

## Psychosocial Factors Are Associated With Health Care Seeking Rather Than Diagnosis in Irritable Bowel Syndrome

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The objective of this prospective study was to test the hypothesis that 6 reportedly important psychosocial factors were useful criteria for diagnosing the irritable bowel syndrome. Ninety-seven new patients with entry complaints of abdominal pain, altered bowel habits, or both underwent full evaluation by board-certified or -eligible gastroenterologists in an outpatient setting. The independent measures were 6 questionnaires concerning anxiety, depression, stress, lack of social support, somatization, and abnormal illness behavior. The dependent measure, irritable bowel syndrome, was defined as the absence of an organic disease explanation for patients' entry complaints. Two other board-certified gastroenterologists, independent of the study, made this determination. Their rating was based on full review of transcripts of patients' clinic visits, laboratory data, and the results of a 9-mo telephone follow-up to patients and their physicians. Sixty-five percent of the sample had no organic disease explanation for the entry symptoms, thereby representing irritable bowel syndrome. The psychosocial predictors did not show a significant association with irritable bowel syndrome; the power of the study was 0.86. Post hoc analysis revealed that patients with organic disease, as well as patients with irritable bowel syndrome, had significantly more ( $p < 0.01$ ) psychosocial abnormality than normal subjects, which likely contributed to the inability of the psychosocial predictors to distinguish irritable bowel syndrome from organic disease. It was concluded that psychosocial criteria were of limited value in differentiating irritable bowel syndrome from organic disease but that they were determinants of health care seeking for the entire study group.

Patients with the irritable bowel syndrome (IBS) have abdominal pain and alteration of bowel habits as their primary complaints (1-5). These physical symptoms have no organic disease basis, and there is no agreed-upon physiological mechanism (6,7). The physical complaints usually occur, however, in association with psychological symptoms (6). Furthermore, IBS is common and expensive (8,9), with an estimated prevalence of 14%-22% in selected nonpatient populations (10,11). Approximately 100,000 hospitalized patients receive a primary diagnosis of IBS yearly (12), and 40% of all gastroenterology referrals are functional, with IBS representing most of these (13).

The absence of a definitive diagnostic approach to this common problem (2-4) and of a gold standard diagnosis (14,15) has made IBS an extremely difficult problem for clinicians. Although Manning et al. (3) and Kruis et al. (4) have developed diagnostic criteria based on certain physical symptoms, these lack sufficient accuracy to be used alone (3,5,14,16-18). To make a diagnosis of IBS, physicians have for the most part been forced to rely on multiple laboratory investigations to rule out organic disease (1-5).

Because of the prominence of psychological factors associated with IBS, however, it has been suggested that they be tested as positive diagnostic criteria (1). Anxiety and depression are present in more than two thirds of psychiatric interviews with IBS patients (19).

*Abbreviations used in this paper:* CES-D, Center for Epidemiologic Studies of Depression; IBQ, Illness Behavior Questionnaire; IBS, irritable bowel syndrome; SDS, Support Dimension Scale; SUNYA, State University of New York at Albany.

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Other studies, using stringent research diagnostic criteria (20), have revealed psychiatric diagnoses in 72%–100% of IBS patients (21–23); hysteria, depression, and anxiety have been most frequent. In addition, stress is associated with the onset of IBS in more than one half of patients (10), life event stress is prominent (24), and both classical and operant conditioning mechanisms are proposed as important factors in the development of IBS (6,25). Somatization also has been prominently associated with IBS (24). Further, it has been shown that psychological abnormalities are confined to IBS patients who seek health care (11,26–30) and that patients with similar complaints who do not seek care exhibit psychological profiles similar to those without symptoms (27,29); however, these findings were not corroborated in a study in New Zealand (31).

The purpose of the present study was to test the hypothesis that a variety of reportedly important psychological measures, used alone and in combination with the Manning criteria, would distinguish IBS from organic disease.

## Methods

### Design

This study prospectively evaluated the relationship of several independent measures to the diagnosis of IBS. The specific hypotheses tested, with significance defined at the 0.05 level, were twofold: (a) that psychological criteria reported to be associated with IBS would distinguish IBS from organic disease; and (b) that a combination of the Manning criteria and the psychological predictors would represent the most effective diagnostic criteria for IBS. Although many independent variables were considered, only the 6 psychosocial scales described later were considered for hypothesis-testing purposes.

### Subjects

This study was approved by the institutional review boards of Michigan State University and Ingham Medical Center. As shown in Figure 1, 279 new patients presenting consecutively to the gastroenterology clinics were considered for this study. Of those, 148 met the entry criteria of at least 1 month of continuous or intermittent abdominal distress, altered bowel habits, or both. Seventeen of these patients refused to participate because of emotional distress ( $n = 5$ ), lack of time or interest ( $n = 8$ ), or no reason given ( $n = 4$ ). Another 34 had incomplete data sets (due to failure to return for follow-up), leaving 97 subjects in the study sample. A comparison between the patients with incomplete data sets and the study population revealed that patients in the study population had significantly fewer complaints of constipation, diarrhea, and the Manning criteria ( $p < 0.01$ ) but no differences on the psychological variables. Twenty-six of the 97 subjects in the study sample were self-referred to the clinic.

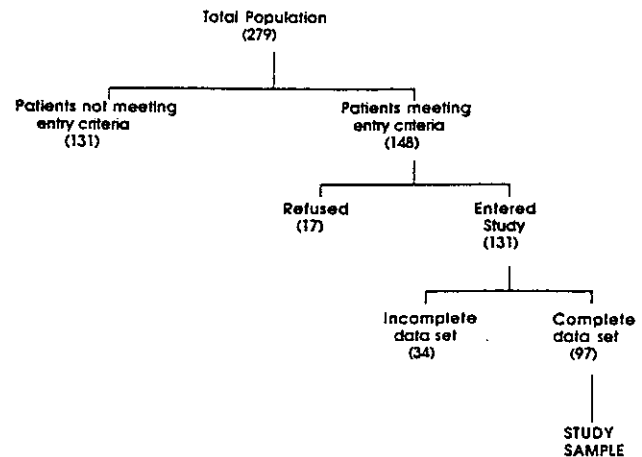


Figure 1. Selection of the study sample.

Of the 97 subjects, 36 were male and 61 were female. Eighty-one subjects were white, 14 were black and 2 were considered as other ethnicity. Sixty-two were married, 21 were single, 4 were separated, 4 were divorced, and 6 were widowed. Of the total sample, 4 had entered into 1 of these last 3 categories within the 6 mo before entry into the study. Fifty-one of the subjects were employed. Of the 46 who were not employed, 29 were not employed by choice. Subjects ranged in age from 19 to 86 years, with 47 the mean age.

### Measures

**Dependent variable.** Irritable bowel syndrome, the dependent measure, was operationally defined as the absence of an organic disease explanation for the entry complaints, as in the studies of Manning et al. (3) and Kruis et al. (4). The dependent measure was determined by a rating from 2 board-certified gastroenterologists who were independent of the study and unaware of its design or hypothesis. Raters were instructed to rate organic disease only when objective data that explained the entry complaints were present; laboratory and other investigative information, death, clearly abnormal physical examination findings, classical histories (rare), and severe clinical deterioration (rare) qualified as objective evidence of organic disease. The raters reviewed typed copies of the patients' study visit charts, all available medical information from before the study, all laboratory data obtained during the 9 mo of the study, and the results of a 9-mo telephone follow-up. Each rated all 97 patients following a 3-h period of instruction and practice.

The dependent variable was represented by these 2 physicians' average rating of the degree to which organic disease explained the entry complaints. Because ratings were on an interval scale, agreement between raters was calculated using a zero-order correlation coefficient. Interrater agreement was 0.75. Ratings ranged from 1 (indicating a confident diagnosis of organic disease) to 6 (indicating a confident diagnosis of nonorganic disease), with a mean of 3.69 and a standard deviation of 1.39. Dichotomizing the ratings at 3.5 and comparing raters revealed that the raters disagreed on 12 of the 97 cases. Of cases in which the raters

agreed, 30 were diagnosed as organic disease and 55 as IBS. For all hypothesis-testing analyses and most other analyses, the ratings of all 97 cases were used to represent the dependent variable.

Because the raters were asked only to determine the presence or absence of organic disease, no specific diagnoses were available. Of the 30 patients given organic disease ratings by both independent raters (from dichotomized data), clinical records showed that 11 had peptic ulcer disease, 2 had inflammatory bowel disease, 2 had symptomatic gall stones, 2 had infectious diarrhea, and there was 1 each of the following diagnoses: medication-induced gastritis, irradiation-induced colitis, angina pectoris, congestive heart failure, Hirschprung's disease, dumping syndrome, opiate-induced constipation, severe malrotation of the colon, fecalith of the cecum, common bile duct obstruction (from carcinoma of the pancreas), intestinal obstruction, severe pylorospasm, and pancreatitis.

**Independent variables.** Independent measures were divided into 4 categories: (a) demographic variables, (b) history of medication intake, (c) symptoms and signs, and (d) psychosocial variables. Demographic variables, obtained via questionnaire, concerned standard subject information such as gender, age, education, race, and marital status; in addition, there were items regarding dietary habits, medical history, and family and childhood symptoms. There were additional items concerning the use of health facilities, such as number of surgeries, number of doctors managing care, and days in the hospital during the preceding year. Medication histories were obtained from a questionnaire that asked about medications taken more than 12 times in the past year for both gastrointestinal and psychological symptoms.

Thirty-six symptoms and signs relating to gastrointestinal problems were elicited by the attending physician, who recorded them on a rating sheet. They included all 6 Manning criteria (3) as well as 30 additional items on abdominal pain, constipation, diarrhea, and several dimensions of organic disease. Constipation was measured by the following items: pain relieved by bowel movements; visible abdominal bloating; majority of bowel movements occurring less than 3 times weekly; more than one quarter of stools scybalous, associated with straining, and/or associated with incomplete emptying; and alternation with diarrhea. Diarrhea was measured by onset of pain associated with more frequent or looser-than-normal stool; more than one quarter of stools loose or watery; majority of stools occurring more than 3 times daily; and fecal incontinence.

Many of the 36 symptoms and signs items were combined into scales based on content and statistical relationships, thus providing more normal distributions. All items relating to diarrhea and constipation formed a separate scale for each. Likewise, the 6 Manning criteria formed 1 scale. Descriptive information on these scales and the different psychosocial scales is provided in Table 1; information on individual item frequencies is available from the authors. Examination of the reliabilities revealed a range of quality in measurement, and thus in the potential associations with other variables. In general, the pertinent symptoms and signs scales shown were of moderate quality, ranging in reliability from 0.65-0.79. In addition, the duration of these symptoms was unrelated to the eventual diagnosis of IBS or organic disease. The psychosocial scales, described next, demonstrated similar consistencies with reliabilities ranging

Table 1. Descriptive Statistics and Correlations With Irritable Bowel Syndrome Rating on Important Scales

	No. of items	Mean (SD)	Scale range	Reliabilities <sup>a</sup>	r
<b>Signs and symptoms scales</b>					
Diarrhea <sup>b</sup>	5	1.22 (0.31)	1-2	0.79	0.04
Constipation <sup>b</sup>	7	1.23 (0.24)	1-2	0.67	0.36 <sup>c</sup>
Manning <sup>b</sup>	6	1.25 (0.26)	1-2	0.65	0.22 <sup>c</sup>
<b>Psychosocial scales<sup>c</sup></b>					
SUNYA Somatization Scale	10	2.81 (2.21)	0-9	0.73	-0.08
CES-D scale	20	13.48 (9.79)	0-60	0.85	0.11
Spielberger Trait Anxiety	20	2.05 (0.56)	1-4	0.91	0.06
<b>Support Dimension Scale</b>					
Friends of the same sex	8	3.14 (0.81)	1-5	0.86	-0.16
Friends of the opposite sex	8	2.79 (0.82)	1-5	0.86	-0.05
Family	8	3.88 (0.76)	1-5	0.84	-0.03
Helping professionals	8	2.75 (0.87)	1-5	0.87	-0.02
<b>Illness Behavior Questionnaire</b>					
Whiteley scale	14	.35 (0.23)	0-1	0.79	0.11
Disease conviction	6	.43 (0.28)	0-1	0.60	0.05
Psychological vs. somatic concern	4	.32 (0.23)	0-1	0.26	0.02
Denial	3	.66 (0.36)	0-1	0.61	0.04
Hassles questionnaire <sup>d</sup>	117	1.22 (0.45)	0-2	—	0.05
Effects of stress <sup>e</sup>	1	3.15 (1.27)	1-5	—	0.17 <sup>f</sup>

N ranged from 87-97 because of missing data for some items. <sup>a</sup>All reliabilities are internal consistency indices using Cronbach's  $\alpha$ . <sup>b</sup>Items were scored 1 for no and 2 for yes, and scale was created by averaging. <sup>c</sup>High score means high level of trait being measured, except for psychosocial vs. somatic concern subscale, where a high score indicates patient feels somewhat responsible for illness and a low score indicates a tendency to somatize concerns. <sup>d</sup>Statistics refer to log-transformed data set. <sup>e</sup>Single item asking degree to which symptoms for which patient consulted physician get worse under stress; 1 indicates never and 5 indicates always. <sup>f</sup> $p < 0.05$ . <sup>g</sup> $p < 0.01$ .

from 0.60–0.91. The notable exception was the psychological vs. somatic concern subscale, which had a reliability of 0.26.

Six psychosocial measures were used: (a) the State University of New York at Albany (SUNYA) Somatization Scale (32); (b) the Center for Epidemiologic Studies Depression (CES-D) scale (33); (c) the Spielberger Trait Anxiety Scale (34); (d) 4 subscales of the 52-item Illness Behavior Questionnaire (IBQ) (35), which were disease conviction, Whiteley hypochondriasis, psychological vs. somatic concern, and denial; (e) the Hassles Scale (36); and (f) the Support Dimension Scale (SDS) (37).

The SUNYA Somatization Scale (32) reflects the frequency and intensity of 17 common somatic symptoms believed to predict somatization. Because five of the 17 items referred to gastrointestinal symptoms and overlapped with the Manning criteria, they were not used in calculating the scale score. Two additional items were dropped from the scale because low item variance and low interitem correlations. For the remaining 10 items, a score was calculated by averaging the product of the frequency by intensity responses.

The CES-D scale is a self-report inventory designed to detect depression in a general population (33). Twenty items, each with a possible score ranging from 0–3, were rated on a scale of frequency of occurrence within the preceding week and summed to create a single score. Two of these items referred to somatic symptoms (appetite and sleep) but did not overlap with either the Manning criteria or the entry criteria. Four items were written in the positive direction and reverse-scored to reduce response set bias.

The Spielberger Trait Anxiety Scale is a 20-item self-report inventory designed to measure the ongoing or chronic level of anxiety the respondent feels (34). Respondents were asked to rate on a 4-point Likert-type scale their general feelings in each category.

Four subscales of the 52-item IBQ were selected, based on the content of their items, and were used to measure traits hypothesized to be predictive of IBS; to keep demands on patients as low as possible, the unrelated subscales were not used. The 6-item disease conviction subscale measures the degree to which patients believe their symptoms are caused by organic problems despite physicians' reassurance against such a conclusion (35). The 14-item Whiteley hypochondriasis subscale measures the degree of hypochondriacal preoccupation. The third subscale, psychological vs. somatic concern, contains 5 items; a high score indicates that the patient feels somehow responsible for his or her illness and perceives the need for psychiatric rather than medical treatment, while a low score indicates a tendency to somatize concerns (35). In the 5-item denial subscale, a high score indicates a tendency to deny life stresses and to attribute all problems to the effects of illness (35). All subscale scores were calculated by averaging across items. Due to overlap of some items between subscales, the total modified IBQ consisted of 25 items.

As a measure of stress, the Hassles Scale (36) was used. The 117-item checklist asks respondents to indicate the occurrences of any items that have "hassled" them in the preceding month. The Hassles Scale has been shown to be superior to major life-events scales in predicting health-

related issues (36,38). Scores were calculated by taking the log of the sum of 1 plus the number of hassles checked to produce a normally distributed variable. Log transformations are a common mechanism for achieving normalcy in skewed data sets (39).

Considerable research lends credence to the notion that social support can both moderate the effect of stress on outcome variables and directly influence outcome variables (40). The SDS was designed to measure the level of support and satisfaction with support from 4 sources: friends of the same sex, friends of the opposite sex, family, and helping professionals (37). These 4 subscales were created by averaging the items for each source; a score of 1 represented a low degree of support/satisfaction, and a score of 5 reflected a high degree.

Finally, within the psychosocial domain was a single item on the effects of stress on the symptoms that brought the patient to the doctor. Scores ranged from 1 (symptoms never became worse with stress) to 5 (symptoms always became worse with stress).

### Procedure

Data were collected at 3 different times. (a) The initial clinical interviews were performed by 3 physicians who were board-certified or -eligible, university-based gastroenterologists practicing in the 2 clinics where the study was conducted. The symptoms and signs form was completed by the physician immediately after interviewing and examining the patient. Also, the physician ordered indicated diagnostic studies, reviewed already available laboratory data, and recorded all information in the dictated evaluation. After seeing the physicians, the patients completed the following questionnaires: demographic and history of medication information, the SUNYA Somatization Scale, the CES-D, and the Spielberger Trait Anxiety scale; these were administered by a trained research associate who was also an experienced registered nurse. (b) The patient returned 2 to 4 wk later, when results of newly ordered diagnostic tests were available, for follow-up with the physician. At this time the modified IBQ was administered. It was felt that distributing questionnaires over data collection points would reduce respondent fatigue and resistance to the research demands. For this reason also, the Hassles questionnaire and the SDS were mailed between visits and either mailed back or collected at the second visit. For 9 subjects, the first 2 visits were combined and all material was completed at this time. (c) Nine months after the first visit, patients were contacted by a trained research assistant who performed a structured interview, via telephone, to inquire about multiple dimensions that could reflect possible change in their health status. Ninety of the 97 subjects were contacted. When a physician, whether the clinic gastroenterologist or another, had been involved in a patient's care during the interim, information was obtained directly from the physician to corroborate the patient's report.

## Results

### Correlations

To test the hypothesized relationships between the outcome rating and the independent measures, zero-order correlations were calculated. These results, presented at the extreme right side of Table 1, show that constipation was the strongest predictor of IBS, with  $r = 0.36$  ( $p < 0.01$ ). The Manning criteria, in which constipation is reflected, also correlated ( $r = 0.22$ ,  $p < 0.01$ ). None of the psychosocial predictors used for hypothesis testing showed a significant correlation. Only one psychosocial variable significantly ( $p < 0.05$ ) related to IBS—the single item on effects of stress on the entry complaints. Moreover, there was no enhancement of the correlation of the Manning criteria by combining them with the psychosocial predictors. Thus, there was no support for the study's hypothesis that psychosocial factors would be useful to distinguish IBS from organic disease.

For this study, we predetermined that a correlation of 0.30 represented clinical significance. With  $\alpha$  set at 0.05, power was calculated at 0.86. In many clinical investigations a power of 0.80 is considered adequate for rejecting the null hypothesis (39).

Of the medications patients reported taking, bulking agents were associated with IBS ( $p < 0.01$ ), consistent with the above correlation with constipation. There was a negative correlation with use of antimicrobial agents ( $p < 0.01$ ). Among the demographic variables, more education was associated with IBS ( $r = 0.33$ ,  $p < 0.01$ ). The older a subject, the more likely complaints were explained by organic disease ( $r = -0.24$ ,  $p < 0.01$ ). There were no significant differences in employment status, marital status, or gender. Only a family history of diarrhea was associated ( $p < 0.01$ ) with IBS among the many history, dietary, and health-care-utilization variables measured.

### Interactions

As suggested by the literature on stress (40), the interaction of stress and social support is important. Moderated multiple regression (39) was used to test for significant interactions. If 10% of the variance in IBS is considered nontrivial, the power of this test is a respectable 0.78. Stress was measured by the Hassles questionnaire, and social support was measured by the SDS. The interaction of the Hassles questionnaire with each of the 4 SDS subscales was tested, and none of these tests was significant at the 0.05 level.

### Post Hoc Analyses

A number of post hoc analyses were conducted to explore the lack of support for the hypothesized

relationships between the psychosocial predictors and IBS. The first of these analyses was to check for a significant relationship between the psychosocial variables and IBS when age, education, and gender were controlled. This analysis consisted of partialing age, education, and gender out of the relationship between psychosocial variables and IBS. Again, no significant relationship was found between psychosocial variables and IBS.

The second post hoc analysis was a comparison of the means on the psychosocial variables of our sample with norms gleaned from other research. Data on general population subjects are available for the CES-D scale (33) and Spielberger Trait Anxiety Scale (34); normative data for the SUNYA Somatization Scale were obtained from introductory psychology students (32); and normative data for the IBQ were obtained from medical and law students (41). Normative data for the Whiteley subscale of the IBQ were not available. Figure 2 provides the mean scores, standard deviations, and results of t-tests comparing the means of nonpatient samples with both the IBS and organic disease patients in this study. Except for the psychological vs. somatic concern subscale of the IBQ, all study patients had significantly higher scores than normal and student populations, indicating that patients with organic disease, as well as those with IBS, had increased psychological abnormalities on these measures.

As a check on the possible adverse effect of the broad definition used by the raters for IBS, a third post hoc analysis was performed. For cases in which both raters made a rating of IBS, clinical records were reviewed in search of possible confounding subgroups (11,13,42). The following potentially confounding final diagnoses had been made: 5 cases of nonulcer dyspepsia, 4 cases of idiopathic constipation, 4 cases of idiopathic abdominal pain, and 1 case of psychogenic vomiting; when these were deleted from the analysis, no improvement in the association of any independent measure with a rater-based diagnosis of IBS was found.

A fourth post hoc analysis was performed to determine if inherently confusing cases were confounding the results: when the data were dichotomized, the raters had disagreed on the rating of IBS in 12 of 97 cases. When these 12 cases were dropped from the analysis, there was no improvement in the association of any independent measure with the diagnosis of IBS.

## Discussion

There was no support for the hypothesis that reportedly pertinent psychosocial factors were of diagnostic value in distinguishing IBS from organic dis-

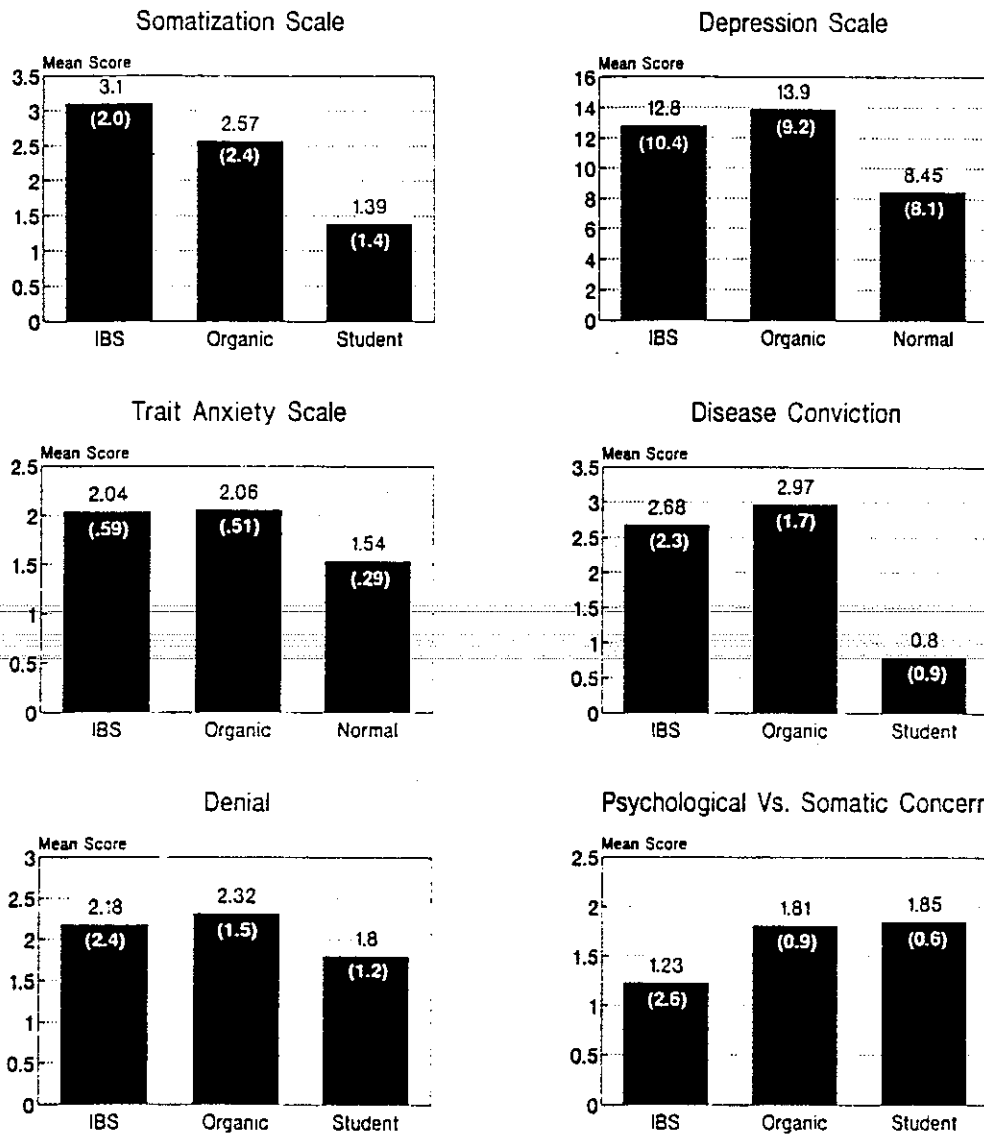


Figure 2. Comparison of the IBS, organic, and normal or student samples with each other on the psychological variables (standard deviations given in parentheses). t-Tests showed that the organic and IBS means were not significantly different on any of the 6 variables. The normal or student samples were significantly different ( $p < 0.01$ ) from the organic and IBS patients' means for all variables except for the IBQ psychological vs. somatic concern subscale, where the organic and student samples were not significantly different.

ease. In considering this failure, potential shortcomings of the study must be considered before a negative result is accepted. Power is often implicated in negative studies. The power was quite high, at 0.86, indicating that meaningful associations were not likely to have been overlooked, that the number of subjects was sufficient, and that a negative conclusion can be accepted from a statistical interpretation.

Another possible shortcoming is that IBS, the dependent measure, was not defined satisfactorily (1,7,29). Whitehead and Schuster (1), for instance, have outlined a more restrictive and more complex definition than the one used here. Broad entry criteria (abdominal pain, altered bowel habits, or both) were used to make this study comparable to those of Manning et al. (3) and Kruis et al. (4), the primary existing diagnostic studies in IBS. Further, post hoc analyses showed that a more exacting definition of IBS produced no change in results, nor did removal from analysis of the cases

confusing to the raters. It was concluded that potential imprecision in defining the outcome measure did not affect the results of the study.

Sampling bias due to systematic self-selection is a possible limitation in the present study. Dropouts from the study had significantly higher levels of constipation, diarrhea, and Manning criteria, indicating that they represented more severe cases of IBS. Nevertheless, there were no differences on the psychosocial variables. Therefore, bias due to self-selection was not likely to affect results regarding the psychosocial variables.

With respect to the possibility that the independent measures themselves were not satisfactory psychological predictors, particularly when most were not developed for use in medical patients (43), there are 2 areas to consider. (a) Because the most impressive support (6) for an association of IBS and psychological factors derives from interviews (6,19,21-24) rather than ques-

tionnaires, it is possible that the process of acquiring the psychological data is an important determinant not addressed by this study. Nevertheless, the findings in this study and those using the interview were similar (Figure 2), i.e., both showed increased psychological abnormality in patients with IBS as compared with normal subjects. Also of importance, the interview itself has not been tested for its ability to differentiate IBS and organic disease (19,21-24); studies have considered patients who were already known to have IBS and sometimes those who were normal or psychoneurotic (as comparison groups). Nonetheless, it remains possible that only an interview has the specificity required to distinguish IBS from organic disease. However, the use of the psychiatric interview would have obviated one aim of this study, which was to increase cost effectiveness and efficiency in the diagnosis of IBS. There probably will be little disagreement with the opinion that improved questionnaires, developed from comprehensive interviews with medical patients, are needed (43). Until then, measures like the ones used here and elsewhere will have to suffice, albeit with reservation. (b) Because this study, for the most part, used measures not previously used in questionnaire studies of IBS, the possibility can be raised that the measures themselves were at fault for not distinguishing IBS and organic disease. However, as with the interview studies, the findings in this study were similar to those of previously reported questionnaire studies (6,23,24,44,45): IBS patients showed increased psychological abnormalities compared with normals (Figure 2). Moreover, the instruments used here, like those reported in the literature, are well-established short- and long-term measures and are representative of the major known psychosocial abnormalities in IBS: anxiety, stress, depression, somatization, lack of social support, and abnormal illness behavior (6,10,19,21-23). It is germane, as noted also with the interview studies, that patients with organic diseases had rarely been included in past (questionnaire and other types of survey) studies (19,21-24,28,44,45). Nevertheless, it remains possible that other instruments could more effectively distinguish organic disease and IBS.

Thus, in considering the adequacy of the independent measures, the results obtained in this study were similar to past results using interviews and different psychometric measures. What was new in this study was the combination of a prospective design and inclusion of patients with organic disease, as well as the demonstration that patients with organic disease had equally high levels of the same psychological changes. That is, study patients with organic disease as well as nonorganic disease (IBS) exhibited psychosocial abnormalities, with the result that psychologically based predictors could not differentiate between the

two groups. This, then, is an explanation for the negative study. Moreover, it was this finding, not disagreement with prior studies, that rendered psychosocial variables of limited value in the diagnosis of IBS. Therefore, this study was consistent with and extended previous findings.

An underlying assumption is often that patients with organic disease do not have psychological factors in association with their illnesses. However, it has been shown that psychosocial concerns not only are present but are often the determining factor leading patients with organic disease to seek health care (27,29,46,47). Post hoc analysis here seemed to corroborate this by showing that patients with organic disease as well as IBS had significantly higher scores than reported normative samples in 5 of 6 independent measures where this information was available (Figure 2). However, the data require confirmation, especially because there is some evidence that longstanding psychosocial factors may be more pronounced in IBS than in organic disease (28). Nevertheless, the study was consistent with evolving research data showing that psychological, health care-seeking behaviors are present in patients with both organic and nonorganic disease (11,26-29,46,47). The study adds to the understanding of this important phenomenon by highlighting the effect of these behaviors on the utility of psychological criteria for diagnostic purposes.

How do the busy practitioner and others use the observations that the Manning criteria alone are insufficient for diagnosis (30% have organic disease when the criteria include 91% of cases of IBS) (3) and that prospectively evaluated psychological predictors were not useful in distinguishing IBS from organic disease? Although psychological factors are clearly associated with IBS and can prompt the physician's suspicion, this study suggests that psychological predictors cannot be used definitively in many instances. These are initial findings, however, and do not allow a conclusive statement about the diagnostic use of psychosocial factors. Rather, the results highlight the need for additional prospective work to evaluate the utility of the reported and other psychological measures in distinguishing IBS from organic disease. In addition, this study reaffirms the need for developing new measures designed for medical patients and the need for studying material derived from the medical interview (43). Unfortunately, at this point the clinician must still consider that laboratory and other diagnostic investigations will be required for confirmation in many instances. Diagnostic evaluation is most useful when based on objective findings in the history and physical examination and on observation over time. It is reassuring that once a diagnosis of IBS is made, the likelihood of having overlooked organic disease is small (48-51).

In summary, this study showed that 6 psychosocial measures did not distinguish patients with IBS from those with organic disease. It is proposed that this was because both groups of patients exhibited psychological abnormalities. However, these findings do not diminish the importance of psychological factors in IBS. It is suggested that, pending further study, psychosocial information may be most useful when considered for its health care-seeking implications and therapeutic importance rather than its diagnostic qualities.

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