

USING HYPNOSIS TO INVESTIGATE DELUSIONS

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Introduction

According to Joseph Reyher (1962), hypnosis research can be classified as either intrinsic or instrumental. Whereas intrinsic research explores the phenomenon of hypnosis itself and the factors that influence hypnotic responding, instrumental research uses hypnosis as a technique to investigate other phenomena (see also Barnier, 2002a). Hypnosis is a powerful instrumental tool because it can produce subjectively compelling belief in suggested effects as well as alter reality monitoring in ways that mimic a variety of pathological conditions. One of the advantages of using hypnosis instrumentally is that complex clinical phenomena can be investigated in the laboratory. Indeed, hypnosis has an extensive history of instrumental use (for review, see Kihlstrom, 1979; Oakley, 2006) and has successfully modelled a

variety of clinical phenomena. These include, for example, symptoms of repression and impulse inhibition, conversion hysteria, auditory hallucinations, functional amnesia, functional blindness, mirrored self-misidentification, déjà vu, and reverse intermetamorphosis (Barnier, 2002b; Barnier et al., 2007; Barnier & McConkey, 1999; Barnier, McConkey, & Wright, 2004; Blum, 1975; Bryant & McConkey, 1989a, 1989b; Burns & Reyher, 1976; Cox, 2007; Cox & Barnier, 2003, 2007; Halligan, Bass, & Wade, 2000; O'Connor, Barnier, & Cox, 2007; Reyher, 1961, 1962, 1969; Szechtman, Woody, Bowers, & Nahmias, 1998; Zimbardo, Andersen, & Kabat, 1981).

In this paper we describe a program of research in which we are using hypnosis to develop laboratory analogues of a range of clinical delusions. Hypnosis is ideal for this task because it shares a number of features with delusions (Kihlstrom & Hoyt, 1988). Both clinical delusions and hypnotic illusions involve a false belief about the self that is: 1) believed with conviction, 2) resistant to rational counterargument, 3) maintained regardless of overwhelming evidence to the contrary, and 4) not shared by others in society (DSM-IV, 1995; Langdon & Coltheart, 2000). Also, as Kihlstrom and Hoyt (1988) noted, hypnotic phenomena involve involuntariness bordering on

compulsion and subjective conviction bordering on hallucination and delusion (see also Kihlstrom, in press). The parallels between clinical delusions and hypnosis experiences were best highlighted by Sutcliffe (1961) when he commented that hypnotized individuals are essentially deluded about the real state of the world.

In light of these parallels, past research has used hypnosis to investigate hypnotic sex change delusions (Burn, Barnier, & McConkey, 2001; McConkey, Szeps, & Barnier, 2001; Noble & McConkey, 1995; Sutcliffe, 1961). And in recent work we have developed hypnotic analogues of two forms of delusions of misidentification: reverse intermetamorphosis and hypnotic mirrored-self misidentification (Barnier et al., 2007; Cox, 2007; Cox & Barnier, 2007). Delusions of misidentification involve a mistaken belief about the identity of oneself or other people, places, or objects (Breen, Caine, Coltheart, Hendy, & Roberts, 2000). They include Capgras Syndrome (the belief that my friends or relatives have been replaced by impostors), Fregoli Syndrome (the belief that strangers are actually people I know who are in disguise), intermetamorphosis (the belief that someone has changed into another person), reverse intermetamorphosis (the belief that I have changed into another person), reduplicative paramnesia

(the belief that there are doubles of certain people or places), and mirrored-self misidentification (the belief that the person I see when I look in the mirror is a stranger). In the next section we describe the techniques we are using to establish viable laboratory analogues of these delusions.

Establishing the Paradigm

Our hypnotic paradigm to model delusions in the laboratory includes elements to: (1) create a credible delusion of misidentification, (2) index changes to self following the delusion suggestion, and (3) challenge the hypnotic delusion.

Types of Suggestions

To create a credible hypnotic delusion of misidentification (or indeed any hypnotic delusion or any hypnotic experience) we need to administer suggestions that make sense to the hypnotized person, and that are likely to create a delusional experience with features similar to clinical delusions. Clinical delusions of misidentification involve personal identity change and occur across a variety of different identities. For example, deluded individuals may adopt the identity of someone similar to themselves, someone dissimilar to themselves, someone familiar, or someone unfamiliar. These delusions may encompass beliefs about real, existing individuals, as in the case of a woman known as RZ who believed that she was her father (Breen et al., 2000), or beliefs about non-existent individuals, as in the case of a woman known as

EN who believed that she had a non-existent twin sister (Baddeley, Thornton, Chua, & McKenna, 1996).

To map this range of delusional beliefs, in our research we have written and tested a number of delusion suggestions. For instance, in the case of reverse intermetamorphosis, during hypnosis we have administered suggestions to high hypnotizable participants (hereafter referred to as “highs”) to become real individuals, such as a friend or relative who is very similar, a friend or relative who is very dissimilar, a same-sex sibling who is presumably familiar, or a friend’s sibling who is presumably unfamiliar. We have also administered suggestions to have an extra (nonexistent) same-sex sibling. Although we thought it might be easier for people to experience a temporary hypnotic delusion about someone real, similar, or familiar, the pass rate for all suggestions across six experiments ranged between 78% and 100%. In other words, all of these suggestions were equally effective in producing a credible hypnotic experience of reverse intermetamorphosis in high hypnotizable individuals (Cox, 2007; Cox & Barnier, 2007).

In the case of hypnotic mirrored-self misidentification, during hypnosis we have administered suggestions to highs to see a stranger in the mirror, see the mirror as a window, or see the mirror as a window with a view of a stranger on the other side. We have used these three suggestions to explore the different forms of

initial thoughts that might “seed” the delusion (see Langdon, McKay, & Coltheart, in press, for discussion of the various implausible thoughts that might initially seed persecutory delusions) and to map the different pathways from neuropsychological impairment to clinical cases of mirrored-self misidentification. Whereas participants given the stranger in the mirror suggestion and the mirror as a window with a view of a stranger suggestion reported seeing a stranger in the mirror (and not themselves), participants given the mirror as a window suggestion simply reported that they saw themselves. In other words, the specifics of the suggestion influenced its success and the resulting pattern of delusional performance. This finding is similar to research on hypnotic sex change delusions, where suggestions to become “more and more like the opposite sex” lead to a more compelling delusional experience than suggestions to become “less and less like your actual sex” (Noble & McConkey, 1995; also see Sutcliffe, 1961).

Indexing Changes to Self

We have used a variety of measures to index the impact of a delusion suggestion on self. In the earlier hypnotic sex change work, following the delusion suggestion, McConkey and colleagues asked participants to say their name and to describe themselves; participants typically provided a new name for their deluded identity and described themselves

as looking and feeling like the opposite sex. In Burn et al.'s (2001) hypnotic sex change study, the experimenter also asked participants to complete a "draw-a-person" task and to nominate the part of themselves that they liked best. Following the sex change suggestion, participants typically drew a figure of the opposite gender and nominated stereotypically "gendered" parts of themselves, such as breasts, long legs, and strong shoulders.

Building on this work, in our recent studies of reverse intermetamorphosis, during the suggested identity change, we have asked participants to say their name, to describe themselves, and to list some personal likes and dislikes for their (deluded) identity. For instance, in one experiment we asked participants during the suggested delusion to describe some things they liked doing in their spare time as well as some things they didn't like. Across six experiments, 90% of our highs provided a new name and described themselves differently during the suggested delusion. Also, highs generated at least five personal likes and dislikes for their deluded identity, whereas low hypnotizable participants (hereafter referred to as "lows") generated less than three.

We have also administered two different self-concept tasks before and during the suggested delusion. The first task was a modified version of Higgins' (1987) self-discrepancy task. In this task, participants provided five words to describe their actual self and five

worlds to describe their ideal self. The second task was Kuhn and McPartland's (1954) "I am" task. In this task, participants completed five sentences, each beginning with the words "I am." Participants completed these tasks at the beginning of the session and then again following the delusion suggestion when they were experiencing themselves as a different identity. We were interested in the extent to which highs' and lows' self-concepts might change following the delusion suggestion, and indexed self-change by calculating the number of different self-descriptions provided (i.e., different words and different sentence completions) during the suggested delusion, compared to before the delusion. Across four experiments we found that highs completed the self-concept tasks with approximately 4.39 different self-descriptions, whereas lows completed the self-concept tasks with only 2.57 different self-descriptions.

In our recent work on mirrored-self misidentification, during the suggested delusion, we asked highs who they could see when they looked in the mirror. The majority described another person in the mirror, and the following excerpt illustrates one participant's compelling experience (from Barnier et al., 2007):

Hypnotist: Tell me, what do you see?

Participant: (Participant looks in the mirror and then looks behind him). Who's that?

Hypnotist: Tell me about what

you see.

Participant: Another person.

Hypnotist: Tell me about the person.

Participant: They're wearing a purple shirt, they've got a big nose, got a mole on their neck.

Hypnotist: Is the person you see a male or a female?

Participant: Male (participant looks behind him).

Hypnotist: Tell me more about what they look like.

Participant: They've got short, curly hair, brown eyes, brown hair.

Hypnotist: Have you ever seen this person before?

Participant: No (participant looks behind him).

Hypnotist: Does this person remind you of anyone?

Participant: I think I've seen him before at school.

Hypnotist: Tell me about that... where you might have seen him.

Participant: I think he was in the year below me ... yeah I knew there was something.

Hypnotist: What do you think his name is?

Participant: Anthony.

Hypnotist: In what ways does this person look like you?

Participant: Same coloured hair. I've got hazel eyes.

Hypnotist: And what colour eyes does he have?

Participant: Brown.

Hypnotist: In what ways does

the person you can see look different to you?

Participant: Different coloured eyes. I think my nose is smaller... got bigger lips.

Hypnotist: He has or you have?

Participant: I have ... and I've got more freckles.

Hypnotist: What is he doing at the moment?

Participant: Looking into the mirror. I don't know where he is though (participant looks behind him and around the room).

Hypnotist: Is he doing anything in particular or saying anything in particular?

Participant: Just looking at me. He's saying something but I can't understand.

Hypnotist: Why can't you understand?

Participant: Because I can't lip read.

Hypnotist: Can you hear him?

Participant: No.

Hypnotist: How come?

Participant: Because I can only see him.

Taken together, these experiments indicate that in response to a hypnotic suggestion for a temporary delusion of misidentification, highs experience compelling alterations in their sense of identity (Barnier et al., 2007; Cox, 2007; Cox & Barnier, 2007).

Challenge Procedures

To examine whether hypnotic delusions are maintained with the conviction displayed by clinically deluded individuals, McConkey and colleagues (Burn et al., 2001; McConkey et al., 2001; Noble and McConkey, 1995) introduced two useful challenge procedures in their hypnotic sex-change research: a contradiction and a confrontation. In the contradiction, they asked participants what they would say if a doctor (a hypothetical authority figure) came in and said they were not their suggested sex. In the contradiction, they asked participants to open their eyes, look at themselves on a monitor, and describe what they were experiencing as they did so. McConkey and colleagues found that highs maintained their deluded identity in the face of these challenges. They defended their delusional belief, for instance, by commenting that the doctor was a quack and saying they could see someone else on the monitor.

We adapted these challenge procedures in our work on reverse intermetamorphosis. In a contradiction, we asked participants what they would say if their mother came into the room and said they were not their suggested identity. In a confrontation, we asked participants to open their eyes, look at themselves on a monitor, and describe what they were experiencing as they did so. Across three experiments, approximately 81% of our highs maintained their suggested identity

in the face of these challenges. In response to the contradiction, they made comments such as, "Mum's gone crazy ... she's lost the plot." In response to the confrontation, they made comments such as, "It was very blurry at first. Then my eyes focused and I thought that's my brother on the TV." Notably, in one experiment involving real, high hypnotizable participants (hereafter referred to as "reals") and simulating, low hypnotizable participants (hereafter referred to as "simulators") tested with Orne's (1959, 1962, 1971) real-simulating paradigm, we found that more than twice as many reals than simulators maintained their identity following the confrontation (for similar findings, see Noble & McConkey, 1995). This indicates that the delusional experiences of reals cannot be explained solely in terms of the demand characteristics of the hypnotic setting.

We have also developed challenge procedures for our hypnotic analogue of mirrored-self misidentification. Following the delusion suggestion, we asked participants to touch their nose as they looked into the mirror. The majority of highs commented that the stranger was copying them and continued to maintain that they could see another person in the mirror. The following excerpt illustrates how one participant responded to this particular challenge:

Hypnotist: I'd like you to touch your nose with your finger.

Participant: He's copying me

(participant laughs).

Hypnotist: What did he do?

Participant: He touched his nose (participant laughs and looks behind him).

Hypnotist: Why do you think he did that?

Participant: Maybe he's trying to make me seem like I'm crazy or something.

In current work on hypnotic mirrored-self misidentification, we are investigating a graded series of first person, second person, and third person challenges designed to map the challenges used by clinical neuropsychologists with delusional clients. Our first person challenges include questions about appearance such as, "How is it possible that you and the person you see in the mirror look so similar?" Second person challenges involve the experimenter appearing in the mirror beside participants and asking, "Who else do you see in the mirror?" and, "If there are two people in the room and two people in the mirror, who must the people in the mirror be?" Third person challenges involve behavioral tasks such as asking participants to touch an apple held over their shoulder and asking, "What did the person in the mirror do? Why did they do that?" and, "How do you explain that the person you can see always does exactly what you do?" We have found that some highs will maintain their suggested mirror delusion across an entire series of graded challenges.

Overall, these challenge procedures indicate that hypnotic

delusions of misidentification are credible, realistic and held with strong conviction. Highs do not ignore information that conflicts with their suggested experiences. Rather, when confronted with challenging information, they appear to interpret it in a way that is consistent with their delusion by generating explanations that support their deluded identity (see also Burn et al., 2001).

Autobiographical Memory During Hypnotic Delusions

In addition to establishing a hypnotic paradigm that closely maps the features of clinical delusions we have also been interested in understanding the impact of the suggested delusion on autobiographical memory. Empirical work on autobiographical remembering during delusions has been both limited and mixed (see Baddeley et al., 1996; Corcoran & Frith, 2003; Kaney, Bowen-Jones & Bentall, 1999, for mixed findings on memory specificity among deluded individuals). However, clinical cases suggest that autobiographical memories are often distorted during delusions of misidentification (Baddeley, et al., 1996; Breen et al., 2000). Deluded individuals recall memories that "serve" their delusional beliefs. For example, in Breen et al.'s (2000) case of RZ who believed she was her father, when RZ's delusion was challenged, she continued to maintain that she was a man and recalled a memory about having an operation to make her look like a woman. This memory served her delusional

belief because it explained why she had man's voice and a woman's body.

To investigate how a hypnotic delusion of misidentification influences autobiographical remembering, we asked participants to elicit memories following the hypnotic delusion suggestion. We used participants' responses to the "I am" task to cue specific memories. For example, if participants said, "I am confident." we asked them to describe a specific event from their (deluded identity's) past that illustrated this.

Across four experiments we found that highs were much more likely to generate specific memories than lows: whereas 86% of highs' memories were specific, only 43% of lows' memories were specific (where specific memories were unique events with an identifiable beginning and end as defined by Conway & Pleydell-Pearce, 2000). Also, when challenged, highs provided more justification for having personally experienced their memories than lows. For instance, highs recalled their emotional state at the time of the event or cited physical evidence such as photographs of the event. Notably, highs rarely confabulated memories (30% of lows' memories were confabulations). Rather, they recalled memories of previously experienced events, but reinterpreted these in light of their delusion and viewed them from the perspective of their deluded identity.

Summing up, these findings suggest that during a hypnotic delusion, memories consistent

with the suggested identity are facilitated. Highs selectively recall and reinterpret memories that support their deluded identity. This is similar to clinically deluded patients who remember in the service of their delusions.

Interpretations, Implications, Challenges and Future Directions

Our program of research indicates that a hypnotic suggestion can produce credible, compelling delusions of hypnotic sex change, reverse intermetamorphosis, and mirrored-self misidentification. The hypnotic suggestion has the strongest effects for high hypnotizable individuals who receive a formal hypnotic induction (the suggestion can be passed by highs who receive imagination instructions, but their experience is less compelling; Cox & Barnier, 2007). Importantly, response to the hypnotic delusion cannot be explained simply in terms of the demands of the experimental procedure because we have consistently found differences in the reactions of reals and simulators (e.g., in response to challenges and in autobiographical memories elicited during the delusion, Burn et al., 2001; Cox, 2007; Noble & McConkey, 1995). Of particular interest, a hypnotic delusion influences the accessibility and quality of autobiographical memories (Cox, 2007; Cox & Barnier, 2007; for compelling similar work on posthypnotic amnesia for autobiographical memories see Barnier, 2002b; Cox & Barnier, 2003).

In striving to map the features of clinical delusions, we have found striking similarities between clinical cases and their hypnotic analogues. First, just as clinical patients believe themselves to be a variety of different identities (in delusions of misidentification), our hypnotic paradigm created viable delusions for a range of identities -- real and nonexistent, similar and dissimilar, familiar and unfamiliar. Second, both clinical and hypnotic delusions are resistant to challenge and maintained with conviction even in the face of rational evidence to the contrary. Third, deluded individuals, both clinical and hypnotic, recall autobiographical memories that serve their delusion from the perspective of their deluded identity. For example, the patient RZ who believed she was her father adopted her father's perspective when recalling a memory that involved both her father and herself, making comments such as, "I kicked RZ out of the house when she was living there." This change in perspective during a delusion (whether clinical or hypnotic) may help to reinforce the conviction that memories are of self-experienced events, that in turn may help to render these delusions resistant to challenge.

Although our results are provocative, this hypnotic paradigm is not without limitations. For instance, hypnotic delusions and clinical delusions differ in their etiology. Clinical delusions are thought to arise when a neuropsychological impairment (e.g., brain injury)

produces perceptual and/or affective deficits, combined with faulty belief evaluation processes (Breen et al., 2000; Langdon & Coltheart, 2000). In contrast, hypnotic delusions are a combination of cognitive (e.g., dissociative) and social/motivational processes. Thus, although the hypnotic analogue may be able to map the features of clinical delusions, it may be less able to map all of the processes (Kihlstrom & Hoyt, 1988); we return to this in a moment. At first glance, clinical and hypnotic delusions also differ in their longevity and behavioral consequences. For instance, in terms of longevity, clinical delusions of misidentification can last for months or years (Frazer & Roberts, 1994; Hirstein & Ramachandran, 1997; Todd, Dewhurst, & Roberts, 1981). In terms of behavioral consequences, in cases of mirrored-self misidentification, individuals avoid looking in the mirror and even cover up all the mirrors in their house (Breen et al., 2000). Similarly, Capgras individuals who believe their relatives have been replaced by impostors, have been known to engage in violent acts toward them (see Stone & Young, 1997, for discussion of a Capgras patient who decapitated his father because he believed his father was a robot). Such qualities seem quite different from the short lived and relatively benign effects of the experimental hypnosis session. But hypnotic responses can extend well beyond the hypnotic setting (e.g., Barnier & McConkey's, 1998, posthypnotic

postcards) and clinical hypnosis interventions can produce long lasting and significant behavioral changes (see Nash & Barnier, in press).

There is scope to improve our hypnotic delusion paradigm and to further explore the processes underlying clinical delusions. In collaboration with clinical neuropsychologists (Max Coltheart, Robyn Langdon, Nora Breen, and Martha Turner) we plan to develop a catalogue of hypnotic analogues of clinical delusions and to compare specific clinical and hypnotic cases. We are particularly interested in the cognitive processes that influence autobiographical memory and information processing during a delusion. According to an influential model of autobiographical remembering proposed by Conway (2005), current self influences the accessibility of autobiographical memories. Within Conway's model, individuals attempt to maintain a balance between the principles of correspondence and coherence. Correspondence refers to the need to record experiences as accurately as possible and coherence refers to the need to maintain a coherent sense of self where goals and beliefs are consistent with autobiographical knowledge. Our hypnotic delusion paradigm can test Conway's model by examining whether a change in self (from a hypnotic delusion suggestion) will facilitate and/or inhibit particular autobiographical memories.

Our hypnotic paradigm also enables us to test and refine

current theories of delusions, such as Langdon and Coltheart's (2000) two-factor model of monothematic delusions. According to Langdon and Coltheart (2000), there are two factors that contribute toward delusional beliefs: Factor 1 involves a neuropsychological anomaly affecting perceptual or affective processing and Factor 2 involves a deficit in belief evaluation, where delusional hypotheses are inappropriately accepted as beliefs. Applying our hypnotic analogue to Langdon and Coltheart's (2000) two factor theory, the specific suggestion provides the content of a (hypnotic) delusional experience, much as the neuropsychological anomaly provides the content of a clinically deluded experience (Factor 1). Then, the overall hypnotic context influences the evaluation and acceptance of beliefs and explanations about these experiences, much as the impaired belief evaluation system leads to the acceptance of delusional hypotheses in clinical cases (Factor 2). Thus, with hypnosis and hypnotic suggestions we can model and refine our understanding of the operation of these factors, together and in combination.

Researchers and practitioners have demonstrated again and again that hypnosis is a powerful technique to investigate (as well as treat) complex clinical phenomena. Our instrumental use of hypnosis allows us to explore aspects of delusions that have been either neglected in research or difficult to study in the laboratory. In this sense, our research adds to a long

and illustrious tradition in the field of hypnosis.

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