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Which psychological factors exacerbate irritable bowel syndrome? Development of a comprehensive model

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ABSTRACT

Objective: There is evidence that psychological factors affect the onset, severity and duration of irritable bowel syndrome (IBS). However, it is not clear which psychological factors are the most important and how they interact. The aims of the current study are to identify the most important psychological factors predicting IBS symptom severity and to investigate how these psychological variables are related to each other.

Methods: Study participants were 286 IBS patients who completed a battery of psychological questionnaires including neuroticism, abuse history, life events, anxiety, somatization and catastrophizing. IBS severity measured by the IBS Severity Scale was the dependent variable. Path analysis was performed to determine the associations among the psychological variables, and IBS severity.

Results: Although the hypothesized model showed adequate fit, post hoc model modifications were performed to increase prediction. The final model was significant ($Chi^2 = 2.2$; $p = 0.82$; RMSEA < .05) predicting 36% of variance in IBS severity. Catastrophizing (standardized coefficient (β) = 0.33; $p < .001$) and somatization ($\beta = 0.20$; $p < .001$) were the only two psychological variables directly associated with IBS severity. Anxiety had an indirect effect on IBS symptoms through catastrophizing ($\beta = 0.80$; $p < .001$); as well as somatization ($\beta = 0.37$; $p < .001$). Anxiety, in turn, was predicted by neuroticism ($\beta = 0.66$; $p < .001$) and stressful life events ($\beta = 0.31$; $p < .001$).

Conclusion: While cause-and-effect cannot be determined from these cross-sectional data, the outcomes suggest that the most fruitful approach to curb negative effects of psychological factors on IBS is to reduce catastrophizing and somatization.

Introduction

Irritable bowel syndrome (IBS) is a common, chronic gastrointestinal disorder, characterized by recurring episodes of abdominal pain associated with altered bowel habits [1]. There is no consensus on the etiology of IBS but biological, psychological, and sociological factors are all believed to contribute to the onset, severity, and natural history of the disorder. Psychological factors appear to play particularly important roles as moderators of symptom severity, symptom persistence, decisions to seek treatment, and response to treatment [2–4], but it is not clear which psychological factors are the most important in explaining these outcomes. In a recent review 23 different psychosocial factors were identified that are associated with IBS [5], indicating the richness of this literature and the variability in factors identified. The psychological concepts most commonly associated with IBS are listed below:

Stress

The effect of stress on IBS is almost universally recognized by clinicians and patients. IBS symptoms wax and wane with daily stress [6,7] and IBS patients report more lifetime stressful events than healthy controls [8]. There is particularly strong evidence for the role of early life stressors such as sexual abuse and maternal separation in IBS [9–12]. Dysfunctional brain–gut interactions have been found in maternally separated rodents — an often studied model of early life stress in IBS [13]. Moreover IBS patients show greater reactivity to stress [14]; that is, compared with healthy controls, the same exposure to stress leads to a greater physiological gut response in IBS patients.

Personality

Certain personality traits or temperament characteristics may make one more vulnerable to the effects of stressors. A widely studied personality factor is neuroticism [15], which describes people who readily experience negative affect. Subjects high in neuroticism are more reactive to stress and have stronger reactions to recurring

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problems. Neuroticism is one of the few personality traits that have been consistently found to be increased in IBS patients compared with controls [16–20].

Coping

The way patients cope with stress and pain mediates health outcomes [21]. One of the most robust predictors of pain intensity is a coping strategy named pain catastrophizing, defined as a maladaptive way of coping (or not coping) with pain by magnifying the threat or seriousness of pain and feeling helpless to do anything about it [22]. Catastrophizing is associated with more intense pain and greater disability in pain patients, including those who suffer from IBS [22–25].

Psychological distress

Psychological distress refers to feeling anxious and depressed. These symptoms are more frequent and more intense in IBS patients, and they are associated with more gastrointestinal symptoms, disability and quality of life impairment [7,26–31]. In 30% to 90% [32–34] of IBS patients, psychological symptoms are so severe that co-morbid psychiatric disorders can be diagnosed. The association between psychological distress and IBS seems to be bidirectional in nature: psychological distress both precedes the onset of IBS [35,36], and is aggravated by the challenges of managing a chronic gastrointestinal disorder [37].

Somatization

Somatization refers to the psychological tendency to report multiple physical symptoms. Somatization is frequently seen in IBS patients [32], many of whom receive diagnoses of other functional gastrointestinal disorders, chronic pain syndromes, and symptoms such as chronic fatigue, frequent urination, bad breath and heart palpitations. The overlap between IBS and these other co-morbid disorders and symptoms does not appear to be explained by a common pathophysiology [34]. Instead people high in somatization are thought to be hypervigilant to noticing somatic sensations and to attach disease significance to these symptoms [32,34].

It has been established that these psychological variables play a role in IBS, but it is essential to determine the relative strength of their contribution to the waxing and waning of IBS as this will suggest which psychological factors should be targeted in treatment. Besides the direct effects these psychological factors have on IBS outcomes, they are also associated with each other. For example, the effect of neuroticism on IBS seems to be mediated by anxiety [19] and in functional dyspepsia it has been shown that psychological distress is associated with somatization [38]. Thus, we devised a model (see Fig. 1) in which these associations between psychological factors were taken into account. Specifically, we hypothesize that stressful life events, abuse history and neuroticism aggravate maladaptive coping, anxiety, and somatization, which in turn influence IBS symptom severity. The aims of the current study were to test our model, to identify the most important psychological factors predicting IBS symptom severity, and to investigate how these psychological variables are related to each other.

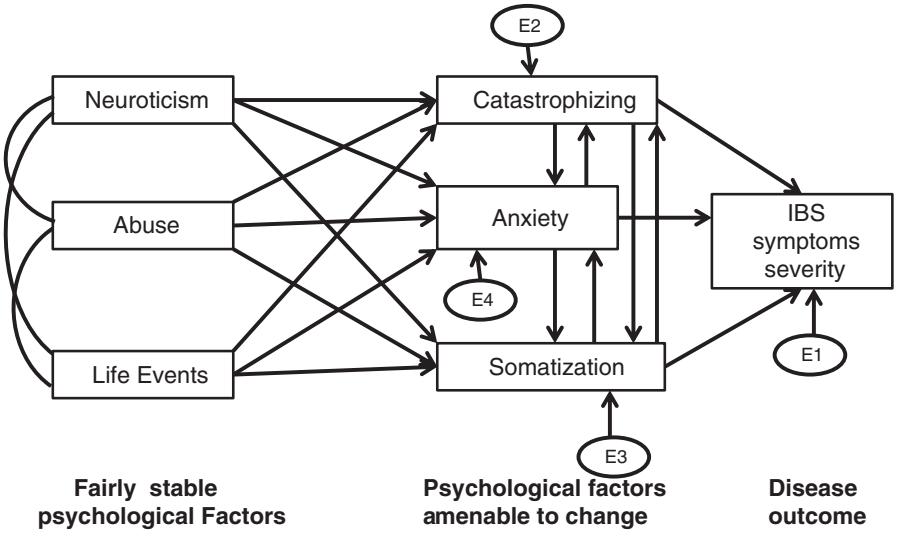
Methods

Study design

This study analyzes data from a study on the pathophysiology of IBS [39,40]. For this study subjects were admitted to a research clinic at the University of North Carolina for a 24- to 30-h period. On the day of admission the questionnaires described below were completed. Data from all participants were used in the current analyses.

Subjects

Subjects were recruited by advertisements or physician referrals and screened by telephone. The study was approved by the institutional review board of the University of North Carolina (UNC) and all subjects provided informed consent. The study population consisted of patients with a physician diagnosis of IBS who also met Rome II or III criteria for IBS (depending on time of enrollment, 77% of patients were screened with Rome II criteria) and had current symptom activity (abdominal pain at least once a week in the past month). These subjects had no history of gastrointestinal resection (other than appendectomy or cholecystectomy), known Inflammatory Bowel Disease, coeliac disease, lactose



Note: Direct effects between 'fairly stable psychological factors' and IBS severity were tested but for clarity not depicted in the current model

Fig. 1. Proposed model of psychological effects on IBS severity.