Hypnotic suggestibility predicts the magnitude of the imaginative word blindness suggestion effect in a non-hypnotic context

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ABSTRACT

The present study investigated how the magnitude the word blindness suggestion effect on Stroop interference depended on hypnotic suggestibility when given as an *imaginative* suggestion (i.e. not post-hypnotic suggestion) and under conditions in which hypnosis was not mentioned. Hypnotic suggestibility is shown to be a significant predictor of the magnitude of the imaginative word blindness suggestion effect under these conditions. This is therefore the first study to show a linear relationship between the imaginative word blindness suggestion effect and hypnotic suggestibility across the whole hypnotizability spectrum. The results replicate previous findings showing that highs respond to the word blindness suggestion to a greater extent than lows but extend previous work by showing that the advantage for those higher on the hypnotizability spectrum occurs even in a non-hypnotic context. Negative attitudes about hypnosis may not explain the failure to observe similar effects of the word blindness suggestion in less hypnotizable individuals.

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1. Introduction

Highly hypnotizable individuals (henceforth highs) are able to create distortions in attention and perception in ways we do not yet fully understand. For example, a commonly used test of attention is the Stroop effect (see MacLeod, 1992). The Stroop effect refers to the finding that, compared to a baseline condition, participants take longer to respond to the colour of the font in which a word is presented when that word is incongruent to the colour. Raz, Shapiro, Fan, and Posner (2002) showed that highs given a post-hypnotic suggestion that words would appear meaningless showed a dramatically reduced Stroop effect. So how can highs overcome one of the most habitual responses we have, namely reading a word? Is this ability unique to highs, or does it rely on a strategy anybody can adopt? One view of highs is that they have special abilities not available to others, for example abilities to dissociate (Hilgard, 1977) or to attend (Crawford, Brown, & Moon, 1993) that vary across the hypnotic suggestibility spectrum. Another view is that highs differ from less hypnotizable individuals largely or entirely in attitudes, beliefs and expectations (Kirsch, 1985; Spanos, 1986; see Heap, Brown, & Oakley, 2004 for a review of research on hypnotisability). On the former view, highs would be able to reduce Stroop effects in a way not available to less hypnotizable individuals. On the latter view, less hypnotizable individuals should be able to reduce the Stroop effect just as well as highs if the influence of attitudes, beliefs and expectations can be lessened.

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Raz and Campbell (2011) went someway to answering this question when they showed the effect of the post-hypnotic word blindness suggestion was significantly greater in highs rather than lows. Critically, the suggestion resulted in a reduction in Stroop interference in lows of about 40 ms, which was roughly half that observed in highs. Thus, there at least appears to be a difference between highs and lows in overcoming the Stroop effect by attempting to see words as meaningless when the word blindness suggestion is given as a post-hypnotic suggestion. Furthermore, in a recent study Parris, Dienes, Bate, and Gothard (in press) showed a 34 ms effect of the post-hypnotic word blindness suggestion on Stroop interference in the often ignored group of medium hypnotizable individuals. Parris et al. assessed the effect of the neuropeptide oxytocin on the post-hypnotic word blindness suggestion in a double blind randomized placebo-controlled study in two groups of medium hypnotizable individuals so there was no data comparing mediums to groups with differing levels of hypnotic suggestibility. (Nevertheless, the effect size is numerically smaller than the 48 ms effect observed in highly hypnotizable individuals by the same research group, Parris, Dienes, and Hodgson (2012).) It is possible that less hypnotizable individuals may perform badly in situations defined as hypnotic purely because they have negative attitudes about hypnosis (Spanos, 1986). That is, a relation between a task performance and hypnotic suggestibility may only arise when the context is defined as hypnotic.

Context has been shown to be important in determining the relationship between hypnotic suggestibility and personality or cognitive variables (e.g. Council, Kirsch, & Hafner, 1986; Stam & Spanos, 1980; see also Spanos, 1986). Council et al. (1986) showed that the personality trait absorption was only related to hypnotic suggestibility in the hypnotic context. They concluded that completing the absorption questionnaire altered expectancies about responsiveness to hypnotic test suggestions, and these altered expectancies then determined hypnotic behaviour (although see Lifshitz, Howells, & Raz, 2012, for contrary evidence as to the role of expectancies in responsiveness to suggestions). Whilst some theorists posit that hypnotic suggestibility is a stable trait and thus largely immutable to attitudes and expectations (Kihlstrom, 2003; Tellegen & Atkinson, 1974), there is substantial evidence to the contrary (see Lynn, Kirsch, & Hallquist, 2008, for a review), raising the possibility that the effect of the word blindness suggestion is also modulated, at least to some extent, by attitudes and expectations (cf. Magalhães De Saldanha da Gama, Slama, Caspar, Gevers, & Cleeremans, in press, who show expectations can modulate the Stroop effect).

Showing the effectiveness of imagination alone in responding to the word blindness suggestion, Raz, Kirsch, Pollard, and Nitkin-Kaner (2006) found no difference in the effects of the post-hypnotic and imaginative word blindness suggestion in highs, but did not test the performance of less hypnotizable individuals. This raises the question of whether less hypnotizable individuals would do as well as highs do in the (non-hypnotic) context of an exercise of using their imagination. To test this possibility, we sought to establish if there was a relationship between hypnotic suggestibility and the effect of the word blindness suggestion out of the hypnotic context.

Raz et al. (2006) is the only paper showing the effectiveness of imagination alone in operationalising the word blindness suggestion. It is therefore important to replicate the effectiveness of imagination in producing the word blindness suggestion. Moreover, in Raz et al.'s (2006) study is it not clear whether attempts were made in the imaginative suggestion condition to remove any mention or indication of hypnosis. The need for a replication of the effectiveness of imagination in producing the word blindness suggestion effect is further highlighted by contrasting results in similar selective attention tasks. For example, Iani, Ricci, Gherri, and Rubichi (2006) showed that whilst a post-hypnotic suggestion effectively eliminated the Flanker Compatibility Effect in highs, the imaginative suggestion had no such effect. The same pattern of results was observed by Iani, Ricci, Baroni, and Rubichi (2009) using the Simon task.

The aim of the present study was to investigate whether the imaginative word blindness suggestion can reduce Stroop effects in a context that is unrelated to hypnosis and to identify whether, if successful, there is a relationship between hypnotic suggestibility and the effect of the suggestion. To that end, participants were invited to participate in a study referred to as a study of the effect of imagination on cognitive tasks. They were recruited from a pool of participants screened using the Waterloo-Stanford Scale earlier in the academic year, with a different experimenter, in a different lab, who made no mention of hypnosis at any time. A response-stimulus interval (RSI) manipulation was also included since Parris et al. (2012) showed that the suggestion effect is stronger when RSI is 500 ms compared to the 3500 ms employed by Raz and colleagues, though both RSI conditions allow substantial post-hypnotic suggestion effects (Parris, Dienes, & Hodgson, submitted for publication).

2. Method

2.1. Participants

One hundred participants were screened using the Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (Bowers, 1993) at the University of Sussex for this experiment. The age regression challenge was not included making the scale out of 11. From this cohort, 11 low (scoring 0–3), 13 medium (scoring 4–7) and 11 high suggestible participants (scoring 8–11) were recruited. The 35 (10 males) students were aged 25.5 years (SD = 4.02).

2.2. Materials

All aspects of the materials, design and procedure matched those of Raz et al. (2002) as closely as possible. The colours red, blue, yellow and green were used in the experiment. The incongruent stimuli consisted of the words RED, BLUE, YELLOW or GREEN presented equally often in any of the three non-matching colours (e.g. The word red was presented in blue, yellow