which delusional patients prefer. It is also observed that the language practice of these people is different – for example they understand some terms in an idiosyncratic way.

In bottom-up theories, it is thought that the source of delusions lies in anomalous experience and that the delusion is a rational answer to that experience (Maher, 1999; Kapusta, 2010). Such experience is connected with brain injuries (Campbell, 2001) which lead to delusions in two ways: firstly – the experience can provide directly an unusual content, for example, hallucination; or secondly – the experience can be less specified (it is for example

only an unusual mood) and has to be interpreted. The first view is called an endorsement account, the second – an explanationist account (Bayne & Pacherie, 2004). Affective/emotional disorders could be connected with an explanationist account.

If, as bottom-up theories conjecture, delusions are a rational answer to anomalous experience, it is possible that the change of experience is connected with the change in emotions. On the other hand, difficulties in reasoning may consequently lead to beliefs connected with emotional disorders. Both scenarios are possible. Both indicate that emotions are present in delusions. In the next part of my paper, I will provide selected information about the emotional problems in delusions and then I will return to both cognitive theories.

### **Emotional problems in delusions**

It can be found that delusional patients suffer from several emotional disorders. Some have clinical symptoms of severe depression (Campbell, 2001), deep anxiety (Grzywa & Gronkowski, 2010), flattened affect (Bentall, 2006) or the opposite – a manic state (Spitzer, 1992). They also have basic problems connected with emotions – they do not identify facial expressions (Breen, Caine, & Colheart, 2002) or recognize only some of them – fear and sadness but not happiness (Tsoi et al., 2008) and they do not regulate emotions adaptively (they have difficulties with emotion reappraisal) (Westermann, Rief, & Lincoln, 2014). Even a brief analysis of the problem provides one with a hypothesis that delusions are firmly connected with emotions (Spitzer, 1992).

The type of affect which is thought to be the precedent of delusions is called a “delusional mood” and is described as “a sense of imminence, impending meaning, and of inevitability” (Campbell, 1999). People who suffer from a strange feeling that something wrong is happening, may then come to an extraordinary statement about reality, which can lead to delusion. Affective and emotional problems in delusions can be both well described (for example – as mentioned – problems with identifying emotional expressions) and more fuzzily as a “delusional mood”. Even the brief mention of some emotional problems shows that it can be treated as an important subject when concerning delusions.

Due to the fact that delusions are very diverse and their analysis may lead to different conclusions, I will focus, in the next part of the paper, on two monothematic delusions: Cotard delusion and Capgras delusion.

### **Cotard delusion/Capgras delusion**

People who suffer from Cotard delusion are convinced that they are dead (Coltheart, Langdon, & McKay, 2007) or that they do not exist (Bell, Halligan, & Ellis, 2006). Such a person insists that even he is aware that this claim is irrational (Campbell, 2001). People with this disorder very often suffer from severe depression and anxiety (Debruyne, Portzky, Peremans, & Audenaert, 2011). They also may have problems when recognizing familiar faces and perceiving emotional expressions (Kudlur, George, & Jaimon, 2007).

In Capgras delusion, the person claims that a relative, usually their spouse, has been kidnapped and replaced by an impostor (Coltheart et al., 2007). This disorder is sometimes treated as the result of impairments in facial processing, the reverse of prosopagnosia (Bayne & Pacherie, 2004; Hirstein, 2005; Stone & Young, 1997; Atta, Frolenza, Gujski, Hashmi, & Isaac, 2006). While in prosopagnosia people do not recognize faces but have an emotional response when seeing them, people with Capgras delusions recognize faces but do not have any usual feelings of familiarity. When seeing known faces, they also do not have the normal skin response (Ellis, Young, Quayle, & de Pauw, 1997; Hirstein & Ramachandran, 1997). Such problems are, on the basis of some research, thought to be the result of damage to the right hemisphere – to the areas connected with face memory (Bourget & Whitehurst, 2004).

In these two distinct types of delusion, it is possible to find some similarities. Some researchers claim that both are the results of a common anomalous experience – an absence of familiarity (Young & Leafhead, 1996). In both there is a problem with the emotional response toward other people. In Capgras delusion, there is no emotional response toward one person/some people and in Cotard delusion – toward each and every person (Stone & Young, 1997). Both are connected with emotional deficits but in the case of Cotard delusion, they seem to be more global (Gerrans, 2000). There are also reasoning similarities – both delusions are connected with impairments in the attributional style, although in different directions (Gerrans, 2000). People with Capgras syndrome have too much external attribution (like in paranoia), people with Cotard syndrome inversely – too much internal (like in depression) (Gerrans, 2000).

There are also some differences between them. First and most important – the content of the delusions. In Cotard delusion a patient claims that he is dead, in Capgras – that his relative was replaced by an impostor. There can be found also some specific features connected with only one type of

delusion. In Cotard delusion, the patient is not able to recognize himself as the owner of the unusual experience. Patients with Capgras delusion have problems with visual modality but not with auditory modality (Hirstein & Ramachandran, 1997). When talking on their phone, they are able to recognize their relative. Other differences between the two delusions are more basic. First of all, it is the quality and size of the affective deficit – it is more global in the Cotard delusion (Gerrans, 2000). Probably this is, at least, one of the reasons for the differences in interpreting experience observed in both delusions. As has been said, in both delusions there are problems with attribution although they are different. This may lead to differences in experiencing one's own and others' existence.

Perceptual and affective problems, as bottom-up theories propose, may be the result of brain injuries. Much research has been conducted, the aim of which was to find the neural basis of these delusions. Neuroimaging studies have provided the information that in Cotard delusion an important role is played by the fronto-temporo-parietal circuitry (Debruyne et al., 2011; Kudlur et al., 2007). Some cases have also found different kinds of impairments: dilation of the third and lateral ventricles, bilateral cerebral atrophy, sylvian and interhemispheric fissure enlargement, left parietal lobe lesions, and haemorrhagic contusion of the right temporal cortex (Kudlur et al., 2007). On the other hand, in most cases there were no structural brain changes (Debruyne et al., 2011; Kudlur et al., 2007).

In neuroimaging studies with people suffering from Capgras delusion, right hemisphere abnormalities were most often observed, especially in the frontal, temporal, and limbic regions (Atta et al., 2006; Bourget & Whitehurst, 2004; Luca, Bordone, Luca, Patti, Sortino, & Calandra, 2013). On the other hand, most patients have bilateral damage, not specified to one region in each case (Bourget & Whitehurst, 2004).

Such research is not conclusive – it is impossible to find specified areas which are connected to these kinds of delusions. The results also cannot provide any answers to the questions – why do some people not say “I feel like I'm dead” but “I'm dead”? or “I feel as if you were not my wife” but “You're not my wife”? Neither affective problems nor brain disorders explain the maintenance of the delusions and their limitation to one theme.

### **What do we need more of?**

Perceptual and emotional problems alone are not sufficient conditions for explaining delusion formation (Langdon & Coltheart, 2000). On the other hand, they seem to be very important. There is a high probability that

during delusion formation both bottom-up and top-down ways are present and play an important role (Broome et al., 2007; Garety & Freeman, 1999; Stone & Young, 1997).

One of the most common explanations of delusion persistence is reasoning impairment. In the subject literature, some proposals concerning those kind of biases can be found: ‘jumping to conclusions’ (patients make statements based on a small amount of information) (Broome et al., 2007; Colbert & Peters, 2002; Garety & Freeman, 1999), intolerance of uncertainty on the one hand but certainty of their opinions on the other (Broome et al., 2007; Colbert & Peters, 2002; Warman & Martin, 2006), impaired working memory and attentional deficits (Broome et al., 2007; Fotopoulou, 2010), impairments in attributional style and probabilistic reasoning (Leposavić & Leposavić, 2008; Green, Williams, & Hemsley, 2000; Fotopoulou, 2010), low self-reflectiveness (Warman & Martin, 2006), deficits in monitoring, and the theory of mind (Fotopoulou, 2010).

On the other hand, without mentioning the perceptual and emotional problems – simply a rational explanation is not sufficient, for example ‘jumping to conclusions’ is present in depression (Wittorf et al., 2012). Probably both affective and cognitive impairments are necessary for the development of delusion.

### **What can be inferred?**

Questions about the role of emotions in delusions are both theoretical and practical (Spitzer, 1992). The theoretical side asks if their relation is necessary, asks about their nature and operationalization (Spitzer, 1992). This can lead to psychiatric practice which should also include within the inquiry emotional problems (Spitzer, 1992).

The very presence of emotional problems within delusions shows that belief disorders and emotional disorders should not necessarily be treated as a total demarcation of the phenomenon (Dub, 2014). Delusions can be interpreted as emotional disorders on the one hand, and emotional disorders as states with delusional convictions on the other (Dub, 2014). That claim can be strengthened by the evidence that pharmacological or psychological treatment may cause the reduction of delusions (Fotopoulou, 2010). Cognitive anomalies alone cannot provide sufficient characteristic of delusions (Stephens, 1999). It is probable that adding affective elements can lead to a better definition and understanding of such phenomenon. There are researchers who claim that there is a continuum with normal beliefs

on the one side and delusions on the other (Green et al., 2000). Maybe there is also a single spectrum with cognitive disorders on the one side and affective ones on the other, with delusions being somewhere in the middle. Another hypothesis can be that affective and cognitive anomalies are two dimensions of mental disorders. The further development of both empirical and theoretical research into delusions may help in verifying such claims.

Even without clear conclusions about the role of emotions in delusions it is clear that there is a connection between them. Further research, probably more specific work, may lead to a better understanding of that relation. Equally, there could be explored how affect is situated in belief formation and what kind of disorders in emotions can lead to delusions and what kind of reasoning is present during emotional disorders. Other research can also provide interesting theoretical conclusions. It is possible that philosophers may treat mental disorders as some kind of natural experiment. It is probably not possible to separate emotions and reasoning in the experimental design. However, exploring mental disorders can lead to observation of those situations and provide conclusions about the nature of beliefs and the nature of cognition. Further research of this type is definitely worth continuing.

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