

Hypnosis as a research method in psychology

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Abstract: Despite the controversies concerning the nature of hypnosis and intrinsic research, hypnosis proves to be a generous research method. It has been used as methodology throughout time, both in cognitive psychology and in reproducing some clinical symptoms in laboratory conditions. As a methodological instrument, combined with modern neuroimaging techniques, hypnosis has the potential, through experimental psychopathology, to help choose the way in which the human brain functions. Moreover, its use can lead to discovering the aetiology of adequate treatment in psychopathological disorders. Research has demonstrated that hypnosis is a basic empirical framework for investigating and understanding various psychological phenomena.

Key words: hypnosis, research method, psychology.

Introduction

This paper is a synthesis of some of the studies showing that hypnosis represents a basic empirical research framework. At an international level, there are various publications that contain reports concerning the contemporary research, the ideas and the clinical practice in the field of hypnosis: *American Journal of Clinical Hypnosis*, *European Journal of Clinical Hypnosis*, *International Journal of Clinical and Experimental Hypnosis*, *Contemporary Hypnosis*, *Australian Journal of Clinical Hypnotherapy* and Hypnosis articles.

The history of hypnosis as a method of research dates back to the first years of experimental psychology (e.g. Bernheim, 1886; Hull, 1933; Holroyd, 1992). Additionally, when we talk about hypnosis and research, we take into consideration two aspects. On the one hand, we talk about research focused on the hypnosis phenomenon itself (“intrinsic research”), and, on the other, about the “instrumental” research, that uses hypnosis as an instrument for investigating phenomena outside its immediate field (Reyher, 1962; Barnier, 2002b). The focus of this paper will be on the second type of research, aimed at highlighting the way in which it has been and can be used to study cognition, behaviour and physiology, without an exhaustive presentation. For example, to explore functional amnesia (Barnier & McConkey, 1999; Barnier, 2002a; Cox & Barnier, 2003; Enea & Dafinoiu, 2008), visual Stroop effects (Macleod & Sheehan, 2003; Egner, Jamieson & Gruzelier, 2005; Raz, Fan & Posner, 2005), functional blindness (Blum, 1975; Bryant & McConkey, 1989), voluntary motor control (Halligan, Athwal, Oakley & Frackowiak, 2000; Haggard, Cartledge, Dafydd & Oakley, 2004), colour processing (Kosslyn, Thompson, Costantini-Ferrando, Alpert & Spiegel, 2000), malingering (Ward, Oakley, Frackowiak & Halligan, 2003), pain (Hofbauer,

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Rainville, Duncan & Bushnell, 2001; Derbyshire, Whalley, Stenger & Oakley, 2004; Rajj, Numminen, Narvarnen, Hiltunen & Hari, 2005), delusions (Sutcliffe, 1961; Burn, Barnier & McConkey, 2001; Barnier, Cox, O'Connor, Coltheart, Langdon, Breen, & Turner, 2008), auditory hallucinations (Szechtman, Woody, Bowers & Nahmias, 1998). Most studies use the four types of effects that hypnosis is expected to cover: changes in cognition, imagery, mind-body relationship and suggestibility (Holroyd, 1992).

Hypnosis and cognition

Since many of the effects of hypnosis can be regarded as changes in the cognitive processes (e.g., attention, memory, etc.), hypnosis can be used to broaden the range of cognitive phenomena and processes studied. Many of the cognitive changes associated with hypnosis are related to attention, memory, awareness and reasonableness (Kumar & Pekala, 1988), and the changes occur in the highly hypnotisable patients. Therefore, it was noticed that they excel in the tasks involving divided attention, passive receptive attention or inhibition of competing stimuli, even in the waking state. Not only are the highly hypnotisable patients simultaneously involved in two cognitive processes more efficiently than the low hypnotisable ones, but they also have better comprehension when incompatible suggestions are given simultaneously (Bartis & Zamansky, 1990; Holroyd, 1992). It seems that hypnosis is also useful for increasing the attention absorption, which, in some cases, can diminish performance. Barabasz (1980) has shown that in the case of a naval electronics technician (radar), absorption can be compensated by suggestions for attention focusing. On the other hand, the highly hypnotisable subjects should have increased performances for the tasks involving divided attention, inhibited attention or passive attention. Hypnosis can be used as a research method for the selection of subjects presenting definite attention predisposition or for modifying the parameters of attention processing such as divided attention when cognition is investigated (Holroyd, 1992).

The use of hypnosis for obtaining some learning performances and studying the possibilities for influencing memory, have long stirred the interest of researchers (London & Cooper, 1968; Liebert, Rubin & Hilgard, 1965). The results of the studies concerning the improvement of memory through hypnosis (hypermnnesia) are contradictory. For instance, looking over the studies aimed at the effects of hypnosis on learning and memory processes that had been carried out up to that time, London & Cooper (1968) classified them into studies that investigate the effects of hypnosis *per se* on learning, and studies that provide suggestions for improving performance. It was thought that hypnosis itself, without suggestions for improving performance, does not influence learning or updating (Schulman & London, 1963), but that hypnotic suggestions for improving memory and for motivational stimulation in learning or consolidation could increase performance (Hammer, 1954; Stalnaker & Riddle, 1932). The studies that have reported the

improvement of memory, without increasing the errors, used events from real life or movies and long retention intervals (Geiselman & Machlovitz, 1987). Improving memory in the highly hypnotisable individuals could be realised for meaningful material, not for a meaningless one (Relinger, 1984). More recently, Amanda Barnier (2002a, 2002b, 2003) carried out several studies in which hypnosis was used as a methodological tool in the studies on memory; hypnosis was not aimed at the capacity of hypnotic suggestions to improve memory but at their ability to diminish it (Barnier & McConkey, 2005).

Imagery

In the studies in which imagery is considered an important part of the psychological processes, hypnosis was used in highly hypnotisable subjects in order to intensify imagery. For instance, imagery is considered important in creativity and solving problems, but also in therapy.

In some studies, the differences between the high and low hypnotisable subjects have been contradictory. Nadon, Laurence & Perry (1987) suggested that the high hypnotisable subjects have a tendency to use imagery in cognitive activities rather than a rich imagination *per se*, which could explain the contradictory results of some research. Friedman, Taub, Sturr & Monty (1990) have argued that the differences between them cannot be noticed in complex cognitive tasks, but they can be discovered in basic perceptual processes. The highly hypnotisable have shown better results in hypnosis than in the waking state, and better results than the low hypnotisable subjects both in hypnosis and in the waking state, in a series of information processing tasks mediated by imagery, such as perception of stereograms (Crawford, Wallace, Nomura, & Slater, 1968), and visual memory discrimination (Crawford & Allen, 1983). The researchers who wish to use hypnosis as methodology should realize the fact that vivid imagery is generally necessary for hypnosis (Spanos & Flynn, 1989), but this does not mean that the imagery reported by the highly hypnotisable subjects was more vivid than those of the lows in a simple eyes-closed condition (Pekala & Kumar, 1989; Holroyd, 1992).

Hypnosis can increase holistic processing, possibly by a greater involvement of the right hemisphere (e.g. Crawford & Allen, 1983) in the highly hypnotisable participants. The exploitation of the changes related to hypnosis in imagery processing enriches the research in cognitive psychology and perception (e.g., lateralized brain function and signal detection information processing, synaesthesia, the Stroop effect and illusions). The role of imagery when hypnosis is used to handle the psychological states is another important area of research. For example, warts remission following the application of hypnosis has been attributed to a more intense sensorial imagery (Spanos, Williams & Gwynn, 1990). This leads to discussions about hypnosis as a method of research in the area of psychosomatic and psychoneuroimmunologic phenomena (Holroyd, 1992).

Hypnosis and experimental psychopathology

Hypnosis has been used to create a temporary functional disorder of the quasi-neurological functions, which in turn could provide an experimental model for understanding similar conditions encountered in clinical situations such as conversion disorders, chronic pain, will disorders and motor control. Hypnotically induced changes are helpful both in understanding the aetiology and in the treatment, since they are neurophysiologically similar to those of individuals with corresponding clinical symptoms (Oakley, 2006). For example, the symptoms that can be produced by suggestion in hypnosis are similar to the medical symptoms that are not identified with a neurological or physical cause, and which are more recently called "conversion disorder symptoms" (Oakley, 2006).

By using Positron Emission Tomography (PET), it was found that in the conversion disorder paralysis of a 45 year-old woman (Marshall, Halligan, Fink, Wade, & Frackowiak, 1997) the same brain areas were activated as in the case of a 25 year-old man to whom paralysis was hypnotically suggested (Halligan, Athwal, Oakley, & Frackowiak, 2000). The problem is that patients with a conversion disorder are considered to be pretending in order to get various benefits or to avoid certain responsibilities. Similarly, some theorists consider that hypnotizable individuals are pretending, and this is the explanation for the activation of the same brain areas in hypnosis and conversion disorder. To elucidate this issue, Ward, Oakley, Frackowiak, & Halligan (2003) used neuroimaging techniques (PET) with 12 highly hypnotizable volunteering students. In half of each scanning session, the subjects were told that they had paralysis of the left leg, and the rest of the time they were asked to pretend that their leg was paralyzed, in return for a financial reward which depended on how convincing they were. The experimental conditions were counterbalanced among the participants, who were hypnotized during the entire experiment. The results showed clear differences in brain activity in the two situations. One of the brain areas associated with hypnotically induced paralysis in this study, the right orbitofrontal cortex, was one of the areas identified in the hypnotic paralysis reported by Halligan et al., (2000), as well as in the case of the patient with a conversion disorder studied by Marshall et al., (1997). This finding supports the view that the cases of paralysis reported in these studies were not the product of pretences or simulation (Oakley, Ward, Halligan & Frackowiak, 2003; Oakley, 2006).

Other research focused on using posthypnotic suggestions to create amnesia. Functional amnesia is characterized by: a) an inability to consciously access personal memories, b) a continuous influence of forgotten information on behaviour, thought and action, and c) spontaneous remission (Bryant, 1995; Eich, Macanlay, Loewenstein & Dihle, 1997; Barnier, 2002). Posthypnotic amnesia has been found to present the three features of functional amnesia, that it can create selective forgetfulness and recovery of autobiographical memories in the

laboratory, thus representing a laboratory model of the latter (Barnier, 2002; Enea & Dafinoiu, 2008).

In another study, Barnier et al., (2008) created a false self-identification in the mirror for the high hypnotizable participants. It is characterized by the belief that "the person I see in the mirror is not me" (Breen, Caine, Coltheart, Hendy, & Roberts, 2000; Barnier et al., 2008). Participants received one of three versions of a hypnotic suggestion: 1) to see a stranger in the mirror, 2) to see the mirror as a window and 3) to see the mirror as a window through which they see a stranger. The first suggestion came from a clinical case in which the patient had problems with face processing, which caused seeing the reflection as belonging to a stranger. The other two suggestions started from another clinical case in which the patient had agnosia in the mirror and thought that a mirror functioned as a window and that the reflection was actually a stranger at the other side of the window.

The results revealed differences and similarities between erroneous clinical self-identification in the mirror and erroneous hypnotic self-identification in the mirror. Although there are similarities between the features of the hypnotic and clinical illusions, and also between the underlying processes, they are however etiologically different. In clinical cases, the aetiology is often a neuropsychological impairment, while in the hypnotic illusions there is no such deterioration. The authors aim at developing a catalogue of hypnotic analogies of clinical delusions, with the purpose of identifying the cognitive processes that occur during the illusion. They intend thus to demonstrate that hypnosis is a basic empirical framework for investigating and understanding illusions.

Mind-body relationship

Hypnosis can be used as a research method to investigate relevant physiological processes. Starting from the idea that the mind can heal the body, hypnosis was used to verify if the belief in mental healing is justified. The design of the first investigations in which hypnosis and suggestion had remarkable clinical effects (Paul, 1963; Hilgard & Hilgard, 1983), did not allow to clearly identify if the result was the effect of hypnosis, of expectancy, of relaxation or emotional support (Swirsky-Sacchetti & Margolis, 1986; Holroyd, 1992).

Many case studies have shown that hypnosis can be used by people in order to mentally remove warts (Noll, 1988; Johnson 1989). Controlled studies that aimed at explaining the physiological mechanisms of mental control that may be related to the mental reduction or destruction of warts were also conducted (Ullman, 1959; Birkett, 1982). The explanation could lie in the effects of the hypnotic restriction of blood supply to the warts combined with improved hypnotic immunity. Spanos, Williams & Gwynn (1990) conducted an experiment in which the subjects were distributed into three treatment groups: hypnosis, salicylic acid and placebo medication. The results revealed that only the hypnotized subjects lost significantly more warts than the subjects in the control group without treatment. The success

was associated with stronger sensations of tingling and not with higher hypnotisability, which indicates that the physiological changes directed towards a particular part of the body can depend on the hypnotic images. Also, hypnosis has been used to demonstrate how the mind can affect the blood supply, blood-clotting mechanisms and immune responses (Holroyd, 1992).

Conclusion

Hypnosis used as research methodology can provide endless possibilities. Since in psychology there are many unanswered questions, hypnosis is a research strategy that can be taken into account by researchers, whether they are specialists in cognitive psychology, social psychology or neuroscience. The combination of hypnosis and cognitive psychology or hypnosis and neuroscience contributes to developing knowledge in these fields, and the advantages and disadvantages of its use should be evaluated by each particular researcher.

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