

Touching the Unconscious in the Unconscious

**Suggestions are effective
even when given under general anesthesia**

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Hypnosis

Hypnosis = communication with the unconscious

- induction of a trance state bypassing the critical mind
- use of suggestions

in the unconscious ?!



Indications for perception under general anesthesia

- D. Cheek, Am J Proctol 1962: The anesthetized patient can hear and can remember.
- A. Kaiser, Anesthesiology 1994: Robison-Story >> 50/10/10 (=23%) implicate memory
- „Intraoperative Awareness“: explicate memory 0,2%
implicate memory 2%
- Levinson 1965: intraoperative simulation of ventilation incident >>> 80% implicate memory
- J. Rosendahl, BMC Anesth 2016: Meta-analysis of studies on intraoperative suggestions



Meta-Analysis of Intraoperative Suggestions

Rosendahl et al BMC Anesthesiology (2016) 16:125
DOI 10.1186/s12871-016-0292-0

BMC Anesthesiology

RESEARCH ARTICLE

Open Access

Efficacy of therapeutic suggestions under general anesthesia: a systematic review and meta-analysis of randomized controlled trials

Jenny Rosendahl¹, Susan Koranyi², Davina Jacob³, Nina Zech³ and Emil Hansen³

32 RCTs (1986-2001) out of 7427 articles N= 2102 patients

Control group: Distraction (white noise, music, text)

Taped suggestions (50% with music)

Anesthesia: 24 balanced anesthesia (volatile anesthetic)

2 Total Intravenous Anesthesia TIVA (Propofol)

6 Neuroleptanesthesia (formerly, inadequate depth)



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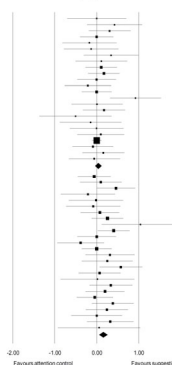
BMC Anesthesiology

Efficacy of therapeutic suggestions under general anesthesia: a systematic review and meta-analysis of randomized controlled trials

Jenny Rosendahl¹, Susan Koranyi², Davina Jacob³, Nina Zech³ and Emil Hansen³

Study name	Statistics for each study			Hedges' g and 95% CI
	Hedges' g	Lower	Upper	
Bethune 1993	0.000	-0.703	0.703	1.000
Boake 1986	0.438	-0.228	1.083	0.201
Boake 1986	0.008	-0.268	0.887	1.000
Boake 1986	0.000	-0.268	0.887	1.000
Cheney-Rond 1994	0.000	-0.307	0.307	1.000
Dawson 2001 (1)	-0.251	-1.079	0.576	0.533
Dawson 2001 (2)	0.043	-0.751	0.660	0.919
Dawson 2001 (3)	0.800	0.820	0.820	1.000
Eberhart 1998	0.920	0.259	1.404	0.005
Evans & Richardson 1988	0.372	-0.308	1.052	0.283
Furlong & Reed 1993	0.252	-0.205	0.759	0.249
Leibovits 1999	0.550	-0.474	1.573	0.292
Li 1992	-0.299	-0.823	0.285	0.341
Maroof 1997	0.962	0.374	1.610	0.002
McLusack 1990	-0.219	-0.773	0.335	0.439
Mox 1996	0.211	-0.523	0.945	0.574
March & Zuo 1990	0.122	-0.595	0.799	0.704
Nelson 2001	0.052	-0.427	0.582	0.752
Oddy-Matlock 1995	0.225	-0.361	0.842	0.473
Steinberg 1993	0.000	-0.489	0.489	1.000
Van der Laan 1996	0.223	-0.377	0.843	0.473
Williams 1994	0.703	0.100	1.307	0.022
PONV	0.212	0.068	0.356	0.004
Block 1991	-0.054	-0.435	0.326	0.734
Dawson 2001 (1)	0.075	-0.570	0.720	0.820
Dawson 2001 (2)	0.143	-0.505	0.790	0.885
Dawson 2001 (3)	0.208	-0.441	0.856	0.530
Eberhart 1998	0.873	0.325	1.422	0.002
Li 1993	0.000	-0.366	0.366	1.000
Maroof 1997	1.105	0.209	2.002	0.018
McWilliams 1990	0.199	-0.362	0.763	0.438
Rosenberg 1992	0.159	-0.329	0.648	0.523
Artisemetics	0.221	-0.003	0.446	0.053

Intraoperative Suggestions



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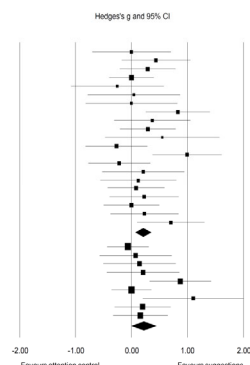
BMC Anesthesiology

Efficacy of therapeutic suggestions under general anesthesia: a systematic review and meta-analysis of randomized controlled trials

Jenny Rosendahl¹, Susan Koranyi², Davina Jacob³, Nina Zech³ and Emil Hansen³

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Boake 1986	0.438	-0.177	1.032	0.183
Boake 1986	0.289	-0.269	0.788	0.236
Cheney-Rond 1994	0.000	-0.307	0.307	1.000
Dawson 2001 (1)	-0.251	-1.079	0.576	0.533
Dawson 2001 (2)	0.043	-0.751	0.660	0.919
Dawson 2001 (3)	0.800	0.820	0.820	1.000
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Artisemetics	0.221	-0.003	0.446	0.053

Intraoperative Suggestions




Comparison awake/under general anesthesia

Effect Size

	Periop Kekecs 2014	Hyp live	Hyp tape	Sugg live	Sugg tape	Intraop Rosendahl 2016
Anxiety	0.40	0.60	0.70	0.23	0.14	0.03
Pain	0.25	0.50	0.35	0.18	0.09	0.04
Analgesics	0.16	0.12	0.70	0.15	0.16	0.16
Nausea	0.38	0.89	0.42	0.25	0.07	0.21
Antiemetics						0.22

Limitations in previous studies:

- old (1986-2001)
- small size
- heterogenes design
- low quality
- unklare depth of anesthesia
- negations in the suggestions



Intraoperative Suggestions

thebmj | BMJ 2020;371:m4284 | doi: 10.1136/bmj.m4284

ORIGINAL RESEARCH
Multicentre randomised controlled trial

thebmj | BMJ 2020;371:m4547 | doi: 10.1136/bmj.m4547

EDITORIALS


Effect of therapeutic suggestions during general anaesthesia on postoperative pain and opioid use

Can we soothe the subconscious during general anaesthesia?
Carefully chosen words and music might reduce postoperative pain
Daniel I Mtsaak,^{1,2} Sylvain Boet^{1,2,3,4}

BMJ Impact Factor = 107

Hartmuth Nowak,¹ Nina Zech,² Sven Asmusen,¹ and colleagues

5 centres, 385 patients, 18-70y
1-3 h surgeries
defined, controlled depth of anaesthesia
ear-phones after intubation until extubation
20 min text, 10 min break, repeated
defined pain therapy: PCA, NRS>3,
periodic evaluation




Intraoperative Suggestions

Part A (19 min, followed by a 10 min break, repeated several times. Start after induction of anaesthesia and ends with stop of volatile anaesthetic):

You are sleeping sound and deep.
And you can relax and rest, **recover** and draw strength, because you are **safe** now, **well-protected**.
Everything that you hear and see and feel contributes to your **best care**.
And that's why you can completely concentrate on your body's own way to **heal itself**.

And we are right **by your side**.
My voice will go with you, and you can focus on it, because what I say to you is important for you, is important for your **well-being** and your **healing**.

With every deep breath that the respirator **takes care** of, so that you can save your strength for later,
You can take in fresh air, oxygen, and whatever else is good for you and is of **help to you**.
And with every exhale you can **get rid** of all the used air and can let go all that is disturbing or a burden to you.
Breathe out and let go.
And with every breath you take you can take in ease, **confidence** and strength for **healing**, on and on.




Intraoperative Suggestions

As your mind is resting your body can concentrate fully on **self-healing** and **self-protection**.
All of your organs, your heart and your blood vessels, are **working together** to ensure **wellbeing**, **safety** and **healing**.

(indirect suggestion using another speaker):
Perfect! Your patient looks like he is really doing well.
So calm and stable. He is doing a good job.
So, this surely will result in quick and full healing.
And he will soon be on his feet again,
and can enjoy a successful surgery.
Are you satisfied?
Completely! This has been going perfectly.
Great!

Listen to what I am saving! You already know that this **surgery is good for you** and will continue to **help you**.
And while your treatment here proceeds steady and thoroughly well, everything is getting prepared for your optimal further **care** in the recovery room and at the nurse's station.



Intraoperative Suggestions

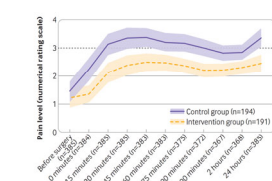
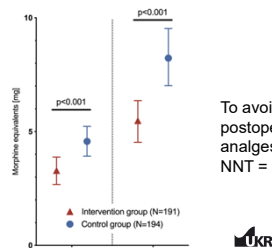
ORIGINAL RESEARCH
Multicentre randomised controlled trial

Effect of therapeutic suggestions during general anaesthesia on postoperative pain and opioid use


Hartmuth Nowak,¹ Nina Zech,² Sven Asmusen,¹ Tim Rahmel,¹ Michael Tryba,^{1,4} Gunther Opren,¹ Lisa Grasse,¹ Kathi Schölk,² Manaja Mosler,¹ Johannes Lorenz,¹ Katharina Geyrhofer,¹ Corina Mitter,¹ Thomas Salzer,¹ Alexandra Ziegler,¹ Kerin Lutz,² Michael Adamzik,¹ Emil Hansen¹

thebmj | BMJ 2020;371:m4284 | doi: 10.1136/bmj.m4284

5 Zentren, 385 patients, 18-70a
1-3 h surgery
defined, controlled depth of anesthesia
ear-phones after Intubation til prior to extub.
20min text with background music,
10min break, repeated
Defined pain therapy:
PCA, NRS>3, regular query

To avoid any postoperative analgesics:
NNT = 6.0



PONV

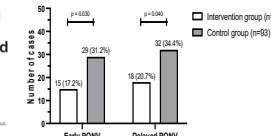
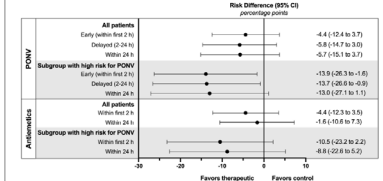
Therapeutic Suggestions During General Anaesthesia Reduce Postoperative Nausea and Vomiting in High-Risk Patients – A Post hoc Analysis of a Randomized Controlled Trial

Hartmuth Nowak^{1*}, Alexander Wipf¹, Tim Rahmel¹, Gunther Opren¹, Lisa Grasse¹, Manaja Mosler¹, Katharina Geyrhofer¹, Corina Mitter¹, Alexandra Ziegler¹, Kathi Schölk², Johannes Lorenz¹, Thomas Salzer¹, Michael Tryba^{1,4}, Michael Adamzik¹, Emil Hansen¹ and Nina Zech²


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*Correspondence: Hartmuth Nowak

To avoid PONV
NNT = 7.1/7.3




Comparison awake/anesthesia and old/new

Effect Size

	Periop Kekecs 2014	Hyp live	Hyp tape	Sugg live	Sugg tape	Intraop Rosendahl 2016	Intraop Nowak 2020
Anxiety	0.62	0.60	0.70	0.23	0.14	0.03	
Pain	0.35	0.50	0.00	0.18	0.09	0.04	0.45
Analgesics	0.23	-0.12	0.70	-0.15	0.16	0.16	0.36
Nausea	0.60	0.89	0.42	0.25	0.07	0.21	0.34*
Antiemetics						0.22	0.30*


* with PONV prophylaxis

Link to audio file:
<https://www.frontiersin.org/articles/10.3389/fpsyg.2022.898326/full#supplementary-material>



Text Generation

Basic Psychological Needs	Traumatic Stressors	Topics for "Essential Communication"
Relationship and belonging	Abandonment Inability to express oneself	Accompaniment Contact
Pleasure gain and Avoidance of displeasure	Pain, suffering Hopelessness	Comfort Confidence
Orientation and control	Chaos Dependence Helplessness	Information Control Instructions
Self-esteem and self-protection (Physical integrity)	Degradation Fear, threat Injury	Respect Safety Healing




Conclusion

Perception in the unconscious

- exceeding „intraoperative awareness“ (0.2%, implicit memory 2%)
- more careful behavior in OR (noise reduction)
- avoid careless talks (pathology results, discussion of other patients)
- avoid negative talks (remarks about patient or operation course)
- use earphones

Suggestions effective under general anesthesia

- at least as effective as with hypnosis
- significantly less effort
- more effective than wake suggestions



Conclusions for medicine

1. Perception under general anaesthesia ≠ « intraoperative Awareness" (0,2-2%)

→ Reduction of noises and careless conversations in the OR

THE AMERICAN JOURNAL OF CLINICAL HYPNOSIS
Volume VIII, Number 4, April 1966
Printed in U.S.A.

THE MEANING OF CONTINUED HEARING SENSE UNDER GENERAL CHEMO-ANESTHESIA: A PROGRESS REPORT AND REPORT OF A CASE¹


David Bradley Cheek, M.D.^{2,3}

"Perfect conduct is a relation between three terms; the actor, the objects for which he acts and the recipients of the action.—The best intention will fail if it either work by false means or address itself to the wrong recipient."⁴ *W.G. Hall, James*

"BE CAREFUL, THE PATIENT IS LISTENING" should be engraved over the door of every operating room, every recovery room, every intensive care unit in every hospital. Always there are two re-

who can recognize their capacity for acting upon these suggestions. Unconscious people are terribly vulnerable to pessimistic thoughts and such thoughts as present in abundance on the eve of surgery. The dangers of pessimism and preoperative anxiety can be mitigated, and this is usually done by thoughtful anesthesiologists while the patient is awake but the seldom continue their good work after the patient is anesthetized.

PROGRESS OF INVESTIGATION OF



Conclusions for medicine

1. Perception under general anaesthesia ≠ « intraoperative Awareness" (0,2-2%)


→ Reduction of noises and careless conversations in the OR

2. **Intervention** reasonable, inexpensive, non-pharmacological against postoperative side effects

3. **Further studies!**

3. **Avoidance of frequent negative influences**

5. **Other parameters:** delir, cognitive deficit, mobilizability, intraoperative need for anaesthetics, blood loss, etc. Need for anaesthesia, blood loss, etc.
 We only see what we measure.
 Many important parameters are difficult to measure (wound healing, immune defences, costs, length of hospital stay, outcome of surgery, etc).




Conclusions for medicine

6. **Other applications :** major, painful operations
 children
 interventions under sedation

7. **Other unconscious persons:** emergency medicine
 resuscitation
 intensive care
 palliative medicine

Frontiers | Frontiers in Psychology
Clinical Hypnosis
OPEN ACCESS
published: 08 November 2022
DOI: 10.3389/fpsyg.2022.1019445

Touching the unconscious in the unconscious – hypnotic communication with unconscious patients
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¹Department of Neurobiology, University Hospital Regensburg, Regensburg, Germany



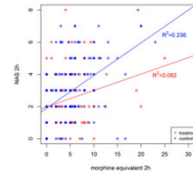
Conclusions for hypnosis

- Evidence-based hypnosis
Scientificity and studies open up access to medicine
- Studies
multicenter instead of single center
- Comparison intraop. suggestions/ hypnosis
more effective than wake suggestions, at least as effective as hypnosis (significantly less effort)
- Similarities
touching the unconscious, suppression of the prefrontal cortex?



Open questions for hypnosis

- Role of trance and hypnotic induction
- Effective constituents
words, music, voice melody, etc.
- Mode of action
Symptom or State analgesia by
 - pain reduction
 - or augmentation of analgesics
 - or tolerance
 - or disturbed pain development



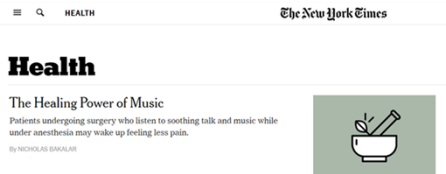
The correlation between pain and need for analgesics is turned to weak and not significant by the intervention. This is evidence for the development of a tolerance for pain.

correlation between pain and analgesics



Misunderstandings

- Music instead of words



Music is effective, but not in unconscious. (Cochrane 2006, Köhlmann 2018)

- Intraop. suggestions instead of hypnosis
- Recordings instead of speaking (study-related, standardisability)
- Communication only with unconscious patients
- Communication by (external) experts



Reactions



Dear Professor Hansen,
in December, I heard the BBC's Health Check podcast about your work playing calming words to patients under anaesthesia. I'm a British novelist, though translated into German among other languages, and the podcast made its way into the book I was writing at the time. ...
The book is set in the English Peak District during the strict lockdown, and a recently-widowed older woman, entirely isolated because of recent cancer treatment, listens to the podcast and thinks about the scientific confirmation that bodies work better when we feel not only safe but accompanied by others. ...

Best wishes,
Sarah Moss



that, and she remembers a podcast she listened to yesterday about a German professor of medicine who'd tried playing people reassuring words while they were under general anaesthetic to see what would happen. They needed fewer opioids afterwards, that was what happened, turns out you can measure the painkilling properties of kindness, of the human voice, and when she heard the professor translating his recording she nearly cried. *You are sleeping sound and deep, he said, you can relax and rest, because you are safe now, and well-protected. We are right by your side, and my voice will go with you.* Oh God, she thought, *don't we all need that, surgery or not,* don't we all need someone to murmur to us as we fall asleep that he is watching over us and so we are safe, though surely you need a real person not a recording, surely there's a better use for all this new technology than pacifying ourselves with a simulacrum of the relationships we can no longer have, electric blankets and recorded words of reassurance, cloth monkeys, that's what it is, because no-one knows how to unlock the cage and we're all forgetting how to go back to the group. *What if the surgeon himself said those words while operating, what if it were a true litany in the visceral real life of the operating theatre rather than wires in the patient's ears as well as on her chest and wrists and legs? Sleeping with that voice must be what it's like to believe in God, to be able to imagine - not imagine, to know - that this fucked up world in which maddened baby monkeys are among the least signs of human inhumanity is still somehow secure in the hands of an omnipotent and benevolent father.* Though I walk in the valley of the shadow of death, still thou art with me. All shall be well and all manner of thing. Nice idea. If only.

