Delusions and hallucinations: theory and treatment

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Brain and mind disorders
One of the brain and mind disorders:

schizophrenia
The symptoms of schizophrenia

Positive symptoms:

• Delusions
• Hallucinations
• Disorganization of thought

Negative symptoms:

• Lack of motivation
• Lack of emotion
• Little social contact with other people
Some basic facts about schizophrenia

- One person in 100 will experience a schizophrenic episode during their lifetime
- No method of prevention known
- No cure known
- Very little known about cause: genetic factors and stressful life events are involved
- 25% will have only one episode; 40% will have recurring episodes; 35% chronic
Treating schizophrenia

Most commonly treated with anti-schizophrenic drugs. Problems:

- These drugs have powerful side-effects
- Patients often don’t take their medication because of these side-effects
- Drug treatment does not target specific symptoms

Is there a treatment method that avoids these problems yet can help?
Positive symptoms of schizophrenia:

- Delusions
- Hallucinations

Causes unknown

Project aim: to discover their causes
What is a delusion?
Delusional disorders: Some examples

- **Capgras delusion**: “My wife has been replaced by an impostor”
- **Fregoli delusion**: “I am being followed around by people I know, but I can’t recognise them because they are always in disguise”
- **Cotard delusion**: “I am dead”
- **Alien control delusion**: “Other people can cause my body to move against my will”
- **Asomatognosia**: “This arm (the patient’s left arm) is not my arm, it is yours”

and...
Mirrored-self misidentification:

Patient TH, an elderly man who subsequently showed the symptoms of dementia, believed that the person he saw when he looked in the mirror was not him, but some stranger who looked very like him.

Why?
What has caused TH’s delusion?

To solve this problem, answers to two questions are needed:

- *Where did this idea come from in the first place?*
- *Once the idea occurred, why did the patient continue to believe it even though everyone was telling him it wasn’t true?*
Where did the idea come from in the first place?

We discovered that this patient had lost all knowledge about how mirrors work. For him, a mirror was just like a window.

Anyone you see through a window is in a different part of the world from you.

Therefore this person can’t be you.
Why didn’t he give up this bizarre idea?

We’ve found that this region of the brain is needed for us to be able to judge beliefs against evidence. Patient had damage to this region.
What caused the delusion

• Where did this idea come from in the first place?
  Answer: a problem with perception: loss of ability to deal with mirrors

• Why did the patient continue to believe the idea?
  Answer: A problem with belief: loss of ability to judge beliefs against evidence
Our general theory of delusion

Two factors must always be present for delusion to occur:

• Some problem with perception - this produces the delusional idea in the first place;
• Some problem with belief evaluation: this makes the patient unable to give up the belief.
Our theory successfully explains all of these delusions:

- Capgras delusion
- Fregoli delusion
- Cotard delusion
- Alien control delusion
- Asomatognosia
- Mirrored-self misidentification
That’s it for the theory: now, what about the treatment?
What about treatment of delusions?

Our case MF: a highly successful Washington lawyer, aged 69, who after a head injury developed the firm belief that his wife was not his wife but a different woman, a past business partner.
A conversation with MF

*Nora:* “If this lady isn’t your wife, why is she wearing a ring just like the one you told me you bought for your wife?”

*MF:* “She must have gone to the same shop and got another one just the same”.

*Nora* (takes the ring from the wife’s finger and shows it to MF): “Well, it seems to have your wife’s initials engraved inside it. How would you explain that?”

*MF* (long pause): “I . . . don’t know how to explain that”.

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A conversation with MF

After a week of conversations like this, gently probing the evidence for MF’s belief, he relinquished the belief, and accepted that his wife was really his wife.
Implications of our theory of delusion for treatment

Our theory: two factors must always be present.

(a) Some problem with perception - this produces the delusional idea in the first place.

(b) Some problem with belief evaluation - this makes the patient unable to give up the belief.

Nothing can be done about (a).
Implications of our theory of delusion for treatment

*Our theory:* two factors must always be present.

(a) Some problem with *perception* - this produces the delusional idea in the first place.

(b) Some problem with *belief evaluation* - this makes the patient unable to give up the belief.

*But we find that (b) will respond to persistent gentle discussions about evidence for the belief.*
Cognitive-behavioural therapy

This is a method for treating delusions and hallucinations that is based on persistent gentle discussions about evidence for the belief.

Some more details about the method . . .
Cognitive-behavioural therapy

• This method is based on persistent gentle discussions about evidence for the belief.
• Good evidence that it can be effective in treating delusions and hallucinations
• It has had no theoretical basis until now
• Our theory supplies this theoretical basis
• Two major virtues: treatment is symptom-specific and drug-free
What’s needed next

• We have discovered what causes delusions; complete project on what causes hallucinations
• Then collaborative research with clinicians, to develop CBT treatments based on our theories and to test how well they work
• And cognitive testing of at-risk adolescents can predict 50% of those who will have an episode of schizophrenia: preventative CBT for them
• Outcomes:
  
  *Drug-free treatment*
  
  *Reduced incidence of schizophrenia*