

# Hypnotherapy in Pediatric Gastroenterology

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## ABSTRACT

In several countries, gut-directed hypnotherapy is becoming an established and evidence-based treatment in pediatric gastroenterology. This article describes what hypnotherapy is, offers an overview of its effect in gut-brain disorders and explains its potential mode of action. Moreover, the use of hypnotherapy in other areas of pediatric gastroenterology, as a supportive tool to reduce pain, stress, depression, and anxiety and improve quality of life, will be also discussed. Guidance toward implementing hypnotherapy in clinical practice is provided, including examples of how you can explain hypnosis to patients with gastroenterological symptoms.

**Key Words:** functional abdominal pain, functional nausea, gut brain interaction, hypnotherapy, inflammatory bowel disease, irritable bowel syndrome

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## WHAT IS HYPNOTHERAPY?

Hypnotherapy (HT) is defined as the use of hypnosis in the treatment of a medical or psychological disorder (1). It can be used as a stand-alone treatment, or in combination with other medical or psychological therapies. During hypnosis, an individual is brought into a hypnotic trance, characterized by a focused attention on thoughts or images of nice experiences and an openness to suggestions (1). Although movies and stage hypnosis may suggest otherwise, this hypnotic trance is a normal phenomenon. It is, for example, comparable to the trance that people experience while watching a movie or daydreaming. In these situations, one is also entirely absorbed by images or thoughts. Most people describe the trance experience as relaxing or pleasant.

A therapist uses this hypnotic trance to provide repetitive, hypnotic suggestions for change in physiology, sensations,

## What Is Known

- For more than 30 years, hypnotherapy has successfully been used in adults with irritable bowel syndrome and functional dyspepsia.
- Hypnotherapy is also an effective treatment option for children with irritable bowel syndrome and functional abdominal pain, either provided by a therapist or by the internet.

## What Is New

- Hypnotherapy has also been shown to be effective in children with functional nausea and in children with functional dyspepsia with nausea as their main symptom.
- Hypnotherapy can reduce anxiety in children undergoing medical procedures like venipuncture, anorectal manometry, or endoscopy.
- More randomized controlled trials are necessary to show its efficacy in children with inflammatory bowel disorders or functional constipation.

emotions, thoughts, or behavior. It is essential to realize that patients will not follow a suggestion if it does not fit them. In contrast to what is suggested during stage hypnosis, a hypnotherapist does not have “control over the patient.” In HT, sessions may be recorded, and patients are invited to listen to the hypnotic recordings daily

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to have more impact. For most gastrointestinal (GI) problems, 4–6 sessions in a 3-month treatment period are sufficient (2,3).

HT is usually given to patients above the age of 5–6 years and can be delivered in various ways. Traditionally, patients visit a therapist for individual treatment. In recent years, studies have shown effectiveness for other forms of HT in GI disorders, like home-based HT using standardized audio hypnosis exercises, group HT, and HT delivered by online video apps (4–6). These forms make HT more widely available, especially in areas lacking well-trained hypnotherapists, and may also reduce costs. A particular form of hypnosis is self-hypnosis, in which the patient goes into trance and creates visual images while repeating suggestions for a specific goal. Teaching patients self-hypnosis provides them with the skill of gaining more control over their body, behavior, feelings, or thoughts. Many patients, therefore, still use self-hypnosis years after the treatment, for example, to improve sleep or concentration. Children generally respond very well to HT since their suggestibility is higher than that of adults (7). They enjoy listening to the exercises and creating their own stories with their vivid imagination. Side effects are infrequent during hypnosis (8). Sometimes, dizziness is reported, which can be prevented by lying down during the hypnosis sessions. In case reports, other adverse events like increased anxiety, dissociated states, depersonalization phenomena, physical discomfort, and retroactive amnesia have been described, but they are rare (8).

## HT IN PAIN-RELATED DISORDERS OF GUT BRAIN INTERACTION

There is a strong rationale for the application and success of hypnosis in functional GI disorders, or disorders of gut brain interaction (DGBI), as they are nowadays called, because of the important role of the gut-brain axis in their pathophysiology (9). Gut-directed HT is defined as one of the brain-gut behavior therapies (BGBT) since the hypnotic suggestions focus (partly) on normalizing the gut-brain dysregulation (10). Systematic reviews have demonstrated the efficacy of gut-directed HT and guided imagery, a technique very similar to HT, in both adults and children with pain-related DGBI like irritable bowel syndrome (IBS) and functional abdominal pain (FAP) (11,12). To date, 4 RCTs have been published evaluating the effect of HT/guided imagery in children with IBS or FAP, either in comparison to standard treatment or to a waitlist control (2,13–15). A systematic review concluded that HT has a substantial beneficial effect on pain scores, but the GRADE quality of this conclusion was regarded as low due to the small number of participants across the studies and bias caused by unblinded allocation (12). Apart from its effect on abdominal pain, HT also improves non-colonic symptoms, feelings of anxiety and depression, and quality of life (2,14,16). Positive results of HT are long-lasting, with 85% of patients being symptom-free at 1-year follow-up after receiving treatment and 68% after 5 years follow-up. In the control group, these outcomes were only 25% and 20%, respectively (17).

Shortcomings of HT for pediatric IBS or FAP may include limited access, its rare coverage by commercial health insurances, and the lack of well-trained hypnotherapists. Therefore, 3 trials examined the use of a home-based treatment with standardized hypnosis exercises on compact discs (CDs) (4,14,18). The first study ( $n = 24$ ) compared this modality with a waitlist control group. About two-thirds of pediatric patients with IBS or FAP responded favorably to this therapy compared to only 27% in the control group. The effects were maintained for at least 6 months (14). A second small study in 32 children with IBS or FAP compared 2 forms of home-based treatment with CDs, either with gut-directed HT exercises or with more general exercises aiming at relaxation and increased well-being, and showed an improvement in 75% of patients, with no differences between the groups (18). The third study, in 260 children, compared home-based treatment to individual HT provided

by a therapist. The CDs contained similar exercises as used during individual HT. Treatment success rates and the number of patients reporting adequate relief (70%–80%) after treatment were comparable, but costs were significantly lower in the CD group (4). A recent follow-up study showed that this home-based treatment had persisting positive results in more than 80% of the children 6 years after treatment (19). Therefore, audio-recorded self-hypnosis is an attractive first-line therapy for children with FAP or IBS because of its efficacy, low cost, and direct availability, either using a mobile app (20) or an online version (21).

## HOW AND WHY DOES IT WORK?

In gut-directed HT, the suggestions are usually directed toward control and normalization of gut functions. Examples of these suggestions are provided in Box 1. Therapists often apply metaphors during treatment, for instance, suggesting that an alarm in the brain has become too sensitive and needs to be reprogrammed. Since stress plays an essential causal role in almost any functional disorder, suggestions for relaxation are a standard part of HT. Also, many children suffer from anxiety or depression, so HT sessions can focus on creating happy feelings with ego-strengthening suggestions (22). If no improvement is noticed, hypno-analysis can be added. During hypno-analysis, a qualified and experienced therapist uses the hypnotic trance to explore underlying psychosocial issues that need to be addressed, like problems at home or school. During trance, the subconscious state can form images of the cause of the abdominal pain that may be metaphors for underlying issues. Examples are presented in Box 2.

### BOX 1. Examples of hypnotic suggestions in disorders of gut brain interaction

For decreasing pain: “Every day, by practicing your deep breathing, slowly in and out, your belly will feel more and more relaxed.”

For decreasing nausea: “Like the water flowing in this imaginary river, easy and steady, food and drinks in your stomach and intestines will also flow steadily, effortlessly, at the right pace, so your stomach will feel better and better and your appetite will increase.”

For improving anxiety and depression: “The more you imagine yourself in this colorful balloon, the more your body will be filled with feelings of confidence and happiness, until one day you no longer need to think of this balloon, because these feelings of confidence and happiness have become a part of who you are.”

For ego-strengthening: “Is it not interesting that when you become older, you become better and better in many things? You also become better in coping with difficult situations or unpleasant feelings. You know deep inside that you can now deal with them, that you have the inner resources to overcome obstacles.”

### BOX 2. Examples of hypno-analysis

An 8-year-old boy with abdominal pain since 1 year and not responding after 4 sessions of hypnotherapy, was invited to “take a look inside his belly” to see what was

in his belly that needed his attention. He saw a raging bull that made little holes in the boy's intestines with his horns. In hypnosis, he could not control the bull. After the session, the therapist talked to the parents about the raging bull and asked them if there was anything the boy was angry about that the parents had not addressed during the intake. It turned out that the father had tried to commit suicide a year ago, but the parents had not talked about this anymore with their son.

A 16-year-old girl, suffering from functional dyspepsia, and not responding to the first 3 HT sessions, was invited to become a "mini-me" and visit her stomach to see what was needed there. She saw a lot of ropes, all tied together with solid knots. After being invited to see how she would solve this, because "her inner wisdom would help her," she realized that she should not try to fix all the problems in her life at the same time. Just untangling one knot at a time and being more relaxed to let the knots untangle themselves would be the best way forward.

The precise mechanisms by which HT impacts pain-related DGBI are poorly understood. It is likely through a combination of effects on GI motility, visceral hypersensitivity, and psychological factors. It has been demonstrated that hypnotic induction of positive feelings, like relaxation and happiness, can lead to a reduction in fasting colonic motility, while hypnotic-induced anger or excitement increase colonic motility (23). A study using functional magnetic resonance imaging to measure cortical activation patterns during rectal distensions in adult IBS patients indicated that HT can normalize the central processing of visceral signals (24).

Improvement in IBS symptoms after HT often parallels improvement in psychological symptoms (2,4,25). Whether these psychological changes are the cause of pain improvement, or the consequence remains to be elucidated. In recent years, a role of the gut microbiome in the pathophysiology of pain-related FGIDs has been suggested. Gut microbial alterations have been found in both adults and children with IBS (26,27). A small study in 38 adult IBS patients investigated the effect of HT on the microbiome. Reductions in IBS symptoms and psychological burden were observed after gut-directed HT, but only minor changes were found in intestinal microbiota composition (28). This suggests that hypnosis may act independently from microbiota composition, but more studies are necessary to confirm this finding.

### HYPNOSIS IN FUNCTIONAL NAUSEA

In 2016, the Rome IV pediatric adolescent committee introduced 3 new diagnoses; functional nausea (FN) and 2 subtypes of functional dyspepsia (FD): postprandial distress syndrome and epigastric pain type (29). Children are diagnosed with FN when they have the following complaints for the last 2 months: (1) bothersome nausea as the predominant symptom, occurring at least twice per week, and generally not related to meals; (2) not consistently associated with vomiting; and (3) after appropriate evaluation, nausea cannot be fully explained by another medical condition. Children diagnosed with the postprandial distress syndrome have bothersome postprandial fullness or early satiation that prevents finishing a regular meal. Supportive features include upper abdominal bloating, postprandial nausea, or excessive belching. FN and FD affect approximately 0.5% and 4.5%–7.6% of children worldwide, respectively, and are associated with substantial physical and psychosocial distress, school absences, and decreased social functioning (30–32).

Surprisingly, evidence from RCTs is lacking regarding the efficacy and safety of available drugs to reduce nausea with or without dyspeptic symptoms in children (33). Currently, most health care professionals individualize the patient's medical treatment, including prokinetics, antiemetics, antacids, and herbal products, according to their symptoms and associated comorbidities (34). The disadvantage of this approach is that treatment is symptomatic. This implies that drugs often need to be used for as long as patients suffer from nausea, which may take years (34).

Several pathophysiological mechanisms have been proposed to play a role in the etiology of FN and FD, including delayed gastric emptying, impaired gastric motility, and/or abnormal central nervous system processing of gastric stimuli through the gut-brain axis (35). Also, there are indications that psychological factors, including anxiety and stress, may increase the severity of nausea via the gut-brain axis (31). As in children with FAP disorders, gut-directed HT may have the potential to reduce symptoms of nausea in these children. In adults, 2 trials have demonstrated positive effects of hypnosis in dyspeptic symptoms (36,37). To date, only 1 recent study, including 100 children (ages 8–18 years) with chronic nausea and fulfilling the Rome IV criteria for FN or FD, compared pharmacological treatment with HT. Both treatments were able to reduce symptoms of nausea. However, in the subgroup of patients with FN, HT was more effective than medical treatment (38). More studies are needed to shed light on the role of HT in children with chronic nausea.

### HT IN OTHER GI DISORDERS

Since some evidence exists that gut-directed HT affects colonic motility (23), it is conceivable that HT can be a helpful adjunct in treating children with functional constipation. In adults with IBS, it has already been shown that stool habits improve after gut-directed HT (39), but data in children are scarce. So far, only 1 report has described self-hypnosis as an adjunct in the treatment of children with severe constipation, but to date, no trials have been performed (40). Future studies may evaluate the efficacy of HT in addition to laxative therapy in children with refractory constipation.

Hypnosis may also be a valuable intervention for patients with globus sensation. Kiebles et al (41) described 10 adult patients with persistent globus sensation, normal esophageal manometric assessment, and unresponsiveness to anti-reflux medication. They were treated with 7 sessions of hypnotically assisted relaxation. Nine of 10 subjects reported a substantial improvement in their globus sensation. Published data in children are lacking, well-designed trials are needed in these patients.

Gastric acid production can significantly be influenced by hypnotic suggestions (42). Also, gut-oriented HT has a prokinetic effect on gastric emptying (43). These data suggest a potential role for hypnosis in treating patients with gastroesophageal reflux disease (GERD) and other functional gastric or esophageal disorders. Two adult studies have shown an improvement in functional heartburn symptoms, but data in patients with GERD, especially in children, are lacking (44,45).

Due to its effect on psychological factors, HT can be added to the medical treatment of children with other GI disorders, especially those who experience stress, depression, anxiety, and/or a lower quality of life. For example, a recent study in adolescents with Crohn disease demonstrated that HT is an acceptable and feasible adjunct in the treatment of these patients and may improve quality of life and abdominal pain (46). Another study compared standard medical treatment to HT in adults and teenagers whose inflammatory bowel disease (IBD) was in remission but suffered from ongoing IBS-type symptoms (47). In this group of patients, HT was not superior to standard medical therapy, making both treatment strategies, or a combination of the 2, reasonable options.



Finally, hypnosis can have a role in reducing pain, anxiety, and stress during medical procedures. A systematic review identified 8 small studies supporting the efficacy of hypnosis in reducing children's needle-related pain or distress (48). This can be useful, for example, in children with IBD who regularly need a venipuncture or subcutaneous medication and have developed a needle phobia. A recent pilot randomized controlled trial assessed the effectiveness and feasibility of a brief hypnosis session to reduce distress in children with functional constipation undergoing anorectal manometry. The authors concluded that one hypnosis session for children before the procedure is an easily incorporable intervention that lowers distress levels before anorectal manometry and is positively perceived by children and parents (49). Also a prospective single-center study in 140 children older than 6 years requiring a diagnostic esophagogastroduodenoscopy or rectosigmoidoscopy suggests that hypnosis combined with oxygen and nitrous oxide and/or midazolam is of additional value to perform diagnostic esophagogastroduodenoscopy or rectosigmoidoscopy without systematic need for general anesthesia (50).

## IMPLEMENTATION OF HYPNOSIS IN CLINICAL PRACTICE

Given the evidence so far, what should be the place of gut-directed HT in the treatment of children with pain-related DGBI and how to organize this? A recently published therapeutic guide on pediatric IBS and FAP concluded, based on recent systematic reviews, that cognitive behavioral therapy, HT, probiotics and peppermint oil are effective treatment options and could all be discussed with patients and parents in a shared-decision-making manner (51). Unfortunately, there are no studies to date comparing these treatments in costs and effectivity.

It seems obvious to offer HT to those children who are most likely to respond. However, studies performed in children with pain-related DGBI have not shown many predictors of treatment response. Neither treatment expectations of child or parents nor hypnotic susceptibility influenced treatment results. Also, the degree of anxiety, depression, severity of abdominal pain, age, and therapist did not predict treatment success (4). Only having more negative beliefs about the abdominal pain and a longer duration of symptoms were associated with worse outcomes in children with IBS and FAP (4), suggesting that HT should not be postponed. So far, no predictors have been identified to help to choose between individual HT versus home-based treatment using online exercises. However, the disadvantage of recorded online HT exercises is that "hypno-analysis" as explained above cannot be performed to customize treatment. This suggests that more complex patients with, for example, unrevealed psychological trauma may benefit from a more individualized approach, but more studies are needed to examine this. Recently, the Rome Working Team on BGBT reported on characteristics of adult patients that are not considered to be good candidates for BGT like HT (10). Although not enough studies have examined this in pediatrics, patient characteristics like severe psychopathology, lack of motivation to invest time, and no insight into the gut brain connection are probably relative contraindications for HT.

Not every clinician feels at ease in advising HT to patients with pain-related DGBI. This might be because misconceptions around hypnosis are still common, which is caused by movies or popular stage hypnotists. Especially the lingering myth that hypnosis is a form of mind control in which the patient has no free will, may hinder both doctors and patients from discussing this treatment option. It is, therefore, important to emphasize that HT is quite the opposite: HT is a very safe treatment in which patients gain more control over their body and their feelings and that "medical hypnosis is very different from stage hypnosis." (Box 3: how to discuss hypnotherapy?) We recommend that HT is mentioned in (inter-) national guidelines in pediatric DGBI. To become part of standard care, pediatricians and pediatric gastroenterologists ideally should have a network of skilled health care professionals

who can provide gut-directed HT, either as a stand-alone treatment or in combination with cognitive behavioral therapy. Requirements for becoming a skilled and licensed therapist are very different throughout the world and are, therefore, not discussed in this paper. When well-trained therapists are unavailable, referral to online treatment with standardized hypnosis exercises is a valuable and cost-effective alternative (4). HT exercises are now available in English, Spanish, and Dutch with German and Swiss following soon (21).

### BOX 3. How to discuss hypnotherapy with patients

Hypnosis is sort of like daydreaming. You likely have experienced this before. You are sitting in the classroom, thinking of your favorite sport or the nice vacation at the beach, and you totally forget that you are at school because you are completely absorbed in your imagination.

Now hypnosis is daydreaming with a purpose. Hypnosis invites you to focus your imagination on bringing about something you want—for example, going to sleep easier, doing better on tests at school, or training your belly to be happier, relaxed, and more comfortable. Hypnosis is the experience of using your imagination in a deliberate and focused way. And the good news is that everyone can do it because it is a natural ability! Interestingly, the more you do it, the better you get and the better it works.

Some people think that hypnosis is losing control, but that is not true! In fact, when it is properly used in medicine, you get even more control over your body and more control over your feelings. And it is like learning a new sport; the more you practice, the better you will become. Thousands of children have already used it successfully for their abdominal complaints and most of them really liked using it. I wonder how good it will work for you!

## CONCLUSIONS

HT is an effective treatment option for children with pain-related disorders of the gut brain interaction. The availability of online exercises makes this treatment now easily accessible and cost-effective, but comparative studies with other effective treatments like cognitive behavioral therapy are highly warranted. HT showed positive results also in other conditions, such as FN, gastroesophageal reflux, constipation and IBD, but more studies are needed to confirm these data. Moreover, HT is a valuable adjunct for children who are fearful during medical procedures.

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