The Behavioural Responses to Illness Questionnaire (BRIQ): a new predictive measure of medically unexplained symptoms following acute infection

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ABSTRACT

Background. The aim of this study was to design a self-report measure of behavioural responses during the acute phase of an illness, in order to assess the importance of these behaviours in the development of ongoing medically unexplained syndromes.

Method. An initial pool of items derived from theoretical models and clinical observation, was piloted on a group of 312 university students to assess the factor structure of the scale and the best fit items. The scale was further validated in a second study of 758 patients who were experiencing Campylobacter gastroenteritis. At 3 months post-infection, patients were sent a second questionnaire assessing symptoms of irritable bowel syndrome (IBS).

Results. Principal components analysis of the items in the student sample yielded a four-factor solution, labelled all-or-nothing behaviour, limiting behaviour, emotional support seeking and practical support seeking. The factor structure was confirmed in the Campylobacter sample, and internal reliability was good. All-or-nothing behaviour was associated with IBS at 3 months post-infection. In contrast, limiting behaviour and practical support seeking at the time of infection appeared to be protective.

Conclusion. The results suggest that this is a valid and reliable measure that can predict the development of a medically unexplained syndrome after acute infection. Overdoing things at the time of infection and then needing to rest for prolonged periods (all-or-nothing behaviour), appears to be a particular risk factor for the development of IBS. Targeted interventions at the time of infection may improve coping and prevent symptoms from becoming chronic.

INTRODUCTION

Medically unexplained syndromes, also known as functional somatic syndromes (FSS), are defined as ‘syndromes characterized more by symptoms, suffering and disability than by consistently demonstrable tissue abnormality’ (Barsky & Borus, 1999, p. 910). They are found in every medical speciality and include syndromes such as fibromyalgia, chronic fatigue syndrome (CFS), and irritable bowel syndrome (IBS). The aetiology of these conditions has been hotly debated over the past 20 years. In an attempt to address this debate, Wessely and colleagues first proposed a cognitive behavioural model of CFS in 1991. They argued that in combination with the precipitant of a physiological or environmental stressor, specific cognitions and behaviours were important in the onset and maintenance of this condition (Wessely et al. 1991).

In recent years cognitive behavioural models have been found useful for understanding the
FSS in general (Magnusson et al. 1996; Sharpe, 1997; Williams, 1997; Rief & Nanke, 1999; Moss-Morris & Wrapson, 2003), and successful treatments have been developed (Boyce et al. 2000a; Blanchard, 2001; Whiting et al. 2001; Drossman et al. 2003). However, many of the theoretical underpinnings of these models remain untested. In particular, specific behaviours implicated in the development of these disorders have not been fully investigated. Whilst prolonged rest at the time of infectious mononucleosis has been found to increase the risk of ongoing fatigue (Candy et al. 2002), CFS patients also describe an oscillating pattern of avoidance of activity in response to symptoms that is punctuated by extreme bursts of activity when symptoms ease (Surawy et al. 1995). Patients also tend to describe themselves as highly self-sufficient before they got ill, and more likely to look after others’ needs than their own (Lewis et al. 1994; Van Houdenhove et al. 1995, 2001). Behavioural tendencies such as these may be major contributors to the development of FSS, in addition to purely avoidant behaviour.

Existing measures of illness-related behaviours have tended to focus on the concept of ‘abnormal illness behaviour’, or maladaptive responses to illness (Zonderman et al. 1985). The most well-known is the Illness Behaviour Questionnaire (IBQ), which despite its name, assesses largely cognitive variables; hypochondriasis, disease conviction, psychological versus somatic focus, affective inhibition, affective disturbance, denial and irritability (Pilowsky, 1993). In an attempt to measure actual behaviour rather than cognitions, Rief and colleagues created the Scale for the Assessment of Illness Behaviour (SAIB; Rief et al. 2003). It includes items that measure the behavioural expression of verification of diagnosis, expression of symptoms, medication, consequences of illness, and scanning.

Both the IBQ and the SAIB, however, were developed using cross-sectional designs, with samples in which illness behaviours were already well established. Neither scale is concerned specifically with the oscillating pattern described by patients or the avoidance pattern identified as a predictor of chronicity in the studies cited earlier. The authors of the SAIB concluded that their failure to find an avoidance factor reflected an overemphasis in the theoretical models. However, it is equally likely that these behaviours are most relevant during the acute and subacute illness episodes that may precede the development of a somatic syndrome, rather than in the chronic stage where behaviours may have adapted over time.

In order to clarify the importance of particular behaviours implicated in the development and perpetuation of somatic syndromes, prospective studies are needed. A number of studies have demonstrated that particular infections are associated with the development of certain FSS; for example, glandular fever is a known risk factor for fatigue (Buchwald et al. 2000; Candy et al. 2002), as is gastroenteritis for IBS (Neal et al. 1997; Parry et al. 2003). Such populations provide an ideal opportunity to prospectively examine factors that distinguish those people who go on to develop a FSS from those who do not.

This study describes the development of a self-report measure of behavioural response to acute illness, and evaluates its usefulness in predicting the onset of a FSS following acute infection. For this purpose, two studies were undertaken; one using a student sample to guide item selection and preliminary analysis of the factor structure of the scale, and the other using a clinical sample of patients experiencing Campylobacter gastroenteritis. The clinical sample was followed up after 3 months to determine the predictive validity of the scale in relation to IBS. Campylobacter was chosen as the acute illness as it is known to increase the risk of developing IBS (Parry et al. 2003) and independent laboratory confirmation of this infection can be obtained, ensuring a medically defined homogeneous population.

STUDY 1: PRELIMINARY ITEM SELECTION

Method

Selection of items

Seven subscales were devised by the authors based on models of illness behaviour, the retrospective accounts of patients with FSS regarding acute illness behaviour, and clinical reports of common activity styles during acute illness. The initial subscales were labelled as
follows: balanced approach (e.g. ‘I would know just what needs to be done and what can wait until I am feeling better’), limiting behaviour (e.g. ‘I would put parts of my life on hold’), denial of illness (e.g. ‘I would continue to work and play as I normally do’), all-or-nothing behaviour (e.g. ‘I would overdo things, then need to rest up for a while’), medical help seeking (e.g. ‘I would take some medicine to make me feel better’), social/emotional support seeking (e.g. ‘I would ring people close to me for sympathy’), and practical support seeking (e.g. ‘I would rely on my family and friends to look after me’). A complete list of items is included in the Appendix.

Participants
The scale was piloted on 312 university students; including first-year Human Biology students and a smaller class of fifth-year medical students at The University of Auckland, New Zealand. The sample was predominantly female (73.5%) and young (mean = 21.7, s.d. = 5.8 years). A separate group of 51 students from the Human Biology course was used to collect the test–retest data.

Procedure
Students were asked to complete the anonymous questionnaire according to what they would do if they were to experience a moderately severe acute illness such as food poisoning or influenza. Items were scored according to a frequency scale (‘not at all’, ‘rarely’, ‘some days’, ‘most days’, and ‘every day’) in order to emphasize the behavioural nature of the items. The test–retest data was collected with 1 week between the completion of each questionnaire.

Results
Structural validity
To explore the factor structure of the scale and to determine which items best represented the proposed subscales, principal components analysis (PCA) with varimax rotation was conducted on the 35 items. The first analysis produced eight factors with an eigenvalue greater than 1, accounting for 61% of the variance. Item analysis of the rotated factors indicated that while most of the items from the proposed scales loaded onto independent factors, the items from the proposed limiting behaviour and balanced approach subscales were spread over two factors each. In addition, the items from the proposed denial of illness subscale were spread across factors representing the proposed all-or-nothing and limiting behaviour subscales. Examination of the scree plot also suggested that a five-factor solution may be more appropriate, therefore, to clarify the nature of the factor structure it was decided to impose a five-factor solution.

A much clearer factor structure was obtained, with the five factors accounting for 50% of the variance. The majority of items had loadings greater than 0.5 on one of the five factors and less than 0.45 on the others. The items from the proposed balanced approach subscale, however, performed poorly, with four of the five items obtaining factor loadings less than 0.5, and the remaining item loading onto the limiting behaviour factor. Results also remained inconsistent for the proposed denial of illness subscale, with some items loading negatively onto the limiting behaviour factor and others onto the all-or-nothing behaviour factor. All items with factor loadings less than 0.5 were deleted, including one item each from the denial of illness, practical support and medical help seeking scales. In addition, the only two remaining negatively loaded items were deleted to avoid the confusion of only two reverse scoring items, leaving a total of 26 items. No item loaded onto more than one factor.

Internal reliability
Cronbach’s $\alpha$ was used to determine the internal reliability of these preliminary subscales. Four of the five subscales obtained $\alpha$-coefficients above 0.80 (see Table 1). The medical help seeking scale, in contrast, obtained an $\alpha$-coefficient of 0.66, with no improvements to be made by removing any items. Consequently, this subscale was removed from further analysis.

Structural validity of the final scale
A final PCA was conducted on the remaining 22 items, producing a clear four-factor solution accounting for 58% of the total variance. Factor loadings ranged from 0.56 to 0.84 (see Table 1). The items from each factor loaded no more than 0.45 on the other factors with the majority obtaining loadings of less than 0.20.
The α-coefficients ranged from 0.81 to 0.87 (see Table 1).

**Test–retest reliability**

Data was collected from the second student sample to investigate the test–retest reliability of the 22-item scale over a 1-week period. Pearson’s correlations were computed between the four subscales at the two time points. Each subscale showed acceptable stability over this period with correlations of 0.61 for all-or-nothing behaviour, 0.76 for limiting behaviour, 0.79 for practical support seeking, and 0.87 for emotional support seeking.

**STUDY 2: VALIDATION STUDY**

**Method**

Following the pilot study, the 22-item scale was validated on a large clinical sample of patients who had recently or were currently experiencing gastroenteritis. Campylobacteriosis is caused by exposure to the *Campylobacter* bacteria, which causes diarrhoea, abdominal pain and fever (Skirrow & Blaser, 2000). The illness typically lasts from 7 to 10 days and generally requires no specific treatment.

**Participants**

All patients over the age of 16 years with *Campylobacter* isolated from stool culture were identified by the major provider of clinical diagnostic services for the greater Auckland area. Due to privacy issues, questionnaires were sent from the laboratory to general practitioners (GPs) \((n = 2542)\), who were then asked to post these on to their patients. At least one patient reply was received from 59% of those GPs sent questionnaires. Based on this figure we estimated that approximately 1500 questionnaires were sent on to patients. A total of 758 replies were received, giving an estimated response rate of 51%.

The sample included 758 people with a mean age of 44.6 years (s.d. = 16.6), of whom 57% were female. The sample was predominantly New Zealand European (90%), and well educated, with 56% tertiary qualified. The majority of the sample reported being married or in a

<table>
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<tr>
<th>Table 1. Principal components analysis of the Behavioural Responses to Illness Questionnaire: Pilot study, student sample ((n = 314))</th>
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<td><strong>I</strong></td>
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<tr>
<td>All-or-nothing behaviour ((\alpha = 0.82))</td>
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<td>I would overdo things, then need to rest up for a while</td>
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<td>I would push myself as hard as ever until I could not push myself any more</td>
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<tr>
<td>I would carry on with things as normal until my body could not cope any longer</td>
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<td>I would feel obliged to carry out all my responsibilities, no matter how bad I feel</td>
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<td>I would try to do too much and feel even worse as a result</td>
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<td>I wouldn’t slow down, I would just carry on as normal</td>
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<td>I would find myself rushing to get everything done before I crashed</td>
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<td>Limiting behaviour ((\alpha = 0.81))</td>
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<td>I would avoid exercise</td>
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<td>I would put parts of my life on hold</td>
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<td>I would avoid my usual activities</td>
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<td>I would go to bed during the day</td>
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<td>I would not be able to carry on with my usual level of activities</td>
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<td>I would take time out from my usual activities so that I can get back to normal quicker</td>
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<td>Emotional support seeking ((\alpha = 0.85))</td>
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<td>I would talk to others about how bad I feel</td>
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<td>I would ring people close to me for sympathy</td>
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<td>I would tell people around me how miserable I feel in the hope that they feel sorry for me</td>
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<td>I would want people to acknowledge how sick I am</td>
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<td>I would want people to understand how awful I feel</td>
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<td>Practical support seeking ((\alpha = 0.87))</td>
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<td>I would rely on my family or friends to look after me</td>
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<td>I would ask for help from my family and friends</td>
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<td>I would make sure I had someone to look after me</td>
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<td>I would try to find someone to help me out</td>
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de-facto relationship (70%) and in some form of paid employment (76%).

Procedure
The scale was completed as part of a larger questionnaire examining predictors of recovery from acute infection which invited patients to complete a baseline questionnaire at the time of illness. Three months after returning a positive stool sample, patients were sent a follow-up questionnaire. A total of 701 questionnaires were returned at this point (response rate of 92%).

Measures
The 22 items from the pilot study were adapted so that participants answered according to how often they had carried out the behaviours since their illness began. The larger questionnaire asked for details about the person’s illness, treatment, days off work, and details of past health problems in order to exclude any participants with a previous history of IBS or other chronic bowel condition. Patients were asked to indicate on a symptom checklist if they had experienced the main symptoms of Campylobacter (nausea, fever, vomiting, diarrhoea, stomach pain, blood in faeces, headache and aching muscles), and a Campylobacter symptom total was computed by summing these responses.

The 3-month follow-up questionnaire included questions to determine whether or not patients met diagnostic criteria for IBS. Symptoms were elicited using questions developed from the Rome I and Rome II criteria for IBS (Drossman et al. 1993; Thompson, 1999). Participants were asked about the frequency of their bowel movements, and if they experienced urgency, straining, bloating, mucus in the stools or a change in consistency of their stools more than 25% of the time. They were also asked if they experienced abdominal pain, and whether or not this pain was related to their bowel movements. Based on the answers to these questions, each participant was scored to determine whether they fulfilled Rome I or Rome II criteria for IBS. In recent years, there has been ongoing debate as to the usefulness of the distinctions made by these criteria (Boyce et al. 2000b; Saito et al. 2000; Mearin et al. 2001). Because of this, and in order to gain the most representative group of IBS, participants who met Rome I and/or Rome II criteria were included as cases.

Results

Structural validity and internal reliability
PCA with varimax rotation was used to validate the pilot study factor structure. This analysis produced similar results with four factors accounting for 61% of the variance. Item analysis indicated that, with the exception of two items, all items loaded onto the expected factors. One item (‘I have talked to others about how bad I feel’) loaded equally onto the limiting behaviour and emotional support seeking scale, whereas previously it had loaded strongly on the emotional support seeking scale alone, and was deleted as a result. In addition, one item (‘I haven’t slowed down, I’ve just carried on as normal’) which had previously loaded clearly on the all-or-nothing factor, was now loading negatively on the limiting behaviour factor and was transferred to that subscale as a reversed scored item.

A final PCA was conducted on the remaining 21 items, producing four factors accounting for 62% of the variance with factor loadings ranging from 0.61 to 0.83 (see Table 2). The items loaded no more than 0.38 on the other factors, with the majority below 0.20. The final Behavioural Response to Illness Questionnaire (BRIQ) comprised a 6-item all-or-nothing behaviour subscale, a 7-item limiting behaviour subscale, a 4-item emotional support seeking subscale, and a 4-item practical support seeking subscale. The final scale and scoring method is listed in the Appendix along with all deleted items and subscales.

Reliability analysis
The internal reliability of the subscales as measured by Cronbach’s α ranged from 0.81 to 0.89 (see Table 2).

Inter-correlations between the scales
Pearson’s correlations were computed between the subscales in order to investigate the inter-relationships between them. The all-or-nothing behaviour subscale was relatively independent of the practical support seeking subscale ($r < 0.01, p=0.95$), demonstrated a small negative correlation with limiting behaviour ($r = -0.07,$
and a small positive correlation with emotional support seeking \((r=0.22, p<0.001)\). There were positive associations between the limiting behaviour subscale and both practical support seeking \((r=0.56, p<0.001)\) and emotional support seeking \((r=0.37, p<0.001)\). The latter two subscales were also correlated \((r=0.44, p<0.001)\). 

**Correlations between the BRIQ subscales, Campylobacter symptom total and days off work**

Pearson’s correlations showed that *Campylobacter* symptom total was positively correlated with all the BRIQ subscales. The strength of these correlations ranged from small, for all-or-nothing \((r=0.08, p=0.05)\) and emotional support seeking \((r=0.23, p<0.001)\), to moderate for practical support seeking \((r=0.33, p<0.001)\) and limiting behaviour \((r=0.40, p<0.001)\). Because the variable ‘days off work’ was not normally distributed, Spearman’s rho correlations were used to determine its relationship with the BRIQ subscales. Results indicated that all-or-nothing behaviour demonstrated a small negative correlation with the number of days off work \((r_s=-0.11, p<0.01)\). Both the limiting behaviour \((r_s=0.27, p<0.001)\) and practical support seeking \((r_s=0.20, p<0.001)\) subscales demonstrated small positive correlations with this variable. Emotional support seeking, however \((r_s=0.07, p=0.07)\) was not associated with days off work.

**Predictive validity**

The predictive validity of the BRIQ was tested through the development of new onset IBS following *Campylobacter* infection. Consequently, all participants who reported a previous diagnosis of IBS or a serious bowel condition were excluded from further analysis. This included 113 participants who indicated they had been diagnosed with IBS in the past, and 14 people who indicated they had other bowel conditions (e.g. colon cancer, Crohn’s disease). Of the remaining 631 participants at baseline, there were 43 non-responders at follow-up. Analysis of the remaining sample of 588 people found a total of 99 (16.8%) new cases of IBS based on those who met Rome I and/or Rome II criteria.
consistent with previous reports of post-infectious IBS which range from 7% to 30% (Gwee et al. 1996; Neal et al. 1997; Parry et al. 2003).

An independent-samples t test showed IBS cases were significantly younger than non-cases [t(584) = 3.28, p < 0.001], while \( \chi^2 \) analysis indicated they were more likely to be female [\( \chi^2 (1, n = 588) = 24.74, p < 0.001 \)]. With regard to illness variables, the IBS group reported a slightly higher number of Campylobacter symptoms [t(586) = -2.15, p = 0.03], but did not differ from the non-cases according to the rate of prescription for antibiotic treatment [\( \chi^2 (1, n = 580) = 0.10, p = 0.75 \)]. The Mann–Whitney U test showed that there was no difference between cases and non-cases with regard to the reported number of days off work (\( z = -1.24, p = 0.22 \)). Consequently, further predictive analyses were conducted controlling for age, gender and Campylobacter symptom total.

The ability of the BRIQ to predict the development of IBS post-infection was tested in two separate analyses. To compare the different levels of behaviour at the time of infection in IBS cases and non-cases, analyses of covariance (ANCOVAs) for each scale controlling for age, gender and Campylobacter symptom total were conducted; with each of the BRIQ subscales measured at baseline as the dependent variables, and IBS caseness measured at follow-up as the fixed factor. Because each subscale had a different number of items, the individual BRIQ subscale totals were converted into percentage scores using marginal estimated means for the ANCOVA data are presented in Table 3, demonstrating that those who went on to develop IBS reported significantly higher levels of all-or-nothing behaviour at the time of infection than those who did not. The levels of limiting behaviour and practical support seeking were significantly lower in those who went on to develop IBS. There was no significant difference in the levels of emotional support seeking behaviour between the two groups.

To investigate the relative importance of the BRIQ subscales as predictors of IBS, a logistic regression was carried out with all four subscales as predictors and IBS caseness as the criterion (coded 0 for ‘no IBS’ and 1 for ‘IBS’), with age, gender, and Campylobacter symptom total also entered into the equation. Results of the logistic regression demonstrated that even when demographic differences and illness severity were taken into account, all-or-nothing behaviour was a significant risk factor for the development of IBS, as was being female and younger in age (Table 4). None of the other BRIQ subscales were significant.

### DISCUSSION

This study is the first to provide a valid and reliable measure of patients’ behavioural responses to acute infection. The development of this scale differed from previous measures in a number of ways. First, the scale focused on frequency of actual behaviour rather than the strength of illness attitudes or cognitions. Second, it measured behaviour in both a student sample and an acute illness sample, rather than...
in a chronic condition, such as somatization or chronic pain. Finally, the prospective design of the study allowed us to examine not only the psychometric properties of the scale, but also the usefulness of the construct as a predictor of a common FSS.

Certain limitations should be noted. Due to the difficulties of determining whether GPs passed on information about the study, we have had to estimate our response rate and the representativeness of the sample may have been affected by this. The self-report nature of the questionnaire means that we do not know how accurately it reflects actual behaviour. In addition, Study 1 used a hypothetical situation rather than a real episode of illness, which may also have impacted on results. Finally, due to the postal survey design aimed at achieving a large sample size, we were forced to rely on self-report of IBS symptoms at follow-up rather than clinical assessment.

Despite these limitations the results clearly demonstrate that the BRIQ subscales have good construct validity and internal reliability. Of the seven scales originally proposed, four (all-or-nothing behaviour, limiting behaviour, practical support seeking, and emotional support seeking) demonstrated good internal reliability and acceptable test–retest reliability. Items from the proposed balanced approach and denial of illness subscales either failed to load on any one factor, or loaded onto the limiting or all-or-nothing behaviour scales respectively. The medical help seeking items, whilst loading together as one factor, had poor internal reliability and were therefore discarded. It is possible that these items in particular were affected by the use of both the hypothetical scenario and a student population in Study 1. They may perform better in a clinical sample and warrant further investigation.

With regard to construct validity, the correlations between the four remaining subscales were only small to moderate in size. The limiting behaviour, practical support seeking and emotional support seeking subscales demonstrated small to moderate positive associations between them. The greatest overlap was between limiting behaviour and practical support seeking, suggesting that people who limit their activities in response to illness are more likely to call on others for practical support. These two coping styles were also moderately correlated with the number of Campylobacter symptoms experienced at the time of infection, as well as days off work, suggesting that these strategies are associated with a delayed convalescence and possibly a more severe illness.

In contrast, the all-or-nothing behaviour subscale was largely independent of the others; demonstrating no association with practical support seeking, a slight negative association with limiting behaviour and a small positive correlation with emotional support seeking. All-or-nothing behaviour describes a pattern of alternating extremes of behaviour, characterized by a cyclical response of pushing oneself to keep going until this feels no longer physically possible. The findings suggest that patients who engage in all-or-nothing behaviour attempt to be self-reliant when ill rather than impose on others. This is not a reflection of having a less severe illness, as all-or-nothing behaviour showed a slight positive association to Campylobacter symptoms at the time of infection. All-or-nothing behaviour also showed a small negative association with days off work suggesting that these patients’ attempts to keep going are reflected in their reluctance to take time off work.

The importance of this new scale lies in its predictive validity. The prospective data analysis showed that in accordance with models based on clinical accounts (Surawy et al. 1995; Moss-Morris & Wrapson, 2003), patients who went on to develop new onset IBS were significantly more likely to respond to the acute infection with an all-or-nothing behavioural style than those who did not. When all four of the BRIQ subscales were entered into a single predictive analysis, all-or-nothing behaviour was shown to be the most significant predictor of IBS. The identification of all-or-nothing behaviour as an independent and measurable construct is an important validation of the cognitive-behavioural model of FSS, and provides new avenues of investigation. By measuring this behaviour, it may be possible to access relevant cognitions that are associated with it, such as perfectionistic beliefs, which may cause poorer outcomes for patients. It also provides some insight as to the mechanisms by which cognitive-behavioural interventions may be succeeding. Most of the successful trials for CFS, a condition that shows some overlap with IBS,
encourage a graduated and consistent return to activity levels (Whiting et al. 2001).

Much of the prior focus on acute illness behaviour has been on the commonly prescribed practice of bed rest, which has been found to be of little benefit and even harmful in some cases (Allen et al. 1999; Candy et al. 2002). In contrast, our study suggested that limiting activity levels, but not bed rest per se, at the time of acute illness decreased the likelihood of developing IBS, as did seeking practical support. There may be several reasons for this discrepancy. Limiting behaviour in the short term may well be adaptive, but prolonged use may prove to be maladaptive. In addition, it is possible that there are different predictors for different FSS, such that limiting behaviour may be somewhat protective for IBS, but a risk factor for other conditions such as chronic fatigue. Certainly, days off work, which correlated with limiting behaviour in this study, failed to predict IBS, whereas an early study showed that absence from work was a predictor of chronic fatigue following infectious mononucleosis (Thompson et al. 1969). Finally, measurement issues make comparisons difficult. Criteria by which caseness is determined for FSS and outcome variables often differ across studies. Poor physical functioning and de-conditioning at the time of infection are often interpreted to be signs of lengthy convalescence; however, these factors may reflect pre-morbid status rather than a specific behavioural response to the illness. More work is needed to unravel this relationship.

Future research should focus on the use of the BRIQ in other acute illness populations to determine the generalizability of these findings. The subscales that appear to be most relevant are the ones which measure all-or-nothing and limiting behaviours. Investigating the relative risk of these two behavioural patterns in other at-risk groups may determine similarities and differences in the likelihood of developing other FSS, but may also be relevant to the course of other chronic illnesses. Future studies should monitor these behaviours over the course of an illness in order to determine whether there are significant changes in behaviour that impact on outcome. Information about individual behavioural responses to illness can also be used to guide preventative interventions in the acute stages of an illness. By focusing on identifying and changing behaviour at this time, we may be able to prevent the development of a chronic somatic complaint in those patients that are vulnerable. In an era where our most significant medical costs derive from chronic illness, it is clear that any intervention that may prevent this occurring merits further investigation.

ACKNOWLEDGEMENTS

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DECLARATION OF INTEREST

None.

REFERENCES


APPENDIX

Behavioural responses to illness questionnaire

(Items are scored on the following scale: Not at all, Rarely, Some days, Most days, Every day)

Limiting behaviour
- I have avoided physical exercise
- I have put parts of my life on hold
- I have avoided my usual activities
- I have gone to bed during the day
- I have not been able to carry on with my usual level of activity
- I haven’t slowed down, I’ve just carried on as normal (NB REVERSE SCORED)
- I have taken time out from my usual activities so that I can get back to normal quicker

All-or-nothing behaviour
- I have overdone things, then needed to rest up for a while
- I have pushed myself as hard as ever until I can not push myself any more
- I have carried on with things as normal until my body can not cope any longer
- I have felt obliged to carry out all my responsibilities, no matter how bad I feel
- I have tried to do too much and felt even worse as a result
- I find myself rushing to get everything done before I crash

Emotional support seeking
- I have rung people close to me for sympathy
- I have told people around me how miserable I feel, in the hope that they feel sorry for me
- I have wanted people to acknowledge how sick I am
- I want people to understand how awful I feel

Practical support seeking
- I have relied on my family or friends to look after me
- I have asked for help from my family or friends
- I have made sure I had someone to look after me
- I have tried to find someone to help me out

Deleted scale items

Balanced approach
- I would pace myself in what I need to do
- I would carry on with some of my daily activities but take more time to rest
- I would carry on with my usual daily activities but at a slower pace
- I would know just what needs to be done and what can wait until I am feeling better

Denial of illness
- I would continue to work and play as I do normally
- I would take time off even if my work or other responsibilities may suffer (reverse scored)
- I would keep up my normal level of exercise

Medical help seeking
- I would go to the chemist for advice
- I would take some medicine to make me feel better
- I would use herbal remedies
- I would look for information about my illness
- I would speak to my doctor or practice nurse about my illness

Social/Emotional support seeking
- I have talked to others about how bad I feel

Practical support seeking
- I would ask my family and friends to carry out my usual responsibilities