

Psychosocial Aspects of Assessment and Treatment of Irritable Bowel Syndrome in Adults and Recurrent Abdominal Pain in Children

Edward B. Blanchard
University at Albany

Lisa Scharff
Children's Hospital and Harvard Medical School

This article presents a selective review of psychosocial research on irritable bowel syndrome (IBS) in adults and on a possible developmental precursor, recurrent abdominal pain (RAP), in children. For IBS the authors provide a summary of epidemiology, of the psychological and psychiatric disturbances frequently found among IBS patients, and of the possible role of early abuse in IBS. A review of the psychosocial treatments for IBS finds strong evidence to support the efficacy of hypnotherapy, cognitive therapy, and brief psychodynamic psychotherapy. The research relating RAP to IBS is briefly reviewed, as is the research on its psychological treatment. Cognitive-behavioral therapy that combines operant elements and stress management has the strongest support as a treatment for RAP.

Irritable bowel syndrome (IBS) is a functional disorder of the lower gastrointestinal (GI) tract in which psychosocial assessment and treatment procedures could play a major role.¹ This article selectively summarizes information on these psychosocial assessment and treatment procedures as they pertain to adults; in addition, it briefly summarizes the literature on a possible precursor of IBS, recurrent abdominal pain (RAP) in children. More detailed summaries of these topics can be found in a recent book by Edward B. Blanchard (Blanchard, 2001), *Irritable Bowel Syndrome: Psychosocial Assessment and Treatment*.

Definitions of IBS

The formal definition of IBS is in a state of flux with a new definition, so-called Rome II, put forth in 1999 (Thompson et al., 1999). The three definitions are summarized in the Appendix.

To the best of our knowledge, no reported empirical studies have shown a functional advantage of one definition over another; that is, we found no instances in which cases that met the criteria responded differently to a specified treatment than similar cases that did not meet full criteria, or in which cases that met the criteria showed a different natural history, and so forth.

Epidemiology of IBS

Two well-conducted epidemiologic surveys have been published on American samples in the last 10 years: the Olmsted

County Study, by Talley, Zinsmeister, Van Dyke, and Melton (1991), and the U.S. Householder Survey of Functional Gastrointestinal Disorders, by Drossman et al. (1993).

In the Olmsted County Study, an age- and sex-stratified sample ($N = 1,021$) of the residents of Olmsted County, Minnesota, between the ages of 30 and 64 were sent a validated self-report questionnaire (Talley, Phillips, Melton, Wiltgen, & Zinsmeister, 1989) that identified GI symptoms experienced over the past year, thus leading to valid diagnoses of functional GI disorders. Altogether, 835 individuals (82%) returned usable surveys. Of these, 26% reported abdominal pain more than six times in the past year, 17.9% reported chronic diarrhea, and 17.4% chronic constipation. Talley et al. (1991) found an overall prevalence of IBS of 17.0% (range = 14.4–19.6; 95% confidence interval), with women outnumbering men 1.15 to 1.0. Of the 329 individuals with functional GI disorders, only 14% ($n = 46$) had seen a physician in the past year because of GI symptoms. In a second, larger study ($N = 4,108$) with a larger age range (20 to 95) that tapped the same geographical area, Talley, Gabriel, Harmsen, Zinsmeister, and Evans (1995) found a prevalence rate of IBS of 17.7%, with women outnumbering men 1.44 to 1.0. Using available data, they estimated the medical costs of IBS to be \$8 billion a year in the United States.

In the U.S. Householder Survey, Drossman et al. (1993) surveyed by questionnaire 8,250 U.S. households, stratified to be similar to the makeup of the United States on geographic region, age, and household size. The return rate was 65.8% (51% female,

Edward B. Blanchard, Center for Stress and Anxiety Disorders, University at Albany; Lisa Scharff, Pain Treatment Service, Children's Hospital, Boston, and Department of Psychiatry, Harvard Medical School.

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Correspondence concerning this article should be addressed to Edward B. Blanchard, Center for Stress and Anxiety Disorders, University at Albany, 1535 Western Avenue, Albany, New York 12203 or to Lisa Scharff, Pain Treatment Service, Children's Hospital, 300 Longwood Avenue, Boston, Massachusetts 02115. E-mail: Lisa.Scharff@tch.harvard.edu

¹ IBS is described as a functional disorder because there is no agreed on structural abnormality associated with it. It follows that there is no agreed on pathophysiology in IBS, a point echoed in the summary of a recent conference devoted to identifying possible models of the pathophysiology of IBS (Dent, 2000). This is not to imply that IBS symptoms occur in a physical vacuum. There are very rich innervations of the gut (the so-called enteric nervous system), and undoubtedly there are connections and influences on the gut. We do not know them yet, and a review of the relevant literature is outside of the scope of this article.

96% Caucasian). Overall, 69.3% of respondents acknowledged one or more functional GI disorders. According to Rome criteria, IBS was diagnosed in 606 individuals (11.2%), leading to a national estimate of prevalence of 9.4%. The sex ratio was 1.88 to 1 (female to male). It is interesting to note that IBS sufferers had missed an average of 13.4 days of work or school in the past year owing to IBS and other causes.

It is thus clear that IBS is a very large problem affecting 19 to 34 million American adults, costing almost \$10 billion in medical care and leading to possibly 250 million lost work or school days per year.

Psychological Distress and Psychiatric Comorbidity in IBS Patients

It has long been recognized that individuals with IBS who seek treatment (whom we term *IBS patients*) are, as a group, somewhat psychologically distressed. For example, Latimer et al. (1981) found significantly higher scores for IBS patients in comparison with normal controls on the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970); on the BDI, IBS patients on average scored 16.4, whereas normal controls scored 2.8; on the STAI-State, IBS patients scored 47.3, whereas controls scored 32.9. Likewise, Welgan, Meshkinpour, and Hoehler (1985) found significantly higher scores for IBS patients than normal controls on Scales 1, 2, and 3 of the Minnesota Multiphasic Personality Inventory (MMPI). Ten years later Schwarz et al. (1993) reported similar results, significantly higher scores for IBS patients than for normal controls for the BDI, STAI, and MMPI Scales 1, 2, 3, and 7. In a recent report of norms for the BDI and STAI from a large sample of IBS patients seen at the Center for Stress and Anxiety Disorders, Blanchard (2001) reported median scores on the BDI of 10, STAI-State of 48, and STAI-Trait of 48.

It thus seems clear that IBS patients as a group appear somewhat neurotic on standardized psychological tests. Of course, one needs to remember that many IBS patients will score in the normal range on these measures; for example, in Blanchard (1993) 32% had BDI scores of 6 or less.

Psychiatric Comorbidity in IBS

There is an equally long history of research reporting high rates of diagnosable psychiatric conditions among IBS patients. Two of the earliest studies used structured interviews based on the Washington University criteria published in Feighner et al. (1972), the predecessor of the *Diagnostic and Statistical Manual of Mental Disorders*, third edition (*DSM-III*; American Psychiatric Association, 1980) with its use of explicit inclusion and exclusion criteria. Liss, Alpers, and Woodruff (1973) found 92% of 25 IBS patients met the criteria for a specified psychiatric disorder or a residual category of "undiagnosed psychiatric disorder." In a second study, Young, Alpers, Norlend, and Woodruff (1976) found that 72% of 29 IBS patients met the criteria for a psychiatric diagnosis, as compared with only 18% of patients with other GI illnesses seen at the same clinic. For the most part, these studies found primary affective disorder, anxiety neurosis, and Briquet's syndrome.

More recent studies using *DSM-III-R* criteria and well-validated structured interviews have usually found high proportions of IBS patients meeting criteria for some Axis I condition. For example, Walker, Roy-Byrne, and Katon (1990), using the Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, & Ratcliff, 1981), found that 93% of IBS patients met criteria for at least one Axis I disorder in comparison with 19% of patients with inflammatory bowel disease (IBD), a GI disease with a fair degree of symptom overlap with IBS. In a similar study from our center (Blanchard, Scharff, Schwarz, Suls, & Barlow, 1990) using the Anxiety Disorders Interview Schedule (ADIS; DiNardo & Barlow, 1988) we found that 56% of IBS patients met criteria for an Axis I condition compared with 25% of patients with IBD and 18% of non-ill controls. Whereas Walker et al. found primarily mood disorders, especially major depression (76% of IBS patients), we found a high prevalence of anxiety disorders, especially generalized anxiety disorder, which had a prevalence of 21%.

There have been discrepant findings, notably a study by Blewett et al. (1996) conducted in the United Kingdom using the Composite International Diagnostic Interview (CIDI; Robins, Wing, & Wittchen, 1988). They found that only 33% of IBS patients met *DSM-III-R* criteria for an Axis I disorder, primarily major depression or panic disorder.

In an interesting study using an existing database (from the Epidemiologic Catchment Area Study; Robins & Regier, 1991) Walker, Katon, Jemelka, and Roy-Byrne (1992) examined the data from 18,571 cases assessed with the DIS. They classified cases as probably IBS when the individual had two of the following symptoms that were otherwise medically unexplained: abdominal pain, diarrhea, and constipation. They identified 412 cases of probable IBS (with no other pain problem) and compared them with cases with no GI symptoms. Individuals with probable IBS showed higher rates of major depression (13.4%), panic disorder (5.2%), and agoraphobia (17.8%). Clearly, there is a fair degree of diagnosable psychiatric morbidity among IBS patients.

At this point it is unclear what happens to the comorbid psychiatric disorder if the IBS is successfully treated. We do know from a study conducted by our center (Blanchard, Radnitz, Schwarz, Neff, & Gerardi, 1987) that IBS patients successfully treated with cognitive and behavioral procedures show significant reductions in BDI and STAI scores. For example, successfully treated patients showed significant reductions in BDI scores (pretreatment, $M = 14.3$; posttreatment, $M = 7.1$), whereas those for whom treatment did not lead to GI symptom relief did not change (pretreatment, $M = 13.6$; posttreatment, $M = 12.8$), nor did scores change among individuals in a symptom-monitoring control condition (pretreatment, $M = 14.3$; posttreatment, $M = 13.2$). It could thus be argued that IBS is a "somatopsychic" condition.

Which Comes First, Patienthood or Neurosis?

Several studies have addressed this question by comparing IBS patients (i.e., individuals with IBS who seek treatment) with what we have termed IBS nonpatients (i.e., individuals who meet the symptomatic criteria for IBS but who have not sought treatment for it—remember the large percentage of patients with functional GI symptoms who had not sought treatment in the Olmsted County epidemiologic study; Talley et al., 1991) on measures of psychopathology.

In the primary study, Drossman et al. (1988) compared 72 IBS patients with 82 IBS nonpatients, identified by a screening questionnaire, on the MMPI and McGill Pain Questionnaire (MPQ; Melzack, 1975). The IBS patients scored significantly higher on Scales 1, 2, 3, and 7 of the MMPI and on the MPQ.

In a companion article published simultaneously in the same journal, Whitehead et al. (1988) reported a similar study comparing clinic patients with IBS, functional bowel disorder (a condition similar to IBS), and lactose malabsorption with nonpatients from a women's church organization who met criteria but had never sought treatment. This time, the Hopkins Symptom Checklist (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974) was used. The three patient groups combined had higher scores on all scales than the comparable nonpatient groups combined. However, although there were arithmetic differences, no specific comparisons of the IBS patients and IBS nonpatients were reported. Thus, this study failed to replicate the Drossman et al. (1988) finding.

Two other studies, one antedating Drossman (Welch, Hillman, & Pomare, 1985) and one later (Whitehead, Burnett, Cook, & Taub, 1996), failed to find significant differences between IBS patients and IBS nonpatients using either the Hopkins Symptom Checklist (Derogatis et al., 1974) or its successor, the Symptom Checklist—90 (SCL-90; Derogatis, 1974). The Whitehead et al. (1996) study did find differences on five of nine subscales of a quality of life measure, the SF-36 (Ware, 1993).

Thus, it is unclear where truth lies: Differences between IBS patients and IBS nonpatients are found on the MMPI but not on the Hopkins Symptom Checklist or its successors. Thus, a seemingly important finding may be a measurement artifact, or the failures to replicate this finding may be artifacts.

The Role of Early Abuse in IBS

A possible explanation for the relatively high levels of psychological distress and psychiatric comorbidity found in IBS patients may lie in a body of work that began with an article published in 1990 by Douglas Drossman and his colleagues (Drossman, Leserman, et al., 1990) that documented a higher level of early (preadolescent) sexual and physical abuse among female patients with functional GI disorders than among comparable female patients with organic GI diseases. In every instance there was a higher prevalence of some form of early sexual abuse among those with functional disorders (53%) than among those with organic GI disorders (37%). Only the early history of physical abuse was statistically different between the two samples. Half of the group with functional GI disorders had IBS (38 of 75). Of the IBS patients, 19 of 38 (50%) reported early sexual or physical abuse.

Following Drossman, Leserman, et al.'s (1990) original report, two studies replicating the findings were published. Walker, Katon, Roy-Byrne, Jemelka, and Russo (1993) found a significantly greater history of sexual abuse among IBS patients (54%) than among a comparison group with IBD (5%). Talley, Fett, Zinsmeister, and Melton (1994), using the Olmsted County survey data, found that 50% of their 130 cases of IBS reported a history of sexual or physical abuse compared with 23.3% of those without IBS.

Later studies by these same research teams, however, have failed to confirm the initial findings. A replication by Talley, Fett, and Zinsmeister (1995) found no significant difference on total

previous physical and sexual abuse among 997 GI outpatients at the Mayo Clinic with functional GI disorders (22.1% positive) in comparison with those with organic GI disorders (16.2%). A report from Drossman's group (Leserman et al., 1996) failed to find any significant differences on sexual or physical abuse between patients with functional versus organic GI disorders (total sample of 239, all female). There was a history of sexual abuse in 55.2% of the total sample and a history of some form of abuse (sexual or physical) in 66.5%. A review article on the topic by Drossman, Talley, Leserman, Olden, and Barreiro (1995) concluded that the history of abuse among those with IBS seems greater the more severe the IBS is, with cases presenting to tertiary care centers averaging 50%.

An unpublished study from our center (summarized in Table 9.2 of Blanchard, 2001) compared responses to Drossman's original questionnaire among 34 IBS patients, 35 psychiatric patients attending an anxiety disorders clinic, and 27 students free of GI disorder. It found 47.1% of IBS patients reported childhood sexual abuse compared with 31.4% of psychiatric outpatients and 29.6% of nonpatients, thus replicating the values typically reported.

It seems clear that a large proportion of IBS patients will have a history of early sexual or physical abuse as well as a history of meeting the criteria for some Axis I psychiatric disorders (the prevalence of Axis II disorders among IBS patients has not been well studied as best we can determine). To the best of our knowledge, the degree of overlap between these two subgroups of IBS patients, that is, those with an abuse history and those who meet criteria for a psychiatric disorder, has not been reported. Finding substantial overlap could lead one to speculate that the early abuse may be responsible for frequently reported psychological distress and psychiatric comorbidity seen among IBS patient samples.

Treatments for IBS

Most IBS patients seek treatment for their symptoms from their physicians. In fact, very few IBS patients find their way to psychologists even though psychological treatments have been shown to be very effective with IBS (as summarized below).

Current Medical Treatments for IBS

Two of the leading medical researchers in the field of IBS, Douglas A. Drossman and W. Grant Thompson, published in 1992 a "graduated multicomponent treatment approach" to IBS. They divided the IBS patient population into three parts on the basis of severity and impact on the patient's life and gave different treatment recommendations for each part.

Mild IBS. About 70% of IBS patients are estimated to fall into this category. They are not believed to suffer from noticeable psychological or psychiatric comorbidity, and their disorders are episodic, not greatly interfering with their lives. For these patients, Drossman and Thompson (1992) recommend (a) education, (b) reassurance that the patient does not have a serious disease, and (c) possibly a dietary intervention to detect food sensitivities or the addition of fiber or bulking agents to the diet. Drossman and Thompson believe these patients do not need psychological help.

Moderate IBS. About 25% of IBS patients fall into this category; they are likely to have psychological or psychiatric comorbidity, and their lives are probably disrupted noticeably by their

symptoms. They are more likely to be found in the practices of the specialist, the gastroenterologist. Drossman and Thompson make some cautious pharmacotherapy recommendations for these patients and also suggest referral for mental health (e.g., psychological) services.

Severe IBS. The last 5% of IBS patients fall into this category. They are seen as refractory to most treatments and as having noticeable psychological and psychiatric comorbidity. Drossman and Thompson (1992) imply that these patients will not readily take a referral for mental health services. Their treatment recommendations are for a multidisciplinary approach as one would use for chronic pain problems including antidepressants and "physician-based behavioral techniques." (p. 1014)

The basis for the percentages is unclear. Thus, this represents more of a conceptual than an empirical subcategorization. However, it does give some idea of which IBS patients psychologists are likely to see.

Drossman and colleagues (Drossman, Li, et al., 1995) have described an illness severity index for patients with functional bowel disorders; the measure is dominated by pain complaints. It was validated against a 3-point rating scale (*mild, moderate, severe*) of illness severity by the treating physician. Although little additional information on the validity or utility of this measure is yet available, Sperber et al. (2000) have found large, significant differences among IBS patients, IBS nonpatients and normal non-ill controls in an Israeli sample.

A comprehensive review of the drug literature is beyond the scope of this article. Jackson et al. (2000) recently completed a meta-analysis of the effects of tricyclic antidepressants on functional GI disorders that included 11 placebo-controlled comparisons (9 on IBS and 2 on nonulcer dyspepsia). The average within-group effect size on pain with IBS was 0.95 D units. Most of the dosages were lower than those normally used with depressed patients. Thus, this class of drugs seems helpful in IBS, with the authors concluding that one should expect improvement in 1 patient for every 3.2 who receive the drug. No analyses were apparently done on differential effects of active drugs versus placebo.

A meta-analysis of the effects of antispasmodic, smooth muscle relaxants on IBS symptoms by Poynard, Regimbeau, and Benhamou (2001) examined 23 double-blind placebo-controlled trials. Mean percentage improvement in pain was 53% with active drug compared with 41% with placebo, for an odds ratio of 1.65 ($p < .001$; 95% confidence interval: 1.30–2.10). This is noticeably lower than the value found by Jackson et al. (2000) for tricyclic antidepressants.

As to dietary interventions, Mueller-Lissner (1988) published a meta-analytic review of the literature on the use of supplementary dietary fiber as a treatment for IBS. He concluded that for patients with constipation-predominant IBS, wheat bran supplements may bring stool weight and bowel transit time close to the normal range and thus may be of some value.

Psychological Treatments of IBS

In this section we present an overview of the research on the psychological treatment of IBS. This is limited to randomized controlled trials (RCTs) published in English. Limited details of these studies are presented in Table 1. We have omitted the 10

University at Albany studies (described below) from this table and summarize them later in Table 2.

There are at least three (and possibly six) distinctly different psychological treatments for IBS that have been evaluated in RCTs: brief psychodynamic psychotherapy, hypnotherapy, and various combinations of cognitive and behavioral treatments (CBT). Two of the components frequently included in CBT, relaxation training and cognitive therapy alone, have also been evaluated as individual treatments.

Brief psychodynamic psychotherapy. Although *brief* and *psychodynamic* may seem contradictory, this description is accurate. The treatments were delivered over a 3-month span and consisted of 10 visits in one instance and 7 in the other. Svedlund, Sjodin, Ottosson, and Dotevall (1983) compared brief psychodynamic therapy with conventional medical care. As Table 1 indicates, on global ratings the treated patients were significantly more improved than controls on pain at posttreatment and at the 12-month follow-up and on bowel dysfunction at follow-up.

In another large study, Guthrie, Creed, Davison, and Tomenson (1991) compared their version of brief psychodynamic psychotherapy plus home relaxation with conventional medical care. The treated group showed greater reductions than the controls in anxiety and depression. For women (about 75% of the total sample), the treated patients' global ratings of GI symptoms showed more improvement than the controls; there were similar results on physician ratings. Thus, both RCTs of psychodynamic psychotherapy show clear significant advantages over routine medical care. (We believe Guthrie and Creed are currently comparing their psychotherapy with an SSRI antidepressant.)

Hypnotherapy. In 1984 Whorwell, Prior, and Faragher reported on the successful treatment of relatively refractory cases of IBS using hypnotherapy. Treatment included an initial hypnotic induction using arm levitation and then further sessions (between 7 and 12) with attention to general relaxation and gaining control of intestinal motility with some attention to ego strengthening. The first RCT revealed that hypnotherapy was superior to a supportive psychotherapy control in reduction of pain, bowel habit disturbance, and bloating and that it led to an increase in sense of well-being.

In a later replication (Houghton, Heyman, & Whorwell, 1996) hypnotherapy was superior to a waiting list control in reduction of pain, bowel habit disturbance, and bloating; the treated patients also showed a greater change in quality of life ratings.

Harvey, Hinton, Gunary, and Barry (1989) reported an independent replication of the utility of hypnotherapy by comparing individually administered hypnotherapy with group administered hypnotherapy. There were no differences between the two forms of administration. Overall, according to patient diaries, 20 of 33 patients (60.6%) were symptom free or improved at a 3-month follow-up point.

Galovski and Blanchard (1998) completed an independent replication of Whorwell et al.'s (1984) hypnotherapy, using protocols supplied by Whorwell et al., in six matched pairs of IBS patients. Compared with a symptom-monitoring control, those treated initially with hypnotherapy showed significantly greater reduction in a composite measure of GI symptoms, on the basis of patient GI symptom diary, than the controls; 55% were clinically improved. There were also significant reductions in state and trait anxiety (as

Table 1
Controlled Studies of Psychological Treatment of IBS

Study	Conditions	N	No. sessions/ no. months ^a	% of sample improved ^b	Differential effects
Svedlund et al. (1983)	Psychotherapy + medical care Conventional medical care	50 51	10/3	—	Psychotherapy leads to significantly greater reduction than control in pain at posttreatment and follow-up.
Guthrie et al. (1991)	Psychotherapy + home relaxation Wait list	53 49	7/3 3 brief visits	67 23	Psychotherapy patients rate better ability to cope. Psychotherapy leads to significantly greater reduction in anxiety and depression than control. For females, patient global ratings show greater change for psychotherapy than controls on all GI symptoms combined, and also for physician global rating.
Whorwell et al. (1984)	Hypnotherapy + home autohypnotherapy Placebo + support psychotherapy	15 15	7/3 7/3	100	Hypnotherapy leads to significantly greater change in pain, bowel habit disturbance, and bloating and improved well being than control. No differential effect; both forms of hypnotherapy worked.
Harvey et al. (1989)	Hypnotherapy Individual Group	16 17	5/3	50 70	
Houghton et al. (1996)	Hypnotherapy Wait list	25 25	12/3	—	Hypnotherapy superior to control on pain, bloating, bowel dissatisfaction and improved quality of life. CBT improved significantly more on STAI-State than drug treatment.
Bennett and Wilkinson (1985)	CBT Medical care three drugs	12 12	8/8 weeks 2 visits	—	
Lynch and Zamble (1989)	CBT Wait list	11 10	8/8 weeks	64 0	CBT improved more than wait list on abdominal pain, discomfort, constipation, and STAI-Trait.
Shaw et al. (1991)	Stress management (relaxation) Drug (Colpermin)	18 17	6/6	50 12	Stress management rated greater global improvement than drug. CBT avoided foods and tasks significantly less than regular medical care.
Corney et al. (1991)	CBT Regular medical care	22 20	6-16/3	59 30	
Van Dulmen et al. (1996)	CBT (group) Wait list	27 20	8/3	44 11	CBT improved more than wait list on GI symptom composite from diary.
Toner et al. (1998)	CBT (group) Psychoeducation (group) Regular medical care	101 total ? ?	12/3 12/3	—	CBT showed more improvement on BDI than medical care. CBT showed more improvement on bloating than medical care.

Note. IBS = irritable bowel syndrome; GI = gastrointestinal; CBT = cognitive-behavioral therapy; STAI = State-Trait Anxiety Inventory; BDI = Beck Depression Inventory.
^a Number represents months unless stated otherwise. ^b Dashes indicate that values were not reported.

Table 2
Treatment Parameters and Outcome for Albany Treatment Studies of Irritable Bowel Syndrome

Study	Conditions	N	% with Axis I ^a	No. sessions/ no. weeks	CPSR score	% sample improved
Neff and Blanchard (1987)	Study 2					
	CBT	10	—	12/8	50.4	60
	SM	9	—	—	15.4	11
	Treat SM (CBT)	7	—	—	—	43
Blanchard and Schwarz (1987)	CBT (group)	14	—	12/8	47.5	64
Blanchard et al. (1992)	Study 1					
	CBT	10	—	12/8	45.2	60
	Attention–placebo	10	—	12/8	38.0	50
	SM	10	—	—	9.5	20
	Study 2					
	CBT	31	51	12/8	32.4	52
	Attention–placebo	30	50	12/8	30.2	47
	SM	31	58	—	6.4	32
	Treat SM (CBT)	30	—	—	—	40
Blanchard et al. (1993)	Relaxation training (PMR)	8	50	10/8	51.6	50
	SM	8	63	—	–1.4	0
Greene and Blanchard (1994)	Cognitive therapy	10	90	10/1	66.0	80
	SM	10	90	—	2.0	10
	Treat SM (cognitive therapy)	6	—	—	64.0	66
Payne and Blanchard (1995)	Cognitive therapy	12	83	10/8	67	75
	Support group	12	92	8/8	31	25
	SM	10	80	—	10	10
Vollmer and Blanchard (1998)	Cognitive therapy (individual)	11	82	10/10	46	55
	Cognitive therapy (group)	11	82	10/10	52	64
	SM	10	90	—	–4	10
Galovski and Blanchard (1998)	Hypnotherapy	6	50	12/12	55	60
	SM	6	50	—	–32	0
	Treat SM (hypnotherapy)	6	—	—	47	50
Keefe and Blanchard (2001)	Relaxation training (meditation)	6	83	6/6	51	66
	SM	7	71	—	–15	0
	Treat SM (meditation)	7	—	—	63	71

Note. CPSR = composite primary symptom reduction; CBT = cognitive–behavioral therapy; SM = symptom monitoring; PMR = progressive muscle relaxation.

^a Dashes indicate that values were not reported.

measured by the STAI). Symptom relief was not related to initial hypnotic susceptibility.

Overall, hypnotherapy was well supported as a treatment for IBS with two independent replications of Whorwell et al.'s (1984) procedures. Moreover, it has been accepted in the United Kingdom as a treatment covered by the National Health Service (P. J. Whorwell, personal communication, 1999).

Cognitive and behavioral treatments. Over the last 15 years there have been a series of small- and medium-sized trials evaluating various combinations of behavioral and cognitive procedures as treatments for IBS. (These combinations are referred to as cognitive behavioral therapy, or CBT.) The University at Albany studies (described below), which fall into this broad category, are summarized separately in Table 2.

Bennett and Wilkinson (1985) reported on the first CBT trial comparing a combination of progressive muscle relaxation, education, and modification of self-talk with a combination of drugs. The treatments were equally effective except that the CBT condition led to significantly greater reduction in state anxiety. Lynch and Zamble (1989) compared CBT with a wait list condition and found that active treatment led to greater improvement in abdominal pain and discomfort, constipation, and STAI–Trait. Shaw et al.

(1991) found that stress management emphasizing progressive muscle relaxation was superior to a drug treatment on global ratings. Corney, Stanton, Newell, Clare, and Fairclough (1991) compared CBT to regular medical care and found that approximately twice as many CBT participants improved (59%) as for routine medical care over 3 months (30%).

Two studies have investigated delivery of CBT in small groups. Van Dulmen, Fennis, and Bleijenberg (1996) found that CBT led to greater improvement than a wait list control on a composite measure derived from a GI symptom diary. In an elegant study involving 101 women with IBS, Toner et al. (1998) compared CBT with a psychoeducational group and with regular medical care. The CBT condition was apparently not superior to the psychoeducational group on any measure. However, it was superior to routine medical care in reducing depression (as measured by the BDI) and bloating. (Toner's CBT treatment is currently being compared with a tricyclic antidepressant in a two-site study; Toner, personal communication, 1999.)

Although there have been more separate investigations of CBT than any other therapy, the results are not as consistently strong as those for hypnotherapy and brief psychodynamic psychotherapy in terms of differential effectiveness vis à vis the control conditions.

Nevertheless, CBT does seem a viable alternative treatment for IBS.

The University at Albany studies. Since the mid-1980s Blanchard and colleagues have been evaluating in RCTs various cognitive and behavioral techniques as treatment for IBS. Advantages of this series are that the same assessment procedures, including the same GI symptom diary, were used in all studies; thus, they are readily comparable. Blanchard and colleagues started off evaluating a cognitive behavioral treatment package consisting of education, relaxation training (progressive muscle relaxation), thermal biofeedback, and elements of cognitive therapy in comparison with symptom monitoring (Blanchard & Schwarz, 1987; Neff & Blanchard, 1987). They next evaluated the CBT combination in comparison with an attention placebo condition (pseudomeditation and EEG biofeedback for alpha suppression) and with a symptom-monitoring condition (Blanchard et al., 1992 [two separate studies]).

Next, Blanchard and colleagues examined individual components of the treatment package, including relaxation (progressive muscle relaxation) alone in comparison with symptom monitoring (Blanchard, Greene, Scharff, & Schwarz-McMorris, 1993) and cognitive therapy alone (Greene & Blanchard, 1994) in comparison with symptom monitoring. Next, the cognitive therapy was compared with both a support group and symptom monitoring (Payne & Blanchard, 1995). They also compared cognitive therapy delivered individually and in small groups (Vollmer & Blanchard, 1998). As noted earlier, Blanchard and colleagues also evaluated hypnotherapy (Galovski & Blanchard, 1998). Their most recent study (Keefer & Blanchard, 2001) evaluated a simpler form of relaxation, meditation, described by Benson (1975) as the "relaxation response." In all studies Blanchard and colleagues calculated a composite score called the composite primary symptom reduction (CPSR) score based on pretreatment and posttreatment diary ratings of abdominal pain and tenderness, diarrhea, and constipation. It thus represents the average percentage reduction in these symptoms. This score is presented for each treatment condition in each study. Following the recommendation of Blanchard and Schwarz's (1988) review of clinically significant change in behavioral medicine, we have termed a patient improved if his or her CPSR score was 50 or greater.

Two things stand out in the results in Table 2. First, the CBT condition was not superior to the attention placebo control condition, echoing Toner et al.'s (1998) later results. Second, cognitive therapy alone has produced the most consistent results. In Payne and Blanchard (1995) it was shown to be superior to support groups that were equally credible and aroused equally positive expectations.

We should add that the positive results found with CBT held up over diary-validated follow-ups at 1, 2, and 4 years (see Schwarz, Taylor, Scharff, & Blanchard, 1990, for the 4-year results). We are currently in the midst of a large scale, two-site replication of the Payne and Blanchard (1995) study.

Conclusions. Hypnotherapy has the strongest empirical support: It is superior to a placebo control (Whorwell et al., 1984), and it has been replicated at two other sites in RCTs: Harvey et al. (1989) and Galovski and Blanchard (1999). Good follow-up results have been reported (Whorwell, Prior, & Colgan, 1987).

The next strongest results are for cognitive therapy: It is superior to a placebo control, and three separate RCTs support it, conducted

at the same site. It has not been replicated outside of Albany, however. Brief psychodynamic psychotherapy has two RCTs supporting it, conducted at separate sites, and the results have held up at a 1-year follow-up.

Various cognitive and behavioral combinations have mixed support: There are several studies from different sites showing that they are superior to symptom monitoring. Good long-term maintenance of results is available. However, in three trials (Blanchard et al., 1992, Studies 1 and 2; Toner et al., 1998) CBT has not been superior to a credible attention placebo condition.

RAP in Children

Research on RAP in children is more limited than similar research on IBS. One of the difficulties for researchers in this area is the definition of RAP itself. Apley and Naish (1958) operationally defined RAP as at least three episodes of pain occurring within 3 months that are severe enough to affect the child's activities. Unlike IBS, RAP has no set of symptom-focused diagnostic criteria, and a diagnosis of RAP does not preclude a diagnosis of IBS. Hyams and colleagues (Hyams, Burke, Davis, Rzepski, & Androlonis, 1996) conducted a community-based study of RAP and IBS in school-age children and reported that 13% to 17% experienced abdominal pain at least weekly. The authors also estimated that 6% of middle school children and 14% of high school children would qualify for a diagnosis of IBS. The same investigators (Hyams et al., 1995) applied the Rome IBS diagnostic criteria (Thompson, Dotevall, Drossman, Heaton, & Krus, 1989) to children meeting the Apley and Naish criteria for RAP presenting at a gastroenterology clinic. Of the 171 patients without an organic diagnosis for pain, 117 (68%) fulfilled criteria for a diagnosis of IBS.

A recent review article (Burke, Elliott, & Fleissner, 1999) that investigated the similarities between IBS and RAP noted multiple common factors, including prevalence, prognosis, psychiatric comorbidity, family history of somatic and psychiatric symptoms, and stressful life events as symptom triggers. The prevalence of the symptom of recurrent abdominal pain is similar in child and adult populations; however, the prevalence rate of accompanying IBS symptoms such as altered bowel habits appears to increase with age (Hyams et al., 1996). It is possible that this is related to developmental changes that affect intestinal motility, but in some children, altered bowel habits do not appear as they grow older or the abdominal pain simply resolves with time.

Although a subset of children with RAP qualify for a diagnosis of IBS, many experience recurrent pain with no additional GI symptoms or, alternatively, may experience multiple symptoms in addition to abdominal pain, including altered bowel habits, cyclic vomiting, and migraine. The Apley and Naish (1958) definition of RAP does not specifically exclude children with organic diagnoses or chronic constipation, although most RAP researchers add these exclusion criteria. Organic diagnoses are identified less than 10% of the time (Apley, 1975; Stone & Barbero, 1970).

There has been growing recognition that a valid and reliable set of symptom-based diagnostic criteria is sorely needed for this population of recurrent pain sufferers (Von Baeyer & Walker, 1999). A recent meeting of experts in childhood GI disorders developed Rome II criteria for the diagnosis of multiple pediatric functional GI complaints but did not develop new diagnostic

criteria for RAP for several reasons: because of their consensus that this diagnosis was too vague, because there was a great deal of overlap between RAP and the established criteria for IBS and functional dyspepsia, and because of developing research regarding the pathogenesis of abdominal pain in children (Hyman et al., 2000). The diagnostic category "functional abdominal pain" was included in the Rome II criteria, with the following diagnostic criteria: at least 12 weeks duration of (a) continuous or nearly continuous abdominal pain in a school-aged child or adolescent; (b) no or only occasional relationship of pain with physiological events (e.g., eating, menses, or defecation); (c) some loss of daily functioning; (d) nonfeigned pain (e.g., not malingering); and (e) insufficient criteria for other functional GI disorders that would explain the abdominal pain.

This new functional abdominal pain diagnosis was not intended as a substitute for Apley and Naish's (1958) RAP definition. Pediatric abdominal pain sufferers who previously met Apley and Naish's RAP criteria would, under the new Rome II criteria, be categorized into multiple categories, including IBS, functional dyspepsia, functional abdominal pain, and abdominal migraine. The development of the Rome II criteria will allow for research on symptom constellations and their associations with physical findings and treatment outcomes. To date, few studies have investigated the prevalence of accompanying symptoms in children with RAP, and none have determined whether accompanying symptoms have an association with prognosis or treatment indications. The term *RAP* itself will likely be abandoned because of its vague definition, but it is used in this article because Apley and Naish's definition and term is the one used in the majority of previous research reviewed here.

Because of the heterogeneity of functional GI disorders subsumed under the label of RAP, prevalence rate studies have reported results that vary greatly, ranging from 9% to nearly 25% (Apley, 1975; Kristjansdottir, 1996; Zuckerman, Stevenson, & Bailey, 1987). The majority of such studies have noted that there are no gender differences in the prevalence rate in younger children but that girls over age 12 are more likely to report RAP than older boys. Stickler and Murphy (1979), along with Kristjansdottir (1996), reported a higher prevalence of RAP in children at age 11 to 12 compared with teenagers, indicating a peak in age at preadolescence, after which prevalence decreases more for boys than for girls.

RAP has a high cost in suffering, missed school days, and health care resource use. Whether or not an organic diagnosis is identified, RAP is associated with elevated levels of both anxiety and depression in both patients and their parents (Walker & Greene, 1987, 1989). The psychological factors that affect the reporting of and treatment seeking for RAP are multiple, and as with IBS, stressful life events, family history, and models for pain behaviors can have powerful influence on symptom expression (for a review, see Scharff, 1997).

Prognosis of RAP and Its Relationship to IBS

Follow-up studies of children with RAP clearly show that these patients are at relatively high risk of continued pain, additional somatic symptoms, functional disability, and increased use of health care resources (Walker, Garber, Van Slyke, & Greene, 1995). Several long-term follow-up studies have identified a rela-

tionship between RAP in childhood and a high prevalence of continued abdominal pain in adulthood or the development of other somatic symptoms, such as chronic headache (e.g., Christensen & Mortensen, 1975; Hotopf, Carr, Mayou, Wadsworth, & Wessely, 1998; Walker, Guite, Duke, Barnard, & Greene, 1998).

Christensen and Mortensen (1975) conducted a 28- to 29-year follow-up with RAP patients and reported that 11 of 18 former RAP sufferers (61%) reported continued abdominal pain. All 11 patients also reported other symptoms consistent with IBS. Walker et al. (1998) conducted a 5-year follow-up study of 76 children who had been diagnosed with RAP without IBS symptoms. Eighteen percent of the sample met three or more of the Manning criteria for IBS (Manning, Thompson, Heaton, & Morris, 1978) at follow-up. Girls with a history of RAP were more likely to qualify for a diagnosis of IBS in comparison with controls.

Whether or not RAP develops into IBS may depend on a number of factors, one of which may be how well the child learns to cope with stressors that can trigger RAP (Compas, 1999). In a 1-year follow-up study of RAP patients, Walker, Garber, and Greene (1994) identified a relationship between stressful events and continued RAP, but only in children who scored low in social competence or whose parents demonstrated high levels of somatic symptoms. Coping skills may be an important link to the continuance of RAP and possibly its development into IBS. The lack of reliable and valid stress-coping measures for children has impeded research in this area.

Treatment of RAP in Children

Treatment of RAP has not been as widely researched as IBS, and the literature on this subject generally involves less well controlled treatments as well as fewer study participants than its adult counterpart (Janicke & Finney, 1999). The standard treatment for RAP is physician reassurance that nothing is seriously wrong with the child and that the symptoms will likely improve with time. Unless the treating physician notes significant psychological symptoms, such as school refusal, referrals for psychosocial treatment of RAP are rarely made.

In general, there are two categories of biobehavioral treatment studies for RAP: case studies that use operant (i.e., reinforcement-punishment) approaches to reduce pain complaints and cognitive-behavioral therapy (CBT) approaches similar to those used in IBS treatment studies.

Several operant treatment programs have demonstrated success in the treatment of RAP. Miller and Kratochwill (1979) successfully used a time-out procedure with a 10-year-old girl to reduce RAP complaints at both home and school. Single case reports of token systems (Sank & Biglan, 1974) and positive reinforcement (Wasserman, 1978) have also reported successful use of operant-based techniques to reduce pain complaints. The use of operant conditioning alone is not generally recommended as a treatment for RAP; however, the case studies presented above demonstrate that operant principles have some influence in the reporting of RAP.

CBT strategies have also been successfully investigated, although the conclusions that can be drawn from the results of such studies are limited. CBT treatments for children often have similar components to adult IBS nonmedical treatments, including stress management training as well as instruction in relaxation, but also

generally add an operant component to the treatment in the form of training parents to avoid reinforcing sick behaviors and to reward healthy behaviors.

In a case-series design, Finney, Lemanek, Cataldo, Katz, and Fuqua (1989) used a multicomponent behavioral treatment in 16 children with RAP. It included a variable number of sessions with components such as symptom monitoring, parent training, relaxation training, increased dietary fiber, and required school attendance. At the end of the treatment, 25% of the participants demonstrated no abdominal pain symptoms, and 56% were rated "improved."

Only two controlled investigations of a standardized CBT treatment have been published, both by the same primary investigator. Sanders et al. (1989) used a control group to assess the utility of a CBT treatment consisting of stress management and parent training with 16 RAP patients. Although both the treatment and control groups demonstrated symptom improvement, 75% of the treated group were pain free at the end of treatment compared with 25% of the controls. In a second study, Sanders, Shepherd, Cleghorn, and Woolford (1994) enrolled 44 children with RAP, who were then randomized to CBT treatment or a comparison group of the standard medical treatment of assurance. Both treatments resulted in a significant decrease in symptoms; however, the CBT group contained significantly more pain-free children at the end of treatment as well as at the 12-month follow-up. Of the patients receiving CBT, 55.6% were reportedly pain free at the end of treatment compared with 23.8% of the standard care patients. Improvement was maintained at the 12-month follow-up.

The above studies demonstrate that CBT in conjunction with parent training works well in the treatment of RAP and likely is more efficacious than physician reassurance or no treatment at all. Certainly, continued research in the area is called for, with an emphasis on larger controlled studies. Treatment elements that have been used in studies with adult IBS patients, such as biofeedback (Blanchard & Schwarz, 1987; Blanchard et al., 1992) and hypnotherapy (Whorwell et al., 1984), should also be examined as potential treatments for RAP.

Future Research Directions

In this concluding section we highlight some directions for future research in IBS and RAP. Some represent brief restatements of points made earlier, whereas others are more lengthy.

1. Given the relatively high percentage of IBS patients who meet criteria for an Axis I psychiatric disorder and the similarly high percentage who have a history of early sexual or physical abuse, one wonders about the overlap of these two populations and whether the early abuse might be the cause of the Axis I disorders.

2. On a similar note, we wonder what role Axis II disorders (personality disorders) might play in IBS. If they are present in a treatment-seeking IBS population to any large degree, could they also be linked to early abuse, and does their presence predict treatment outcome?

3. One also might wonder which comes first, the IBS or the Axis I disorder, and whether one might play a causal role in the development of the other.

4. A related question is what happens to the IBS patient's Axis I disorders when the IBS is successfully treated. We know from our own work (see Blanchard, 2001, Chapter 6) that psychological

distress, as measured by instruments such as the BDI, is relieved by successful nondrug treatments. One wonders what happens to the comorbid Axis I disorders in patients receiving psychological (or even drug) treatment for the IBS.

5. As pointed out in the text, there is a discrepancy in measures of psychopathology (MMPI and SCL-90) between IBS patients and IBS nonpatients. Clearly what is needed is research like Drossman et al.'s (1988) study using both measures.

6. Almost nothing is known about the mechanisms by which psychological treatments have therapeutic effect on IBS patients' GI symptoms, partly because the pathophysiology of IBS is unclear (see Footnote 1).

One hint as to a mechanism comes from the study of cognitive therapy by Payne and Blanchard (1995). In that study participants were given the Hassles Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981) before and after treatment. There were no changes in frequency or distress for the two control conditions; however, for those treated with cognitive therapy, there was no change in frequency of hassles from before to after treatment, but the distress caused by these minor annoyances was significantly lower at posttreatment, implying that patients had learned how to deal with minor life stresses in treatment.

7. On a related topic, the vast majority of IBS patients seeking psychological treatment for their GI symptoms identify stress as a major factor in symptom exacerbations. A careful reading of the literature on the role of stress, or stressful events, and IBS (summarized in Blanchard, 2001, Chapter 8) leads to the conclusion that there are significant correlations of same-day measures of stress and GI symptoms but that there is little or no evidence of stressful events on one day leading to an exacerbation of IBS symptoms the next. More research using some of the newer multivariate procedures is needed on this point. The failure of one such study from our center (Suls, Wan, & Blanchard, 1994) needs to be replicated with larger samples.

Thus, we do not yet know whether teaching IBS patients how to handle stress in their lives more adaptively is a good idea and a causal mechanism.

8. We mentioned earlier that some research has found differences in a quality of life measure, the SF-36 (Ware, 1993) between IBS patients and IBS nonpatients. This has led to some interest in quality of life matters for IBS patients and whether there should be a measure of quality of life in IBS treatment research. To the best of our knowledge, no psychosocial treatment research has included such a measure.

Drossman and colleagues (Drossman et al., 2000; Patrick, Drossman, Frederick, Dicesare, & Puder, 1998) have developed a disease-specific measure of quality of life for IBS that may find a use here. Two other similar measures have been reported. One, by Hahn and colleagues (Hahn, Kirchdoerfer, Fullerton, & Mayer, 1997), known as the Irritable Bowel Syndrome Quality of Life, has been tested and normed on both American and British samples (Hahn, Yan, & Strassels, 1999). The other, the Functional Digestive Diseases Quality of Life, developed by a European group (Chassany et al., 1999), has been normed and validated in French, German, and English (Chassany & Bergmann, 1998) and has been shown to be sensitive to drug treatment effects.

9. What is obviously missing from the psychosocial treatment literature are large-scale, carefully conducted RCTs comparing two or more of the successful psychological treatments for IBS.

Such research could easily yield no differences among conditions. Conducted on a large enough scale, one might be able to identify, post hoc, what kind of IBS patient responded more readily to one form of treatment or the other.

10. Finally, one might want to compare drug and nondrug treatments, and their combination. As noted earlier, we believe that one such trial is underway in the United Kingdom and that another, using CBT and antidepressants, is underway in a joint U.S.–Canadian study. We await the outcomes.

An interesting beginning of this kind of research can be found in a recent study by Heymann-Monnikes et al. (2000), who compared carefully tailored multidrug treatment for IBS ($n = 12$) with the same drug treatment plus a 10-session multicomponent CBT treatment ($n = 12$). The combined drug–CBT group showed significantly greater reduction in IBS symptoms and BDI scores as well as greater gains in overall well-being. The improvements persisted at a 6-month follow-up. Interestingly, the medical-care-alone condition showed no improvement on any measure, leading one to question its efficacy. Clearly the addition of CBT to medical care made a significant difference.

11. Research regarding children with functional GI symptoms is, in comparison with the adult literature, in its infancy. The recently developed Rome II criteria for childhood GI disorders provide a framework for the development of future research with a set of symptom-based diagnostic criteria. Research regarding epidemiology, prevalence, and long-term outcomes needs to be conducted with these children.

12. Psychological assessment studies of childhood IBS, functional abdominal pain, and other functional GI disorders of childhood have not distinguished between children with specific symptom complaints, instead lumping these children together with the definition of RAP. Studies of IBS in adults have identified elevated levels of anxiety and depression as commonly associated with concerns related to specific symptoms (e.g., fear of being away from a bathroom). Such studies have not been conducted with children.

13. School refusal is often associated with RAP and can be a result of multiple factors itself, including social phobia, social skills deficits, learning disability, and teasing. Further investigation is required to learn more about how many children with RAP face difficulties in school, the nature of these difficulties, and how to identify them in individual patients seeking treatment for abdominal pain.

14. Family factors including secondary gain, modeling, and maintaining dysfunctional family behavior patterns in childhood GI symptoms are in need of investigation. It is common for clinicians to suspect these factors as having a strong influence in many pediatric pain complaints; however, they have not been thoroughly researched.

15. Systematic research of appropriate treatments of functional GI pain in children is clearly needed. Research using large groups, state-of-the-art methodology, and treatment strategies that have been useful in adult studies, such as biofeedback, is required.

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(Appendix follows)

Appendix

Different Diagnostic Criteria for Irritable Bowel Syndrome (IBS)

Clinical Criteria for Diagnosing IBS	Rome Criteria for IBS	Diagnostic Criteria for IBS (Rome II Criteria)
<p>1. Recurrent abdominal pain or extreme abdominal tenderness.</p> <p>2. Accompanied by disordered bowel habit:</p> <ul style="list-style-type: none"> a. diarrhea, b. constipation, or c. alternating diarrhea and constipation. <p>3. Present for at least 3 months or longer, much of the time.</p> <p>4. Diagnosed after appropriate medical tests have ruled out</p> <ul style="list-style-type: none"> a. inflammatory bowel disease, b. lactose intolerance or malabsorption, c. intestinal parasites, and d. other rare gastrointestinal diseases. 	<p>1. At least 3 months of continuous or recurrent symptoms of</p> <p>2. Abdominal pain or discomfort that is</p> <ul style="list-style-type: none"> a. relieved with defecation, and/or b. associated with a change in frequency of stool matter, and/or c. associated with change in consistency of stool. <p>and</p> <p>3. Two or more of the following symptoms, on at least one-fourth of occasions or days (at least 3 days a week):</p> <ul style="list-style-type: none"> a. altered stool frequency (more than three bowel movements each day or less than three bowel movements per week), b. altered stool form (lumpy, hard, loose, or watery), c. altered stool passage (straining, urgency, feeling of incomplete evacuation), d. passage of mucus, and e. bloating or feeling abdominal "distention." 	<p>1. At least 12 weeks, which need not be consecutive, in the preceding 12 months of abdominal discomfort or pain that has two out of three features:</p> <ul style="list-style-type: none"> a. relieved with defecation, and/or b. onset associated with a change in frequency of stool, and/or c. onset associated with a change in form (appearance) of stool. <p>2. Symptoms that cumulatively support the diagnosis of IBS:</p> <ul style="list-style-type: none"> a. abnormal stool frequency (for research purposes, <i>abnormal</i> may be defined as greater than three bowel movements per day and less than three bowel movements per week), b. abnormal stool form (lumpy/hard or loose/watery stool), c. abnormal stool passage (straining, urgency, or feeling of incomplete evacuation), d. passage of mucus, and e. bloating or feeling of abdominal distension.

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