



## Editorial

## Hypnosis and the analgesic effect of suggestions

Several psychological approaches can be used to improve pain relief. Among those interventions, hypnosis has been shown to be highly effective to improve the control of acute experimental and clinical pain. Studies comparing hypnosis directly with other psychological strategies such as distraction, mental imagery, or placebo, further demonstrate that hypnosis typically produces larger analgesic effects, at least in highly hypnotizable subjects [2]. However, there remains some important and yet unresolved issues about the specific mechanisms underlying the effects of hypnotic analgesia. One of those issues concerns the relative contribution of suggestions and hypnotic induction in the production of hypnotic analgesia.

In a recent target article, Kirsch, Mazzoni, and Montgomery [3] rightfully called upon the attention of hypnosis researchers and clinicians that the advantage of hypnotic suggestions over suggestions alone is often assumed but rarely tested adequately. In this revival of a classical issue in hypnosis literature, the authors remind us that hypnotic induction and suggestions may have additive beneficial effects but that the putative strengthening of the simple effects of suggestions by hypnosis can be evaluated rigorously. In order to test this possibility, one must compare the effects of *identical* suggestions given with and without the hypnotic induction procedure.

In the present issue of *Pain*, Vilfredo de Pascalis et al. [1] report a study investigating the effects of hypnotic analgesia on pain and distress and on the brain responses evoked by electric shocks and assessed with somatosensory event-related potentials (SERPs) [1]. The very well-controlled experimental design allowed for a separate assessment of the effects of both hypnotic induction and suggestions alone, and in combination (i.e., hypnotic suggestions). Furthermore, the authors examined the effects of post-hypnotic suggestions (i.e., immediately after the end of the formal hypnosis procedure, a simple instruction “to get into a deeper hypnosis” was given followed by the same suggestions of analgesia). The suggestions with and without hypnosis

were also administered in a counterbalanced order across subjects to control for possible repetition effects (habituation or training effects).

The results demonstrate an increase in the response to analgesic suggestions following the hypnotic induction procedure in highly hypnotizable subjects. However, this effect appears mainly in the post-hypnotic phase with decreases in pain and distress that reached about 50% compared to a relatively modest and non-significant effect of suggestions alone in the control-waking state. Mixed effects are observed in the standard hypnotic suggestion condition with the analgesic effects possibly attributable to additive contributions of hypnotic induction and analgesic suggestions or to an increase in the response to suggestions during hypnosis. Taken together, the results are consistent with the notion that both hypnotic induction and suggestions have analgesic effects but further support the possibility that the effects of suggestions may be increased by hypnosis.

The changes in pain produced by hypnotic analgesia are further validated by the concurrent physiological effects observed. Analgesic suggestions given during hypnosis and post-hypnotic suggestions produced a significant reduction in the amplitude of the SERPs compared to the hypnosis control condition. Some changes in SERPs produced by hypnotic and post-hypnotic analgesic suggestions were correlated with changes in pain and effects were stronger in highly hypnotizable. In contrast, SERPs were not significantly affected either by the suggestions alone or the hypnotic induction alone. The consistent physiological effects imply that the changes in pain reports are not simply due to response bias or memory distortions affecting pain report rather than pain perception.

In addition to those findings, the study further documents some additional impact of hypnosis on memory. Indeed, the analgesic effects were amplified in retrospective ratings of pain and distress, consistent with the distortion in pain memory previously reported. However, this amplification was again stronger in the hypnotic analgesia and post-hypnotic analgesia condi-

tions. This effect could be due to an interaction between hypnosis and memory processes.

One potential limitation of the study relates to a phenomenon called the “hold-back effect”; the subjects are believed to refrain from responding in the control condition (here suggestions alone) in order to allow room for improvements in target conditions (here hypnotic and post-hypnotic suggestions). Previous attempt at controlling this factor has reduced the difference between the analgesic effects of imaginative suggestions given with and without hypnosis (e.g., [4]). However, in his commentary on Kirsh’s target article, Spiegel has reminded us of the possibility that in some conditions, highly hypnotizable subjects may spontaneously “slip into” hypnosis in response to non-hypnotic suggestions, thereby reducing the apparent benefit of adding a formal induction procedure [5]. This is a valid possibility rooted in the notion that hypnotic states are not only attainable through a formal induction procedure but may be accessible spontaneously, especially in highly hypnotizable subjects. However, this is a circular argument, unless we have a criterion independent from the response to the suggestions allowing us to define what constitutes a hypnotic state.

Over and beyond the increasingly recognized efficacy of hypnosis for the relief of pain, there remain important questions that must be addressed to further increase understanding of hypnotic analgesia. Taken together, the study reported by De Pascalis et al. [1] relied on

an exemplary experimental paradigm to demonstrate convincingly that the response to suggestions combined with hypnosis may be more effective than the same suggestions given without hypnosis. These findings further emphasise that we must pursue basic research aimed at understanding how we can improve the response to analgesic suggestions.

## References

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