

Hypnosis and Irritable Bowel Syndrome: A Review of Efficacy and Mechanism of Action

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Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder characterized by abdominal pain, distension, and an altered bowel habit for which no cause can be found. Despite its prevalence, there remains a significant lack of efficacious medical treatments for IBS to date. In this paper we reviewed a total of 14 published studies ($N = 644$) on the efficacy of hypnosis in treating IBS (8 with no control group and 6 with a control group). We concluded that hypnosis consistently produces significant results and improves the cardinal symptoms of IBS in the majority of patients, as well as positively affecting non-colonic symptoms. When evaluated according to the efficacy guidelines of the Clinical Psychology Division of American Psychological Association, the use of hypnosis with IBS qualifies for the highest level of acceptance as being both efficacious and specific. In reviewing the research on the mechanism of action as to how hypnosis works to reduce symptoms of IBS, some evidence was found to support both physiological and psychological mechanisms of action.

Introduction

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder characterized by abdominal pain, distension, and an altered bowel habit for which no cause can be found (Whorwell, Prior, & Faragher, 1984). The disorder affects twice as many women as men, and while the estimated prevalence in the general population is 15% to 20%, it comprises around half the cases in gastroenterology wards (Gonsalkorale, Houghton, & Whorwell, 2002). Progress towards diagnostic uniformity has been achieved with systems such as the Manning (Manning, Thompson, Gheaton, & Morris, 1978) and the Rome criteria (Thompson, Creed, Drossman, Heaton, & Mazzacca, 1992). More recently, an objective scoring system for severity of IBS has been developed (Francis, Morris & Whorwell, 1997).

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Lack of efficacious treatments for IBS

Patient education, dietary modification, behavioral/psychosocial therapies, and medications constitute the core treatments currently available to patients suffering from IBS. Education typically consists of helping patients understand the chronic and benign nature of IBS and that the diagnosis is not likely to change (Owens, Nelson, & Talley, 1995). Dietary modification typically includes exclusion of foods that increase flatulence and inclusion of more fiber intake. For sufferers with lactose intolerance, a lactose-restricted diet may result in clinical improvement (Bohmer & Tuynman, 2001). Psychosocial therapies include hypnosis, biofeedback, and psychotherapy. They are indicated especially for motivated patients who are able to associate their symptoms with stressors (Drossman & Thompson, 1992). They have been shown to reduce anxiety, encourage health promoting behaviors, increase patient responsibility and involvement in treatment, and improve pain tolerance (Drossman, 1999). Pharmacologic agents are symptom relief-focused and should be used only as adjunct treatment due to the lifelong nature of IBS (Jailwala, Imperiale, & Kroenke, 2000). Antispasmodic agents are the most frequently used but their demonstrated efficacy is questionable and inconsistent, often with adverse side effects (Brandt et al., 2002). Selective use of antidepressants may have beneficial effects; for instance, tricyclic agents may be beneficial for diarrhea-predominant IBS patients (by slowing down intestinal transit time related to their anticholinergic properties; Gorand, Libby, & Farthing, 1995) and in cases where there is a neuropathic pain component (Hameroff et al., 1984). Similarly, antidiarrheal agents may be beneficial for diarrhea-predominant IBS patients. Benzodiazepines may be useful for short-term reduction of acute anxiety contributing to IBS symptoms (Drossman & Thompson, 1992). Two recent agents show promise for females with IBS: Alosetron (a 5-HT₃ receptor antagonist) and tegaserod (a 5-HT₄ receptor agonist). In summarizing the role of pharmacologic treatments, Desautels and Wald (2004) concluded: "the chronic use of drugs should be generally minimized or avoided because of the lifelong nature of the disorder and the lack of convincing therapeutic benefit." Despite the large number of interventions that have been suggested for the treatment of IBS, effect sizes of these treatments tend to be modest, at best, and no single therapy has emerged which has proven beneficial for large numbers of patients with IBS. Thus, there remains a significant lack of efficacious treatments for IBS.

This lack of efficacious therapies has been accompanied by the increased use of complementary and alternative therapies (Kessler et al., 2001). Between 11% and 43% of patients with gastrointestinal disorders use complementary and alternative therapies such as herbal remedies, commercially available supplements and preparations, alteration of intestinal microflora, dietary modification, digestive supplements such as bulking agents, and psychological therapies including hypnotherapy, psychotherapy, behavior therapies, and multi-component treatment (Giese, 2000; Smart et al., 1986; Spanier et al., 2003). In a recent review of alternative therapies, Spanier et al. (2003) concluded that: "guarded optimism exists for traditional Chinese medicine and psychological therapies, but further well designed trials are needed." In an earlier review of psychological therapies for IBS, Talley and colleagues (1996) concluded that the efficacy of psychological treatment for IBS has not been established because of methodological inadequacies in the research. Leahy and Epstein (2001) observed that psychotherapy offers a clear additional benefit over and above medical treatments and

that hypnotherapy appears to be particularly potent, and in expert hands, produces consistently impressive therapeutic results even in patients refractory to conventional IBS treatment.

Despite some criticism directed at the methodology used in hypnosis research, existing evidence indicates hypnosis is likely to be a welcome addition to the array of effective treatment for IBS. The purpose of this paper is twofold:

- 1) To provide an updated review of its efficacy in reducing symptoms of IBS and associated emotional distress, and in improving quality of life of the sufferers; and,
- 2) To examine evidence concerning its possible mechanism of action.

Methods

Various sources were searched for relevant papers, including the Pubmed and PsychLit databases, medical journals, and Internet. Pubmed yielded the majority of useful papers. Internet sources included the search engine *Inforetrieve*, *Psychinfo.org* and the webpage *IBSHypnosis.com*. The search algorithms used were *hypnotherapy and IBS*, *hypnosis and IBS*, and *hypnosis for pain*. Inclusion criteria for the studies selected were as follows: 1) hypnosis was studied as a treatment for IBS; 2) the course of hypnotherapy was at least one month; and 3) the effect of hypnotherapy was formally evaluated before and after treatment. Research on mechanism of action was also included.

This review started off as a meta-analysis integrating the diverse literature on the efficacy of hypnotherapy for pain relief in IBS patients. However, it soon evolved into a review study instead as it became clear that no negative finding has been published.

Results and Discussion (Symptoms Reduction)

The results will be presented in two sections: symptoms reduction and mechanism of action. For the former, a total of 14 studies aimed at symptoms reduction were identified, with eight not using any control group, and six using research designs that included some type of a control group. Several of these studies also investigated mechanism of action. However, three studies that did not include a set protocol for using hypnosis to treat IBS were excluded from the section on symptoms reduction but two of the three were added to the discussion on mechanism of action. One study (Houghton et al., 2002) tested how different emotions (induced under hypnosis) had influenced perception of rectal distention by IBS patients. Another study (Vase et al., 2003) examined how a verbal suggestion for pain relief under hypnosis could increase the magnitude of placebo analgesia for IBS patients. Finally, a third study (Gonsalkorale et al., 2003) simply conducted a long-term follow up on the efficacy of hypnosis on IBS.

Symptoms Reduction

The 14 studies included in this section included total *N* of 644 IBS patients who have successfully been treated by hypnosis as evidenced by significant symptoms reduction, and as reported in the published research from 1984 to 2004.

The results are organized and presented in two sets of tables. Tables 1 and 2 provide a summary of the methods/procedures used in the studies with the findings

being summarized in Tables 3 and 4. Tables 1 and 3 consist of studies where no control group was used while Tables 2 and 4 consist of studies where a control group was a part of the research design.

In reviewing Tables 1 and 2, it is noted that the hypnotic protocol of most, if not all the empirical research using hypnosis to treat IBS has derived and/or evolved from that proposed by Whorwell's group at the University Hospital of South Manchester in England (Whorwell, 1984). However, the number of sessions in the protocol has ranged from four to 12, and the amount of treatment contact hours has ranged from a total hours of 3.5 to 12 hours spread out over a 3 months duration. Home practice has been consistently an important part of all the studies. All studies have utilized symptoms of IBS as the targeted measures of outcome but some studies have also included

Table 1: Summary of Methods, No Control Group Used

Study	N	# Sessions	Home Practice?	Measures	Whorwell?	Comments
Whorwell (1987)	35	10 half-hourly over 3 months	Yes	IBS Sx	Yes	Compares classical, atypical, and high psychopathology
Harvey (1989)	33	4 hourly over 7 weeks	Yes	IBS Sx, HAD	Yes	Compares group vs. individual
Palsson (1997)	18	7 hours over 3 months	Yes	IBS Sx, BDS, SCL-90R	Adapted	Compares pain and no pain specific instructions
Vidakovic-Vukic (1999)	24	12 hourly over 3 months	Yes	Not specified	Yes	A replication of Whorwell in Amsterdam
Gonsalkorale (1999)	40	12 hourly over 3 months	Yes	IBS Sx, HAD	Yes	
Gonsalkorale (2002)	250	12 hourly over 3 months	Yes	IBS Sx, HAD	Yes	
Lea (2003)	23	12 hourly over 3 months	Yes	IBS Sx, HAD	Yes	
Gonsalkorale (2004)	78	12 hourly over 3 months	Yes	IBS Sx, HAD, FBD	Yes	Cognitive change in IBS after hypnosis

Keys: Sx = symptoms
 BDS = Beck Depression Scale
 FBD = Cognitive Scale for Functional Bowel Disorders
 GHQ = General Health Questionnaire
 HAD = Hospital Anxiety and Depression Scale
 SCL-90R = Symptom Check List
 SPSP = Stress-related Physical Symptoms Inventory

Table 2: Summary of Methods Control Group(s) Used

Study	Design	N	# Sessions	Home Practice	Measures	Whorwell?	Comments
Whorwell (1984)	RCT	30 15 Tx 15 Cntl	7 half-hourly over 3 months	Yes	IBS Sx, GHQ	Yes	
Prior (1990)	RCT	30 15 TX 15 Cntl	10 half-hourly over 3 months	Yes	IBS Sx, HAD	Yes	
Houghton (1996)	RCT	50 25 Tx, 25 Cntl	12 half-hourly over 3 months	Yes	SBQOL (a QOL questionnaire)	Yes	This study utilized subjects seen 1 year ago for IBS tx; comparison was made with a waiting list control group on QOL
Galovski (1998)	Matched control; cross-over	12 6 Tx 6 Cntl	7 half-hourly over 3 months	Yes	IBS Sx diary SCID, BDS, STAI, SHSS:A	Yes	Replication of Whorwell in U.S.
Forbes (2000)	RCT	52 25 Therapist 27 Tape alone	6 over 3 months	Yes	IBX Sx, GHQ, HAD, SF-36	Adapted from Whorwell	Compares therapist and tape
Palsson (2002)	Lagged intervention	24 12 initial and 12 delayed	7 hourly over 3 months	Yes	IBS Sx, BDI, SCL-90R, SPSI, ANS functions	Adapted from Whorwell	

Keys:

ANS = Autonomic Nervous System
BDI = Beck Depression Inventory (Beck et al., 1961)
FBD = Cognitive Scale for Functional Bowel Disorders (Toner et al., 1998)
GHQ = General Health Questionnaire (Goldberg, 1972)
HAD = Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983)
SBQOL = SB Quality of Life Scale (Dunbar et al. 1992)

SCID = Structured Clinical Interview Scale for DSM-IV (First et al., 1995)
STAI = State-Trait Anxiety Inventory (Spielberger, 1970)
SHSS = Stanford Hypnotic Susceptibility Scale (Weitzenhoffer & Hilgard, 1959)
SF-36 = Medical Outcome Study Medical Outcome Study Health Survey (Ware & Sherbourne, 1992)
SCL-90R = Symptom Check List (Derogatis, 1994)
SPSI = Stress-related Physical Symptoms Inventory (Palsson et al., 1998)

Table 3: Summary of Result, No Control Group Used

Study	Changes in IBS Sx (magnitude)	Changes in IBX Sx (% subjects improved)	Changes in QOL	Changes in Psychiatric Sx	Follow-up Data	Comments
Whorwell (1987)	Not reported	84% overall	Not reported	Not reported	Not reported	Classical IBS 95%; Atypical 43%; High psychological problems 60%
Harvey (1989)	Not reported	33% Sx free; 27% some improvement; 39% no change	Not reported	Not reported	Improvements maintained 3 months	1) Group Tx equally effective as individual Tx; 2) Psychological illness less responsive
Palsson (1997)	Reduction in abdominal pain ($p < 0.001$); bloating ($p = 0.004$); stool consistency ($p < 0.005$)	94% "improved"	Not reported	Decreased anxiety ($p = 0.005$); decreased somatization ($p = 0.009$); fewer psychological Sx ($p = 0.013$); depression and psycho stress unchanged	Not reported	Pain threshold and muscle tone unchanged
Gonsalkorale (1999)	Reduction on overall IBS Sx ($p < 0.001$)	Not reported	Improved QOL ($p < 0.001$)	Decreased anxiety and depression ($p < 0.001$)	Not reported	Males with diarrhea-predominant IBS responded least well

Table 3: Summary of Result, No Control Group Used (continued)

Study	Changes in IBS Sx (magnitude)	Changes in IBX Sx (% subjects improved)	Changes in QOL	Changes in Psychiatric Sx	Follow-up Data	Comments
Vidakovic-Vukic (1999)	Not reported	95% "improved"	100% improved "well being"	Not reported	5 subjects contacted "doing well" after 6-12 months	Diarrhea-predominant type responded better
Gonsalkorale (2002)	Reduction on overall IBS Sx ($p < 0.001$)	78% improved in bowel habits	Reduction in all measures of QOL ($p < 0.001$)	Reduction in anxiety and depression ($p < 0.001$)	Not reported	Males with diarrhea-predominant IBS responded least well
Lea (2003)	Reduction in IBS Sx ($p = 0.002$)	Not reported	Not reported	Some reduction in anxiety and depression	Not reported	No difference in responsiveness to hypnosis among hyper-, hypo-, and normal sensitive patients
Gonsalkorale (2004)	Reduction on overall IBS Sx ($p < 0.01$)	Not reported	Improved QOL ($p < 0.001$)	Decreased anxiety and depression ($p < 0.001$)	Not reported	Reduction in Sx correlated with improvement in cognition ($p < 0.001$)

Table 4: Summary of Results, Control Group(s) Used

Study	Changes in IBS Sx (magnitude)	Changes in IBX Sx (% subjects improved)	Changes in QOL	Changes in Psychiatric Sx	Follow-up Data	Comments
Whorwell (1984)	More Sx reduction for hypnosis group than control group ($p < 0.001$)	Not reported	Improved "well being" more for hypnosis than control ($p < 0.001$)	Not reported	1.5 year follow up; Sx remission for all subjects	
Prior (1990)	Reduction in Sx ($p < 0.05$)	87% "much improved"	Not reported	3 of 8 reported substantially decreased anxiety and depression	Not reported	
Houghton (1996)	Reduction in Sx ($p < 0.05$ to 0.0001)	Not reported	Improved mood, psychic and physical well being, locus of control and work attitudes ($p < 0.05$ to 0.0001)	See under QOL	Not reported	3 of 4 unemployed returned to work. Reduced absenteeism and time off for those employed.

Table 4: Summary of Results, Control Group(s) Used (continued)

Study	Changes in IBS Sx (magnitude)	Changes in IBX Sx (% subjects improved)	Changes in QOL	Changes in Psychiatric Sx	Follow-up Data	Comments
Galvoski (1998)	Reduction in composite IBS score ($p < 0.01$ or better)	73% improved; 27% not improved	Not reported	No change in depression; reduction in trait anxiety ($p = .014$), state anxiety ($p = 0.04$)		Psychiatric Sx correlated with improvement ($p = 0.054$). Hypnotic susceptibility not correlated with Tx gain. Positive side effects included decreased blood pressure.
Forbes (2000)	Not reported	52% rated as "improved"	Not reported	"Modest" improvement reported across multiple measures	Not reported	Although inferior to hypnosis, use of prerecorded tape can be used as second line Tx
Palsson (2002)	Reductions in all Sx ($p < .01$ or better)	Not reported	Not reported	Reduction in anxiety and depression ($p = 0.008$) and anxiety ($p = 0.03$); somatization ($p < 0.001$) and psychological distress ($p = 0.002$)	Reductions in abdominal pain maintained after 4 months (40% to 100%)	No significant difference between pain specific and non-pain specific verbal suggestions. No change in ANS functions except skin conductance.

measures of noncolonic symptoms, measures of psychological state (most commonly depression and anxiety), and measures of quality of life. In addition, the Palsson group has also included measure of somatization and ANS functions (Palsson et al., 2002).

Tables 3 and 4 summarize the outcomes of the studies. Note that different studies have utilized different outcome measures. All studies included changes in IBS symptoms as the primary outcome measures but some studies reported the changes in mean scores while others reported percentage changes, and still others reported both. In addition, some studies reported changes in quality of life, and psychological status such as depression and anxiety. Some studies broke down IBS into various subtypes, for instance, classical versus atypical versus high psychopathology; diarrhea-predominant versus constipation-predominant; hyper, hypo versus normal rectally sensitive types. Effect size was not computed due to the absence of certain statistics of the changed-score distributions in many studies. Instead, the level of significance was used due to its ready availability in the studies reviewed.

Discussion

A review of research on hypnosis and IBS indicates that much of the work in this area has been based on Whorwell's "gut directed hypnotherapy" (Whorwell et al., 1984). Typically, this consists of seven half-hour sessions of decreasing frequency over a 3-months period. Patients would be given a tape for daily practice of autohypnosis after the third session. After hypnotic induction (e.g. with arm levitation), followed by deepening procedures, the patient would be provided with a simple account of intestinal smooth muscle physiology and some comments about health and well being. Then, the patient would be asked to place his/her hand on the abdomen, to feel a sense of warmth and to relate this to asserting control over the gut function. All sessions would be concluded with standard ego strengthening suggestions. Of the 14 studies reviewed in this paper (eight with no control group and six with control group), 12 utilized Whorwell's or slightly modified Whorwell's procedure and two used a procedure that was adapted from the Whorwell's procedure.

Frequency and duration of treatment

Despite the use of a common protocol, the number of sessions and actual contact time between therapist and patients appear to differ from study to study, yet resulting in significant symptoms reduction in all studies. The comparative magnitude of improvement across studies could not be compared since most studies did not provide sufficient data to compute effect size. Nonetheless, it would appear that the number of sessions and actual contact time between therapist and patient do not appear to be a critical ingredient for success. It is further noted that all the studies required regular home practice and were completed within about 3 months. Thus, it might be the duration of the protocol, combined with frequent and regular home practice, that is critical to the success of the protocol. Further research is needed to determine if there is, in fact, a minimal duration for successful hypnotic treatment of IBS.

Responsiveness of subtypes of IBS to hypnosis

Although some studies compared responsiveness to hypnosis of diarrhea-predominant to constipation-predominant IBS, there does not appear to be any consistent finding. However, there is some evidence to suggest that IBS with classical

symptoms appear to respond better than those with atypical symptom or with comorbid psychopathology (Whorwell et al., 1987). There is also some evidence that males with diarrhea-predominant IBS appear to respond significantly less to hypnosis than other groups (Gonzalkorale, Houghton, & Whorwell, 2002).

Long term benefits

A long term follow-up of 204 cases of IBS patients treated with hypnosis (Gonsalkorale, Miller, Afzal, & Whorwell, 2003) indicated that among the 71% who initially responded to hypnotherapy, 81% maintained their improvement over time while the remaining 19% reported only slight deterioration in their IBS symptoms. All symptoms at follow up were significantly improved over prehypnotherapy levels ($p < 0.001$) and substantially unchanged from the posthypnotherapy levels. There were no significant differences in the symptom scores between the assessments at Year 1, 2, 3, 4, or 5+ years following treatment. Similarly, quality of life and anxiety and depression scores were significantly improved at follow-ups ($p < 0.001$) although some deterioration did occur over time. Finally, patients reported a reduction in medical consultation rates and use of medication following the completion of hypnotherapy. The authors concluded that the benefits from hypnotherapy appeared to last at least 5 years posttreatment.

Miscellaneous findings.

There is some evidence (Harvey et al., 1989) that hypnotherapy conducted in a group setting had comparable efficacy to one conducted one-on-one but replication of this study is needed. There is also some evidence that post-hypnotic suggestion does not have to be pain specific to produce efficacious result (Palsson et al., 1997). Finally, the use of audiotape alone was shown to have beneficial effect especially for resistant patients, however, its efficacy appears to be inferior to hypnotherapy conducted by a therapist (Forbes et al., 2000).

Mechanism of Action

The robustness of the findings indicating hypnosis as an effective treatment for IBS has spawned research investigating its mechanism of action. Most of the publications on mechanism of action for hypnosis in IBS have come from the Manchester group from the United Kingdom (Whorwell and associates). Others to be reviewed in this paper include the work of Palsson, Whitehead, and associate from the University of North Carolina, and Vase, Price, and associates (from Denmark and the University of Florida respectively). This paper will also review IBS from a neurophysiologic perspective by presenting findings of quantitative electroencephalography (QEEG) studies.

Patients with IBS have shown exaggerated colonic responses to a wide variety of stimuli (e.g., Chaudhary & Truelove, 1961; Harvey & Read, 1973; Sullivan, Cohen, & Snape, 1978), and a lowered visceral sensory threshold to pain induced by balloon distension (e.g., Ritchie, 1973; Swarbrick et al., 1980; Whitehead, Engel, & Schuster, 1980). In the first of a series of studies investigating the mechanism of action of hypnosis on IBS, Prior, Colgan, and Whorwell (1990) assessed the effect of hypnosis on anorectal physiology. They found that in comparison to a control group who had received no hypnotherapy, patients with diarrhea-predominant IBS who received hypnosis showed significant changes in rectal sensitivity during and after a course of the therapy ($p < 0.05$).

For the constipation-predominant group, a trend towards normalization was found but the change was not significant, possibly due to a small N of 5. However, no change in somatic pain threshold, rectal compliance, or distension-induced motor activity occurred in both groups.

A second in the series of enquiry by the Manchester group was published by Whorwell et al. (1992) who found that hypnosis decreased colonic motility index ($p < 0.05$) and this change was accompanied by decreases in both pulse and respiration rates ($p < 0.005$ for both). This study also showed that anger and excitement increased the colonic motility index while happiness reduced the index, though the latter was not significantly different from that observed during hypnosis alone. The investigators concluded that hypnosis may improve IBS symptoms via this reduction in colonic motility.

A follow-up study (the third in this series) by Houghton et al. (2002) found that hypnotic relaxation increased the distention volume required to induce discomfort ($p < 0.05$) while anger reduced this threshold. No associated changes in rectal compliance and wall tension were observed. The authors concluded that altering the emotional state of a patient with IBS using hypnosis can lead to a change in the patient's perception of rectal distension and thus, changes in visceral sensitivity.

In the fourth in this series from the research of the Manchester group, Lea et al. (2003) divided the IBS patients into three groups in terms of rectal sensitivity: hypersensitive, hyposensitive, and normally sensitive. Compared to healthy adults, 10 of the 23 subjects were hypersensitive, seven hyposensitive, and six normally sensitive before hypnosis treatment. Following hypnosis, the mean pain sensory threshold increased in the hypersensitive group ($p = 0.04$), decreased in the hyposensitive group (although not significant, $p = 0.19$), and remained unchanged in the normally sensitive group. Sensory improvement in the hypersensitive group tended to correlate with a reduction in abdominal pain ($r = 0.714$, $p = 0.07$). The authors concluded that hypnotherapy improves abnormal sensory perception in patients with IBS, leaving normal sensation unchanged.

The fifth in this series from the Manchester group investigated the role of cognitive change in patients undergoing hypnotherapy for IBS (Gonsalkorale et al., 2004). Noting that impaired quality of life and psychological distress are common among sufferers of IBS and that hypnotherapy has been effective in improving both symptoms and quality of life in patients with IBS, these researchers administered the Cognitive Scale for Functional Bowel Disorders (FBDs; Toner et al., 1998) together with other assessment tools to IBS patients before and after hypnotherapy. The results showed that hypnosis improved IBS symptoms, quality of life, and measures of anxiety and depression (as might be expected) along with reduction in the total cognitive score (TCS; $p < 0.001$) and all component themes related to bowel function ($p < 0.001$). Furthermore, a reduction in symptom score following treatment correlated with an improvement in the cognitive scores ($p < 0.001$). Regression analysis confirmed that the cognitive score was an independent predictor of symptom improvement. The authors observed that symptom improvement in IBS following hypnosis is associated with cognitive change such as reduction in bowel performance anxiety, improved cognition regarding pain, anger/frustration, embarrassment/shame, control, and self-efficacy. The researchers concluded that this finding represents an initial step in unraveling the

many possible mechanisms by which hypnosis affects changes in patients with IBS.

In contrast to the research from the Manchester group which focuses on possible physiological mechanism of action for hypnosis on IBS, the North Carolina group (Palsson, 1998, 2002) appears to be in favor of a psychological mechanism. In a series of two studies, rectal pain thresholds and smooth muscle tone (as measured with a barostat), autonomic nervous system functions (heart rate, blood pressure, skin inductance, finger temperature, and forehead electromyographic activity), and somatization, and psychological distress were assessed before and after hypnosis treatment. The authors reported that all IBS symptoms improved substantially in both studies but the rectal pain threshold, rectal smooth muscle tone, and autonomic functioning (except sweat gland activity) were unaffected by hypnosis. In contrast, somatization and psychological distress showed large decreases following hypnosis. The authors concluded that hypnosis improves IBS symptoms through reductions in somatization and psychological distress and that the improvements were unrelated to changes in the physiological parameters measured.

Approaching from a slightly different perspective, the role of placebo analgesia to explain the mechanism via which hypnosis works on IBS was investigated by Vase Robinson, Verne, and Price (2003). Thirteen IBS patients rated evoked rectal distention and cutaneous heat pain under the conditions of natural history, rectal placebo, rectal nocebo, rectal lidocaine, and oral lidocaine. Patients were given verbal suggestions for pain relief and were asked to rate expected pain level, and desire for pain relief for both evoked visceral and cutaneous pain. The results indicated that expected pain levels and desire for pain relief accounted for large amounts of the variance in visceral pain intensity (up to 81%) and less so for cutaneous pain intensity. The researchers reported that adding a verbal suggestion for pain relief could increase the magnitude of placebo analgesia to that of an active agent and that anti-hyperalgesic mechanisms might be involved in the treatment of IBS by hypnosis. The research concluded that the combination of expected pain levels and desire for pain relief may offer an alternative means of assessing the contribution of placebo factors during analgesia.

In a quantitative EEG study comparing 24 IBS patients with controls, Nomura and colleagues (1999) concluded, "IBS patients consistently showed a decrease of alpha power percentage and an increase of beta power percentage not only in the conscious relaxed state but also during the stress of cholinergic-stimulated conditions. This suggests that such an altered brain activity is a trait of IBS patient" (p. 483). They found a significant positive correlation between the colonic motility index and beta power percentage. Their findings replicated a previous study by Fukudo et al. (1993). This excess beta (which is associated with anxiety) and deficit in alpha brain waves (a more relaxed brainwave), along with the fact that most IBS patients complain of stress-induced exacerbation of symptoms, helps explain why as little as four to ten sessions of self-hypnosis training has proven effective in producing significant improvement in 80%-90% of IBS patients (e.g., Galovski & Blanchard, 1999; Harvey et al., 1989; Houghton et al., 1996; Prior et al., 1990; Whorwell et al., 1984, 1987).

Despite the many research attempts, the mechanism of action of hypnosis on IBS remains controversial. What appears to be emerging is the consistent finding that IBS patients display a number of abnormal or dysfunctional physiological (e.g., rectal hypersensitivity or hyposensitivity) and psychological reactions (e.g., somatization,

excessive psychological distress) and that hypnosis appears to normalize these reactions. Thus, hypnosis may affect IBS by altering perceptions (for instance, of rectal distension and discomfort, and of external or internal threats to the sufferers), by improving visceral sensory perception, normalizing rectal sensitivity or quieting colonic motility. Hypnosis also appears to enhance the effect of placebo analgesia. The key word may be “altering perception” rather than permanently altering the actual functioning of the organ system involved. This may explain why research to date on posttreatment changes associated with hypnosis have provided very little evidence of changes in physiologic parameters such as pain thresholds, muscle tone, or autonomic functioning (Palsson & Whitehead, 2002). Another reason behind the inability to uncover the mechanism of action may lie in the inadequate selection of assessment instrument or modality used in research. For instance, heart rate variability (perhaps the most sensitive and direct measure of autonomic system dysfunction) has never been included as a measure of autonomic functioning. Finally, the emerging and evolving field of QEEG has opened up a new paradigm with accompanying methods to study mechanism of action at the neuronal level. Hypnosis may very well work through altering brainwave (EEG) activity as well as altering functioning of the gut. A new paradigm may consist of understanding how hypnosis works on the brain, which in turn, alters the way the brain regulates the gut.

Conclusion

The studies reviewed in this paper document that hypnosis consistently produces significant results and improves the cardinal symptoms of IBS in the majority of patients. The studies also show that hypnosis positively affects non-colonic symptoms, emotional well being, ability to work, and quality of life of the patients suffering from IBS. Furthermore, research has supported the ability of these positive effects to be sustained over considerable periods of time.

A significant amount of research with consistent results exists and justifies the use of hypnotherapy for pain relief and symptom management in IBS patients. When evaluated according to the efficacy guidelines of the Clinical Psychology Division of American Psychological Association (Chambless & Holon, 1998; Chambless et al., 1998), the use of hypnosis with IBS qualifies for the highest level of acceptance as being both efficacious and specific because of the multiple randomized, control group studies and comparison with a placebo control condition. Hypnotic treatment of IBS should be accepted in medicine and psychology as an evidence-based practice.

Despite the many attempts to uncover its mechanism of action, how hypnosis works to reduce symptoms of IBS remains unresolved. In reviewing existing evidence, Palsson (2002) concluded, “the hypnotic state seems by itself to increase oro-cecal transit time and quiet colonic motility... (and) specific hypnotic suggestions and imagery can also have demonstrable effects on gastric secretion and transit time, the research to date on posthypnotic changes have provided very little evidence that overall changes in physiologic parameters such as pain thresholds, muscle tone, or autonomic functioning are central to the therapeutic effect, with the exception of increased pain thresholds for the most pain-sensitive subgroup of patients” (Palsson, 2002, pp. 2133). Since then, the Whorwell group has found some evidence for normalization of visceral

sensation by hypnosis (Lea et al., 2003). However, the jury is still out until this finding can be replicated by future research. It appears likely that future research will find a combination of physiological and psychological mechanism behind the therapeutic effects of hypnosis.

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