Hypnosis for Chronic Pain Management: New Findings for Clinical Efficacy

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Overview

- A small taste of the effects of suggestion
- Three clinical studies supporting the efficacy of hypnosis analgesia
- Imaging studies supporting the efficacy of hypnotic analgesia
- Implications of the findings for the treatment of chronic pain
Themes/hypotheses underlying program

 Peripheral activity may trigger pain, but *it is the brain that creates the experience of pain*. Treatments that impact brain can produce relief.
A taste of suggestion

- Imagine a taste
- Heavy hand
- Participation not mandatory
What happened

- Effects are “real”
- Effects are variable
- What happened with brain activity?
Hypnotic pain

Derbyshire et al., 2004
- Can one use hypnosis to induce pain?
- Does “hypnotic pain” differ from “imagined pain” and “real” pain?
- Intensity and cortical activity in response to painful heat, hypnotic pain, & “imagined pain”.

Hypnotic pain

Effect on pain experience:
- Stimulation: 5.7/10 (3-10)
- Hypnotic pain: 2.8/10 (1-9)
- Imagined pain: 0/10 (0)
- Response to stimulation and hypnosis was variable
Hypnotic pain

The evidence indicates that...

- Brain is final common pathway to experience
- Hypnosis can enhance ability to alter experience
The problem of chronic pain

Chronic pain is common:

- Chronic pain of all types: 15% - 20%
  (Blyth et al., 2001; Sjogren et al. 2008; Verhaak et al., 1998)

- Chronic widespread pain: 5% - 7%
  (Gerdle et al., 2008)

- Neuropathic pain: 3% - 8%
  (Gustorff et al., 2008)
The problem of chronic pain

In individuals with disabilities:
- SCI: 77-79% pain, ~33% severe pain
- MS: 53-83% pain; 10-20% severe pain
- Amputation: 70-85% phantom pain, 74% residual limb pain, 51-71% back pain; 32% severe pain
- CP: 67-84% pain; 31% severe pain

~ Ehde et al., 2003
The problem of chronic pain

Chronic pain is, by definition, refractory:

Analgesics most common (Schappert, 1998)

Analgesics do not eliminate pain (Turk, 2002)

- Average pain reduction for opioids: 32% (Turk, 2002)

- Meds for neuropathic pain 30%-40% response rate (McQuay et al., 1996)

→ There is a need to develop new effective interventions
Maybe hypnosis?
Initial case series

Funded by the PVA in 1995
Provide four patients with SCI self-hypnosis training and write a research proposal
All four reported initial improvement
Three maintained or built on gains by 2 mos; one patient’s pain returned to pre-treatment levels at 2 months
At 12 months, two continued to maintain gains, while the third reported increases in pain.
Responders: 2/4 (50%)
Initial case series

~ Jensen & Barber, 2000
Clinical trial

RCT of Self-Hypnosis Training versus EMG-biofeedback for SCI-related chronic pain

Funded by NIH, NICHD, NCMRR

Questions:
- What percent of patients benefit?
- Do benefits last beyond the sessions?
- Is self-hypnosis training more effective than a viable alternative treatment?
Procedures

N = 37 patients with SCI and chronic pain assigned to hypnosis (HYP) or EMG-assisted relaxation (BIO).

10 sessions of treatment

Outcome assessed before and after treatment, and at 3-month follow-up
Study participants

Mean age = 49.5 yrs (Range, 19 – 70)
76% males, 24% females
95% Caucasian, 5% Native American
45% Neuropathic pain; 55% Nonneuropathic pain
28 (76%) completed treatment (5 HYP and 4 BIO dropouts)
Primary outcome measure

Usual pain intensity
- Rating of average (past 24 hours) intensity on 0-10 scale four times in 7 days.
- At pre-baseline, post-baseline, post-treatment, and 3-month follow-up.
- 4 ratings averaged into single score, range from 0-10.
- Assessed by phone by blind RA.
Secondary outcome measures

Current pain intensity before and after session: 0 – 10 Numerical Rating Scale (NRS).

Frequency and effects of practice (for those in HYP): Number of days of practice and relief on a 0-10 NRS.
Self-Hypnosis training intervention

**Induction**: variant of Barber’s Rapid Induction Analgesia.

**“Special Place” imagery**: A safe and comfortable place.

**Decreased unpleasantness**: “You can experience being less and less bothered by any sensations…”

**Diminished pain**: “Any sensations are becoming less and less clear, getting smaller and smaller…”

**Imagined anesthesia**: “Picture any areas of discomfort being engulfed and infused with a powerful psychological anesthesia…”
Self-Hypnosis training intervention

**Sensory substitution:** “Notice feelings like numbness or warmth in areas that used to be uncomfortable…”

**Deep relaxation:** “Imagine your right hand becoming more and more relaxed, heavier and heavier…”

**Post-hypnotic suggestions:** Self-hypnosis: “Any time you’d like to feel more comfortable, take a deep, satisfying breath…” Extension of effects: “Benefit will stay with you…become a part of who you are…”

**Practice:** Given practice tape, and encouraged to practice at least daily.
EMG-Assisted Biofeedback

Frontalis EMG-biofeedback to reduce frontalis activity.
Patients given a relaxation audio recording
Both treatments described as “Interventions that contain both relaxation and hypnosis components that have been shown to reduce pain in other populations”
Results: Pre- to post-session pain

- Pre-session
- Post-session

HYP

BIO
Results: Usual pain intensity

Responders: 22% HYP; 10% BIO
Results: Practice frequency and effects

Of the HYP participants @ 3-mo:
60% still listened to the audio recording (Range, 2-25 days)
80% used skills w/o recording (range, 2-30 days)
Average relief w/ recording: 3.58; w/o: 3.44
Average hours of relief w/ recording: 3.07; w/o: 1.42
Conclusions

Both HYP and BIO have a similar immediate (substantial) effect on pain intensity.

HYP is more effective than BIO for daily average pain.

Decreases in usual daily pain with HYP maintain for at least 3 months.

Treatment outcome is variable: Not all benefit.

But, 80% continue to use skills taught at 3 months, and report pain relief that lasts 1.5 – 3.5 hours.
MS trial (HYP vs. PMR; N = 22)

Responders: 47% HYP; 14% PMR
“Side effects” of hypnotic analgesia

Asked 30 patients who had received the HYP protocol about the “other effects” of treatment:
- 40 effects listed
- 9 (23%) pain-related benefits
- 23 (58%) nonpain-related benefits
- 5 (13%) ‘neutral’ effects
- 3 (8%) ‘negative’ effects
Pain-related benefits

Pain reduction (40%)  
Increased control over pain (40%)  
“I have a new tool for managing pain” (30%)
Nonpain-related benefits

General positive comments (e.g., “It helped”, “I liked it”): 37%
Increased well-being: 33%
Increased relaxation: 23%
Decreased stress: 17%
Negative effects

“It did not work” (3%)
“It was not as effective as I hoped it would be” (3%)
“The effects did not last as long as I hoped they would” (3%)
Imagine a Drug That...

- Produces a substantial ↓ in pain in 22% (SCI) to 47% (MS) of patients w/ chronic refractory pain
- Whose “side effects” are mostly positive, and include ↑’d sense of well-being and relaxation
- Whose worst side effects are: has no effect (3%), not as effective as hoped (3%), or benefits do not last as long as hoped (3%)
- That continues to be effective (no tolerance) and that most patients (80%) continue to use…
Reviews of Randomized Trials

Findings are consistent with those of other clinical trials published in the past 20 years.

All of the reviews of these trials have the same general conclusions (Elkins et al., 2007; Montgomery et al., 2000; Jensen & Patterson, 2005; Patterson & Jensen, 2003):

- Hypnotic analgesia is more effective than no treatment and some biomedical treatments (PT, medications).
- Hypnotic analgesia has specific effects over and above placebo (expectancy) effects.
- Response to hypnotic treatment is variable.
Recent study

To compare the effects of three interventions,
- Self-hypnosis training (HYP)
- Cognitive restructuring (CR)
- “Hypnotic Cognitive Restructuring”

Relative to an education control condition,
On two primary outcomes:
- Average pain intensity
- Catastrophizing cognitions

In a sample of individuals with MS and pain
Study Rationale

- Hypnotic interventions effectively alter pain intensity
- Cognitive restructuring targets pain-related cognitions (e.g., catastrophizing)
- Hypnosis enhances the effects of CBT treatments
- Might HYP-CR contribute to benefits over and above HYP and CR?
Study questions

- Hypothesize that training in self-hypnosis $\rightarrow$ less pain; what effects on catastrophizing?
- Hypothesize that CR $\rightarrow$ less catastrophizing; what effects on pain?
- Are there any benefits of HYP-CR (on pain and/or catastrophizing) over and above those obtained by HYP and CR alone?
Study design

Within subjects treatment comparison

Four sessions each of ED, HYP, CR, HYP-CR (or ED, CR, HYP, HYP-CR; 16 sessions total)
Treatments

ED: Education control (info about pain)
CR: Cognitive restructuring: identify, eliminate, and replace negative cognitions
HYP: Hypnotic induction, suggestions for ↓ pain and suffering, ↑ ability to ignore pain, post-suggestions for permanent effects
HYP-CR: (1) tolerance of ambiguity; (2) hope and positive expectancies; (3) general cognitive flexibility; and (4) replacement of faulty cognitions with more adaptive ones
Participants

22 enrolled, 15 completed
Diagnosis: MS
Inclusion: ≥ 18 yrs, pain > 6 mos, average pain ≥ 4/10
Desc: 80% female, $\bar{X} \text{ age} = 52.6$ yrs (Range, 41-65 yrs)
Measures

**Pain Intensity:**
- 0-10 NRS before and after sessions;
- Average Pain Intensity between treatment modules

*Catastrophizing:* Pain Catastrophizing Scale

**Secondary outcomes:** *Worst pain intensity* (0-10), *Pain Interference* (BPI)
Results

Current pain intensity ratings obtained before and after each session

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<td>Pain interfer.</td>
<td>4.08&lt;sup&gt;ab&lt;/sup&gt;</td>
<td>4.34&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.82&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.71&lt;sup&gt;bc&lt;/sup&gt;</td>
<td>2.99&lt;sup&gt;c&lt;/sup&gt;</td>
<td>2.06 (4,10)</td>
</tr>
</tbody>
</table>

†<i>p = .05; *<i>p < .05; **p < .01

Notes: Means with different superscripts are significantly (<i>p < .05) different from one another based upon repeated measures ANOVAs (time and order as the independent variables). No effects for order emerged, so data were collapsed across order.
Summary and Implications

4 sessions of hypnotic analgesia treatment effectively reduces average daily pain.

4 sessions of CT may reduce catastrophizing.

A combined HYP-CT intervention appears to have benefits over and above either HYP or CT alone.

→ Clinicians who want to maximize beneficial outcomes...
Summary and Implications

4 sessions of hypnotic analgesia treatment effectively reduces average daily pain.

4 sessions of CT may reduce catastrophizing.

A combined HYP-CT intervention appears to have benefits over and above either HYP or CT alone.

→ should incorporate CT into HYP treatments, and HYP into CT treatments.
Imagery evidence


Painful heat stimulation in alert and hypnosis conditions resulted in CBF increases in:

- Sensory cortex 1 [S1] and 2 [S2]; and
- Anterior cingulate gyrus [ACC]).

Hypnotic suggestions for increased or decreased unpleasantness altered

- Perception of pain affect ($81/100 \rightarrow 45/100$); and
- activation in ACC only
Imagery evidence

→ No difference in activity in sensory cortex
Imagery evidence

→ Large difference in activity in ACC
The ACC responds to suggestions for changes in pain unpleasantness.
Imagery evidence

Hypnotic suggestions for increased or decreased pain intensity altered perception of pain intensity (70/100 → 33/100) and activation in sensory cortex but not ACC.

~ Hofbauer et al., 2001
Summary and Conclusions

Hypnotic analgesia treatment effective reduces average daily pain, on average. Effects of hypnotic analgesia treatment is variable; some benefit more than others. Self-hypnosis continues to be used by the great majority of patients who learn it.
Summary and Conclusions

Hypnotic analgesia treatment has many “side effects” … that are overwhelmingly positive.

Hypnosis appears to “boost” the efficacy of cognitive therapy

(Hypnotic analgesia treatment is easy to learn and to provide).
Thank You!

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