

THE ART OF HYPNOSIS: HOW TO REDUCE THE AFFECTIVE DIMENSION OF PAIN. A LITERATURE REVIEW

CORINA DONDAȘ¹, MAGDALENA IORGA², ION DAFINOIU³

ABSTRACT. Interest in hypnotic treatment for pain conditions seems to be on the rise. Recent evidence shows that hypnotic analgesia interventions result in substantial cost savings following medical procedures. Experimental studies suggest that hypnosis can differentially modulate the sensory or affective dimension of pain, depending on the nature of the suggestions. However, there have been few systematic approaches to quantifying this effect across literature and less attention has been given to the specific procedures and suggestions used in hypnotic treatment in research. The present paper evaluates the magnitude of the effect of hypnosis on the affective component of pain. A scientific background presents the usefulness of a hypnotic approach that uses emotion-specific wording that would elicit prior positive experience to intervene at both the sensory and affective dimensions of pain. Such an approach would enable patients who cannot effectively dissociate from the sensation of pain to diminish their affective response. The paper concludes with a discussion of the implications of the findings for future hypnosis research and for the clinical applications of hypnotic analgesia.

Keywords: hypnosis, pain, hypnotic suggestions, hypnotic analgesia

¹ *Clinical psychologist, University of Medicine and Pharmacy "Grigore T. Popa" Iași, PhD student, University "Alexandru Ioan Cuza", Romania. Email: corinadondas@gmail.com.*

² *PhD, Associate Professor, University of Medicine and Pharmacy "Grigore T. Popa Iași", Romania. Email: magdalena.iorga@umfiasi.ro (corresponding author).*

³ *PhD, Professor, Faculty of Psychology and Education Sciences, University "Alexandru Ioan Cuza", Iași, Romania. Email: dafinoiu@uaic.ro.*

Introduction

Interest in hypnotic treatment for pain conditions seems to be on the rise and recent evidence shows that hypnotic analgesia interventions result in substantial cost savings following medical procedures (Lang et al., 2000). Among the benefits from hypnosis treatment, in addition to decreased pain or an increased perceived control over pain, there is also an increased sense of relaxation and well-being, and decreased perceived stress (Jensen et al., 2006).

Many experimental studies suggest that hypnosis can differentially modulate the sensory or affective dimension of pain, depending on the nature of the suggestions (Rainville, Carrier, Hofbauer, Bushnell & Duncan, 1999). However, there have been few systematic approaches to quantifying this effect across literature and less attention has been given to the specific procedures and suggestions used in hypnotic treatment in research. Some experimental studies (Price & Barber, 1987) and a few neuroimaging studies (Rainville et al., 1999) suggest that it is the affective dimension of pain as processed in the anterior cingulate cortex (ACC) that is most associated with suffering and autonomic arousal. On the other hand, pain-related emotions and expectations modulate pain perception and associated pain affect.

The sensory component of pain provides basic information concerning the location and the sensory quality of the pain, such as whether it is sharp, dull, burning, tingling or aching. The affective component of pain provides information concerning how bothersome or distressing the pain is, and determines the overall experience of suffering (Barber, 1996, p. 10).

Jensen and his associates performed a study in 2006 during which they queried 30 patients who had participated in a case series of hypnotic analgesia treatment. Most participants reported satisfaction with hypnosis treatment, even when the targeted symptom, pain intensity, did not substantially decrease. In a quantitative follow-up study performed by Jensen et al. (2008) including 26 people, only 20% of them reported substantial and long-term reduction in average daily pain, yet 81% of them reported still using the self-hypnosis skills they learned during the study. A potential explanation for their findings could be the fact that the distinction between the sensory and the affective component of pain is still underappreciated because, as other studies have shown, subjects that are not so "hypnotically gifted" because they have a low hypnotisability can reduce the affective component of pain as well as subjects with hypnotic responsivity (Price & Barber, 1987).

Whereas traditional hypnosis focused on techniques that would enable individuals to dissociate from the sensation of pain, future directions of hypnosis research should focus on facilitating dissociation or on managing the affecting component of pain. This way, the studies of Rainville et al. (1997, 1999), Price and Barber (1987) and Jensen et al. (2006, 2008) demonstrated that, even though people might report little change in the sensation of pain, they would be less distressed by it with the help of hypnosis.

Future research should focus on introducing a practical hypnotic approach to pain management that would target the affective as well as the sensory dimension of pain, because this way, many individuals who cannot effectively dissociate from the sensation of pain might benefit from approaches to diminish their affective response.

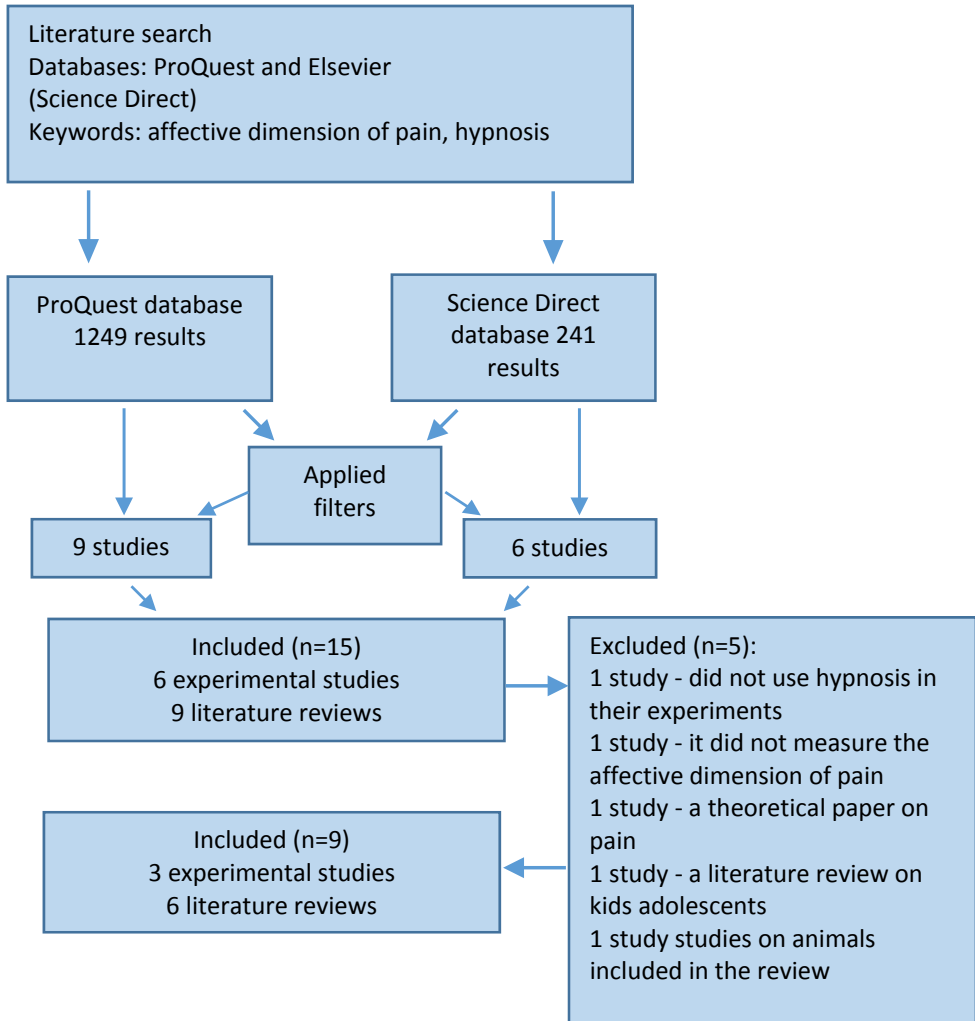
The aim of the present paper is to perform a systematic review of available research literature regarding the impact of hypnosis on the affective dimension of pain. We will evaluate the magnitude of the effect of hypnosis on the affective component of pain as it is presented in the scientific literature. We will point the usefulness of a hypnotic approach that uses emotion-specific wording that would elicit prior positive experience to intervene at both the sensory and affective dimensions of pain. Such an approach would enable patients who cannot effectively dissociate from the sensation of pain to diminish their affective response. The main question is: "Does hypnosis reduce the affective component of pain?"

Material and Methods

The terms used for this research are "affective dimension of pain hypnosis" and two databases were considered: ProQuest and Elsevier (Science Direct).

The ProQuest database returned 1249 results, but after we added a few filters that would help our search process become more specific (full-text papers, peer-reviewed, studies done on humans, articles from ProQuest Psychology Journals) we obtained 9 studies published between 1994 - 2014.

The Science Direct database returned 241 results, but after we added the same filters we used for the results obtained when we searched through the ProQuest database (full-text papers, peer-reviewed, studies done on humans, articles from psychology journals like PAIN, International Journal of Psychology, Clinical Psychology Review, European Journal of Pain) we obtained 6 studies.



We did not have any duplicates, so 15 studies remained in our analysis. Those 15 studies were grouped into two categories: experimental studies (6 studies) and literature reviews (9 studies).

A number of three studies were excluded from the six experimental researches. Two were eliminated because they only analysed the affective dimension of pain and they did not use hypnosis in their experiments and another study, because it did not really measure the affective dimension of pain.

Three studies were eliminated from the 9 literature reviews: one because it was a theoretical paper on pain, one study because it was a literature review on kids and adolescents and one because they also included in their review studies on animals. Therefore, we targeted six studies in this category. We kept in our analyses nine studies, three experimental studies and six literature reviews.

Results

There is conclusive evidence that these two dimensions of pain, one relating mainly to sensory-discriminative aspects and the other relating to the affective-motivational characteristics of pain perception, can dissociate, and that the affective-motivational component is strongly modulated by context and cognitive appraisal of pain.

This affective-motivational dimension can be determined at two stages of processing: the first stage which comprises the immediate affective response to a noxious stimulus (pain unpleasantness), while the second stage is reached when pain is of longer duration and it is associated with more complex emotional reactions such as frustration, depression and anger. The first stage of affective pain processing is believed to be passed through while experiencing acute pain, while the second stage only becomes relevant in chronic pain (Horn et al. 2012).

Authors, year	Subjects	Method	Results
Röder et al., 2007	7 healthy subjects with high levels of hypnotisability	hypnosis with suggestions for pain reduction	The nociceptive response was less intense in cortical regions associated to both sensory and affective component of pain.
Rainville et al., 1997	The number of subjects is not mentioned.	hypnosis with suggestions for dissociation from the sensory and affective aspects of pain	The hypnotic suggestions were efficient in reducing the emotions associated with pain.
Rainville et al., 1999	11 subjects	hypnosis with suggestions for reducing the sensory and affective components of pain	The pain dimension on which the hypnotic suggestions had a significant effect is influenced by the content of the instructions and not by hypnosis itself.

Melzack and Casey (1968) have described pain as a complex multidimensional experience that contains sensory-discriminative, motivational-affective and cognitive-evaluative components. This theory added a (cerebral) extension to the gate control theory emphasizing the fact that cognition, with its components such as distraction, attention, expectancy, catastrophizing and emotion, plays an important role. In addition, Melzack and Wall (1982) completed the gate theory they proposed in 1965 by saying that certain emotional and cognitive factors like anxiety, attention and expectations can have a special influence on pain perception. This theory suggests the fact that factors like the level of attention to pain, the emotions associated with pain and experiences related to pain would play an important role in pain perception.

Yet, while the pain model proposed by Melzack and Casey in 1968 (Figure 1) is circular by nature and all its components are interdependent, another model of pain proposed by John Loeser (Figure 2) is linear by nature. This begins with the presence of a physiological (nociceptive) stimulus that leads to pain (sensory) that results in suffering (affective). The outer circle represents pain or the behaviours of diminishing it.

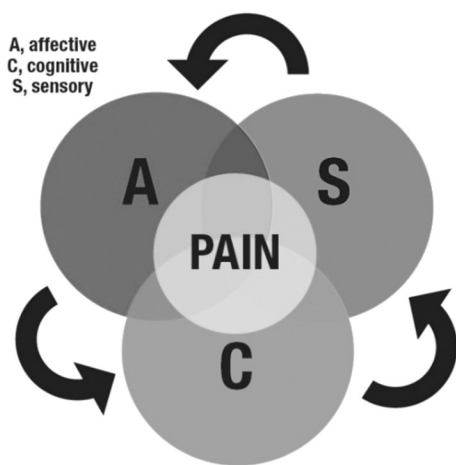


Figure 1. The motivational component of pain: sensory, affective and cognitive. All three components of pain interact to provide perceptual information that influences the motor mechanisms characteristic of pain.

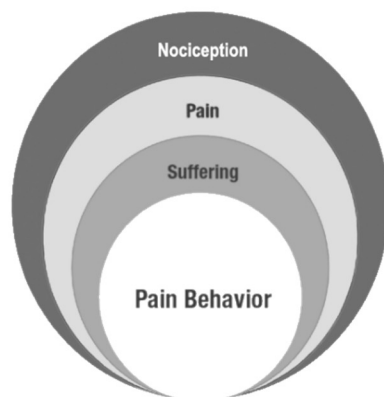


Figure 2. Loeser's model of pain

It is a well-known fact that hypnosis can significantly modify the degree of sensory awareness and cognitive processing and it has been used to alleviate the perception of pain in many clinical circumstances (Lang et al.). Lately there has been a real explosion in understanding the basic mechanisms of pain, but despite all these discoveries in physiology, pharmacology and psychology, the studies show that unalleviated pain remains a very widespread problem.

In a study performed by Price and Barber in 1987, the researchers found that highly responsive hypnotic subjects were able to reduce the sensory component of thermally induced pain. However, subjects with low hypnotic responsivity were as able to reduce the affective component of pain, as were subjects with high hypnotic responsivity. In other words, you could say that there is more involved in reducing suffering than reducing the sensation of pain and hypnosis might be of value in doing so even for those not hypnotically gifted.

This way, as demonstrated in the experimental studies of Jensen et al. (2006, 2008), Price and Barber (1987), Rainville et al. (1997) and Rainville et al. (1999), it is quite possible that many individuals who cannot effectively dissociate from the sensation of pain might benefit from approaches to diminish their affective response.

Experimental neuroimaging studies (Rainville et al., 1997; Rainville et al., 1999) indicate that hypnosis can reduce pain affect or pain sensation based upon the wording of the suggestions, with a corresponding reduction in activation of the anterior cingulate cortex (ACC).

Considering the agreements presented, we are proposing some future directions:

- if virtual approaches are to be useful, more comparison is needed between hypnosis delivered by a clinician and that applied through technological means.

- more brain imaging research will be useful in pinpointing areas of the brain impacted by both hypnosis and the different types of pain, and to provide more information on the theoretical underpinnings of hypnosis,

- research needs to be carried out on how to improve the efficacy of hypnosis for chronic pain and providing hypnosis in the context of multidisciplinary chronic pain programs. it would be particularly useful to determine whether hypnosis has additive effects to multidisciplinary care,

- more research is needed on the use of manualized hypnotic approaches to determine the type of suggestions being used and the characteristic demands of the situation; few interventions are standardized at this point,

- post-hypnotic suggestions need to be specific to the pain problem and the dimension of pain (affective or sensory) to be addressed. More randomized controlled clinical trials are necessary to enhance the efficacy of hypnotic analgesia.

Conclusions

Hypnosis can differentially modulate the sensory or affective dimension of pain depending on the nature of the suggestions. The research findings suggest that hypnotic approaches that focus on the affective dimension of pain may be more effective with more people than the traditional approach that emphasizes relaxation and the dissociation from the sensation of pain. The results also emphasize the utilization of positive state-dependent learning (Rossi, 1986), advocated by Milton Erickson, who advised practitioners to “discover their patterns of happiness” (Parsons-Fein, 2005).

Acknowledgement

This work was co-funded by the European Social Fund through Sectoral Operational Programme Human Resources Development 2007 – 2013, project number POSDRU/187/1.5/S/155397, project title “Towards a New Generation of Elite Researchers through Doctoral Scholarships.”

REFERENCES

- Appel P. R., Bleiberg J., (2011) *Pain Reduction is Related to Hypnotisability but Not to Relaxation or to Reduction in Suffering: A Preliminary Investigation*, American Journal of Clinical Hypnosis, Vol. 48, No. 2-3.
- Feldman J. B., (2004). *The Neurobiology of Pain, Affect and Hypnosis*, American Journal of Clinical Hypnosis, 43:3, ProQuest Central.
- Feldman J. B., (2009) Expanding Hypnotic Pain Management to the Affective Dimension of Pain, American Journal of Clinical Hypnosis, ProQuest Central.

- Horn C., Blischke Y., Kunz M., Lautenbacher S., (2012) *Does pain necessarily have an affective component? Negative evidence from blink reflex experiments*, Pain Res Manage; 17(1):15-24, Pulsus Group Inc.
- Jensen M. P., McArthur K. D., Barber J., Hanley M. A., Engel J. M., Romano J. M., Cardenas D. D., Kraft G. H., Hoffman A.J., Patterson D. R., (2006) *Satisfaction with, and the beneficial side effects of, hypnotic analgesia*, International Journal of Clinical and Experimental Hypnosis, Volume 54, Issue 4.
- Jensen M. P., Barber J., Hanley M. A., Engel J. M., Romano J.M., Cardenas D. D., Kraft G. H., Hoffman A.J., Patterson D.R., (2008) *Long-term outcome of hypnotic-analgesia treatment for chronic pain in persons with disabilities*, International Journal of Clinical and Experimental Hypnosis (56)2.
- Lang E.V., Benetsch E. G., Lugendorf S., Berbaum M. L., Berbaum K. S., Logan H., Spiegel D., (2000) *Adjunctive non-pharmacological analgesia for invasive medical procedures: a randomised trial*, The Lancet, Volume 355, No. 9214, p1486-1490.
- Loeser J. D., (2000) *Pain and Suffering*, Clinical Journal of Pain, Volume 16, Issue 2, p S2-S6, Lippincott Williams & Wilkins, Inc.
- Melzak R., Casey K. L., (1968) *Sensory, Motivational and Central Control Determinants of Pain A New Conceptual Model*, The Skin Senses, Charles C. Thomas.
- Melzak R., Wall P. D., (1982) *Pain mechanisms: a new theory*, Current Contents, Number 23.
- Price D. D., Barber J. (1987) *An analysis of factors that contribute to the efficacy of hypnotic analgesia*, Journal of Abnormal Psychology, Vol. 96(1), 46-51, American Psychological Association, Inc.
- Rainville P., Duncan G. H., Price D. D., Carrier B., Bushnell M. C., (1997) *Pain affect encoded in human anterior cingulate but not somatosensory cortex*, Science, 277(5328):968-71.
- Rainville P., Carrier B., Hofbauer R. K., Bushnell M. C., Duncan G. H., (1999) *Dissociation of sensory and affective dimensions of pain using hypnotic modulation*, Pain 82, 152-171, Elsevier Science.
- Röder C. H., Michal M., Overbeck G., van de Ven V. G., Linden D. E. J., (2007) *Pain Response in Depersonalization: A Functional Imaging Study Using Hypnosis in Healthy Subjects*, Psychotherapy and Psychosomatics, 76:115-121.
- Weichman Askay S., Patterson D. R., (2007) *Hypnotic Analgesia*, Expert Rev Neurotherapeutics, 7(12), 1675-1683, Future Drugs Ltd.
- <http://www.practicalpainmanagement.com/pain/acute/history-pain-nature-pain>, accessed on 14 September 2016.