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Hypnotic analogues of delusions: The role of delusion proneness and schizotypy

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ABSTRACT

There is compelling evidence that hypnotic suggestions can be used to model clinical delusions in the laboratory. In two studies, we investigated the role that personality factors, delusion proneness and schizotypy, played in shaping such hypnotic models. In the first study, 398 participants were screened on measures of hypnotisability, delusion proneness, and schizotypy. Hypnotisability correlated with both delusion proneness and the cognitive–perceptual subscale of schizotypy. In the second study, 22 high and 20 low hypnotisable participants were given suggestions to model two content specific delusions: Frégoli (the belief that strangers are actually known people in disguise) and mirrored-self misidentification (the belief that one's reflection in the mirror is a stranger). Whereas *high delusion proneness* predicted which high hypnotisable participants responded to the suggestion for Frégoli delusion, *hypnotisability scores* predicted which high hypnotisable participants responded to the suggestion for mirrored-self misidentification. No lows responded to either suggestion. We discuss the implications of these findings for hypnotic models of delusions.

1. Introduction

Suggestions in hypnosis have been used to model many clinical symptoms (Kihlstrom, 1979). Researchers, for example, have used suggestions to create hypnotic analogues of clinical delusions and hallucinations in the laboratory with no lasting consequences for participants (for reviews, see Cox & Barnier, 2010; Oakley & Halligan, 2009; Woody & Szechtman, 2011). This approach has allowed researchers to study the putative psychological processes that underlie clinical symptoms with a degree of experimental control not possible with clinical patients. According to Oakley and Halligan (2009), this approach provides for "virtual patients" (p. 266), or clinical analogues, that researchers can study to better understand the clinical disorders themselves. In this paper, we employed this approach and investigated the role of individual differences in shaping analogues of clinical delusions.

The ability to experience hypnotic effects is a relatively stable trait, known as hypnotisability, and is assessed using standardised scales (Laurence, Beaulieu-Prévost, & du Chéné, 2008). Consequently, researchers tend to select high hypnotisable participants (*highs*; i.e., 10–15% of the participant population) to generate hypnotic analogues, as this group will more reliably experience the hypnotic suggestions (Cox & Barnier, 2010). This selection of participants, however, raises two issues when attempting to generate hypnotic analogues of delusions. First, it is unclear whether high hypnotisability is itself associated with traits related to delusions. Second, it is unclear whether individual differences in such traits influence the hypnotic analogue independently of hypnotisability. We examined these two issues in Study 1 and Study 2.

2. Study 1

There is an extensive literature that confirms hypnotisability is not related to broad personality traits, such as extraversion and agreeableness (Laurence et al., 2008). To date, the most reliable personality correlate of hypnotisability is absorption (a tendency to become engrossed in fantasy or experience), but even this trait correlates only moderately (Tellegen & Atkinson, 1974). There is, however, some evidence that hypnotisability could be related to specific traits associated with delusional ideation. A number of studies found that high hypnotisability is associated with greater paranormal experiences and beliefs (Diamond & Taft, 1975; Nadon & Kihlstrom, 1987; Nadon, Laurence, & Perry, 1987; Spanos & Moretti, 1988). Wilson and Barber (1983), for example, found that 92%

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of their sample of very high hypnotisable women believed they had psychic abilities, 88% had out-of-body experiences, and 73% had experiences with apparitions. In contrast, only 16% of low and medium hypnotisable participants reported similar experiences and beliefs. Other research has found that high hypnotisability is associated with a tendency to make source monitoring errors, or to confuse imagined events with real memories (Heaps & Nash, 1999; Wilson & Barber, 1983). Such reality-monitoring errors have been implicated in delusions (Johnson, 1988).

Individuals in the non-clinical population are known to vary in their level of delusion-like ideation or 'delusion proneness' (Peters, Joseph, Day, & Garety, 2004). They can vary in the number of implausible beliefs they might entertain, and in the associated conviction, preoccupation, and distress (Peters et al., 2004). Given the previous findings, it is possible that hypnotisability could be related to delusion proneness. Research in recent years has tended to focus on cognitive correlates of hypnotisability, such as attention and automaticity, rather than personality traits (Laurence et al., 2008). However, the success of the hypnosis paradigm in modelling delusions (Cox & Barnier, 2010) has made the possibility of a relationship between hypnotisability and delusion proneness more salient.

Delusion proneness is related to the broader personality trait of 'schizotypy.' Schizotypy is conceptualised as an attenuated form of clinical psychosis present to varying degrees in the general population (Claridge, 1985). Research suggests three key facets of schizotypy: (i) cognitive–perceptual traits (unusual perceptual experiences and magical thinking), (ii) interpersonal difficulties (social anxiety and blunted affect), and (iii) disorganisation (odd behaviour and speech; see Raine & Benishay, 1995). Of these three schizotypal factors, Jamieson and Gruzelier (2001) proposed that the cognitive–perceptual traits could be related to hypnotisability as both involve a similar tendency to report unusual experiences and beliefs. In support of their proposal, Gruzelier and colleagues found that a number of individual items on a self-measure of schizotypy, the *Personality Syndrome Questionnaire*, correlated with hypnotisability (Gruzelier et al., 2004; Jamieson & Gruzelier, 2001; Laidlaw, Dwivedi, Naito, & Gruzelier, 2005). However, none of the psychometrically validated subscale scores, traditionally used in schizotypy research, correlated with hypnotisability. In addition, the particular individual items that correlated with hypnotisability varied across different samples. Therefore, the authors noted that their findings could have been due to Type I error. Nevertheless, the possibility remains that cognitive–perceptual traits of schizotypy could be related to hypnotisability.

In Study 1, we investigated the relationship between hypnotisability, delusion proneness, and schizotypy. We administered the *Harvard Group Scale of Hypnotic Susceptibility: Form A* (HGSHS:A; Shor & Orne, 1962) to a large group of participants and also gave them measures of delusion proneness (Peters et al., 2004), schizotypy (Raine & Benishay, 1995), and absorption (Tellegen & Atkinson, 1974). Following previous research, we expected that hypnotisability would correlate with delusion proneness, the cognitive–perceptual subscale of schizotypy, and absorption.

2.1. Method

2.1.1. Participants

Participants were drawn from a pool of 439 first and second year psychology students who participated as part of their course requirements. Participants were asked not to participate if they had any ongoing psychological condition, problems with substance abuse, or if they had ever suffered a serious head injury or neurological illness. Research was approved by the Macquarie University Human Research Ethics Committee. From the original sample of participants, 398 participants (98 males, 298 females, 2 undisclosed) of mean age 22.01 years ($SD = 6.18$) completed all measures.

2.1.2. Measures and procedure

Following informed consent procedures, the following measures were administered to participants in counterbalanced orders.

2.1.2.1. Hypnotisability. Hypnotisability was assessed using a 10-item modified version of the HGSHS:A (Shor & Orne, 1962). Instructions were presented on an audio recording and participants scored their own responses. Arm rigidity and arm immobilization items were removed to ensure that the procedure could be conducted within a 1 h session. Scores range from 0–10.

2.1.2.2. Delusion proneness. Delusion proneness was assessed using the *Peters* et al. *Delusions Inventory* (PDI; Peters et al., 2004). This measure includes 21 items requiring dichotomous (yes/no) responses. Participants who respond "yes" to an item then rate their level of distress, preoccupation, and conviction about that item on a five-point Likert scale. All responses are summed to produce a total score (range 0–336). Separate subscales are also computed for: number of delusion-like beliefs (range 0–21), and total subscores for distress (range 0–105), preoccupation (range 0–105), and conviction (range 0–105). For comparison, Peters et al. (2004) found that a sample of clinically deluded participants, on average, endorsed 11.9/21 ($SD = 6.0$) items and scored 130.5/336 ($SD = 79.1$) for the total score.

2.1.2.3. Schizotypy. Schizotypy was assessed using the *Schizotypy Personality Questionnaire-Brief* (SPQ-B; Raine & Benishay, 1995). This measure includes 22 items requiring dichotomous (yes/no) responses. The measure has three subscales for cognitive–perceptual, interpersonal, and disorganised traits. Total scores range from 0–22. Participants scoring 17 and above make up the top 10% of the distribution of scores (Raine & Benishay, 1995).

2.1.2.4. Absorption. Absorption was assessed using the *Tellegen Absorption Scale* (TAS; Tellegen & Atkinson, 1974). This measure includes 34 items requiring dichotomous (yes/no) responses. Scores range from 0 to 34.

2.2. Results

We first examined the correlations with hypnotisability. There was a moderate, positive correlation between hypnotisability and absorption, $r(396) = .351$, $p < .001$, a small, positive correlation between hypnotisability and delusion proneness, $r(396) = .298$, $p < .001$, and a small, positive correlation between hypnotisability and schizotypy, $r(396) = .185$, $p < .001$. In addition, hypnotisability correlated with all the subscales of delusion proneness (all $rs > .281$, all $ps < .001$), the cognitive–perceptual subscale of schizotypy, $r(396) = .254$, $p < .001$, and the disorganised subscale of schizotypy, $r(396) = .152$, $p < .001$, but did not correlate with the interpersonal subscale of schizotypy.

We then compared highs (scoring 7–10 on the HGSHS:A) and lows (scoring 0–3 on the HGSHS:A) because these groups are typically used in hypnosis research. The numbers in each group and their characteristics are shown in Table 1. Highs showed significantly higher scores on all measures and subscales, with the exception of the interpersonal traits subscale of schizotypy (all $ts > 3.723$, all $ps < .001$, all $rs > .269$). Thus, highs showed a greater tendency towards delusional ideation than lows.