

To “Lump” or to “Split” the Functional Somatic Syndromes: Can Infectious and Emotional Risk Factors Differentiate Between the Onset of Chronic Fatigue Syndrome and Irritable Bowel Syndrome?

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Objectives: Recent academic debate has centered on whether functional somatic syndromes should be defined as separate entities or as one syndrome. The aim of this study was to investigate whether there may be significant differences in the etiology or precipitating factors associated with two common functional syndromes, irritable bowel syndrome (IBS) and chronic fatigue syndrome (CFS). **Methods:** We prospectively studied 592 patients with an acute episode of *Campylobacter* gastroenteritis and 243 with an acute episode of infectious mononucleosis who had no previous history of CFS or IBS. At the time of infection, patients completed a baseline questionnaire that measured their levels of distress using the Hospital Anxiety and Depression scale. At 3- and 6-month follow-up, they completed questionnaires to determine whether they met published diagnostic criteria for chronic fatigue (CF), CFS, and/or IBS. **Results:** The odds of developing IBS were significantly greater post-*Campylobacter* than post-infectious mononucleosis at both 3- (odds ratio, 3.45 [95% confidence interval (CI), 1.75–6.67]) and 6- (2.22 [95% CI, 1.11–6.67]) month follow-up. In contrast, the odds for developing CF/CFS were significantly greater after infectious mononucleosis than after *Campylobacter* at 3 (2.77 [95% CI, 1.08–7.11]) but not 6 (1.48 [95% CI, 0.62–3.55]) months postinfection. Anxiety and depression were the strongest predictors of CF/CFS, whereas the nature of the infection was the strongest predictor of IBS. **Conclusions:** These results support the argument to distinguish between postinfectious IBS and CFS. The nature of the precipitating infection appears to be important, and premorbid levels of distress appear to be more strongly associated with CFS than IBS, particularly levels of depression. **Key words:** chronic fatigue syndrome, irritable bowel syndrome, *Campylobacter* gastroenteritis, infectious mononucleosis, functional somatic syndromes, psychological distress.

CDC = Centers for Disease Control and Prevention; **CFS** = chronic fatigue syndrome; **CF** = chronic fatigue; **CI** = confidence interval; **IBS** = irritable bowel syndrome; **IM** = infectious mononucleosis; **HADS** = Hospital Anxiety and Depression Scale.

INTRODUCTION

Patients with functional somatic syndromes such as chronic fatigue syndrome (CFS), irritable bowel syndrome (IBS), and fibromyalgia present with distressing and often disabling symptoms that cannot be fully explained by disease-specific abnormalities (1). Recent debate has centered on whether these disorders should be defined as separate entities (the “splitters”) or whether in fact there should be an overarching definition incorporating all of the syndromes (the “lumpers”).

The lumpers suggest that the diagnoses these patients receive is somewhat arbitrary and depend largely on the key presenting symptom and the medical specialty to which the patients are referred (1–3). There is some support for this argument. A systematic review of studies that investigated multiple functional diagnoses in patients who present with medically unexplained conditions concluded that the overlap

in diagnoses was substantial (4). Similar conclusions have been drawn from studies that used statistical techniques to investigate specific clusters of medically unexplained symptoms in cohorts of patients presenting across specialist clinics or to psychosomatic services (5,6). In contrast, primary care studies of patients with medically unexplained symptoms have shown that symptom subgroups that reflect illnesses such as CFS and IBS may in fact exist (7,8).

A limitation of these studies is that comparisons are drawn on the basis of counting reported symptoms. They do not take into account the fact that the etiology of the conditions may be different and may result in certain symptoms being more severe and disabling than others. The etiology of these conditions is clearly complex and multifactorial, but there is evidence that certain infections can act as precipitants. For instance, bacterial gastroenteritis has been found to be a risk factor for developing IBS (9–11), whereas glandular fever (infectious mononucleosis) has been shown to be a risk for developing CFS (12). Does this mean that different infections put people at risk for different functional syndromes or rather that an acute infection puts a person at risk of developing a functional somatic syndrome irrespective of the nature of the infection?

White and colleagues (12) found that the odds of developing CFS were significantly greater following infectious mononucleosis than an upper respiratory tract infection. However, it is possible that this effect was due to differences in the severity of the infections because other studies looking at more moderate to severe infections have found that hepatitis, meningitis, and Q fever are all risk factors for developing chronic fatigue (CF) or CFS (13–15). One way to investigate this possibility would be to compare the relative odds of developing two clinically defined functional somatic syndromes following known infectious risks for the disorders.

The purpose of the current study was to contribute to the lumpers versus splitters debate by investigating a primary care

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Received for publication November 14, 2005; revision received January 20, 2006.

The research was supported by a grant awarded to Dr. Rona Moss-Morris from the University of Auckland, Vice Chancellor’s Development Fund, and a University of Auckland Doctoral Scholarship and a Foundation for Research, Science and Technology Scholarship awarded to Meagan Spence. The authors’ work was independent of these funding providers. We would like to thank Dr Susan Taylor from Diagnostic Medlab for her advice and information on the diagnostic tests including in this study and for her invaluable help with recruitment. We would also like thank Grant Sutcliffe for designing and developing the Mailout tracker database for this study.

DOI: 10.1097/01.psy.0000221384.07521.05

cohort of patients before they develop CFS or IBS. Specifically, the study aimed to determine whether the odds of developing CFS are significantly greater after infectious mononucleosis than after *Campylobacter* gastroenteritis and whether the opposite is true for IBS. Because psychological distress and premorbid psychopathology have been shown to be predictors of both disorders (12,16–19), another aim of the study was to determine whether the presence of anxiety and depression at the time of acute infection would present equivalent odds for the development of both syndromes. Finally, the study aimed to investigate whether the nature of the specific infection would be a significant predictor of new-onset CFS and IBS even when the presence of anxiety and depression at the time of infection was taken into account.

METHODS

Design and Procedure

This prospective study was approved by the Auckland Ethics Committee. Participants with an acute episode of *Campylobacter* gastroenteritis or infectious mononucleosis completed a baseline questionnaire that included questions about their demographics, infectious symptoms, medical history, and current psychological state. They were then sent follow-up questionnaires at 3 and 6 months postinfection that measured the incidence of new-onset CFS and IBS.

Participants were identified through positive laboratory tests. *Campylobacter* gastroenteritis cases were identified through isolating *Campylobacter* species from feces that were inoculated onto charcoal-cefoperazone-deoxycholate agar and incubated in a microaerophilic atmosphere for 72 hours. Infectious mononucleosis cases were identified using either the infectious mononucleosis screen (monospot), which tests for heterophile antibodies in the blood, or the Epstein-Barr virus (EBV) serology test, which measures viral capsid antigen (VCA) IgM and IgG antibodies.

Participants and Recruitment

Participants who met the inclusion criteria of being over the age of 16 and having a positive laboratory test for *Campylobacter* gastroenteritis or infectious mononucleosis were recruited through the major provider of community clinical diagnostic services for Auckland, New Zealand. Participants were recruited via consecutive sampling over a 21-month period starting in March 2002 and ending in November 2003. Recruitment for the *Campylobacter* gastroenteritis group ended early (after 9 months) because recruitment targets had been exceeded by this stage but continued for the infectious mononucleosis group for the full 21 months. A total of 2504 *Campylobacter* gastroenteritis patients and 735 infectious mononucleosis patients were identified during these time points. For ethical and privacy reasons, the researchers were not allowed to contact these patients directly. Consequently, the diagnostic laboratory sent packs containing information sheets, consent forms, and baseline questionnaires to the identified patients' general practitioner ($n = 891$), with the request that the practitioner send the pack on to the patient.

Tracking procedures, including telephone calls to the general practices and noting practices where no questionnaires were returned, suggested that 40% of general practitioners did not forward the information to their patients. These statistics suggest that approximately 1940 questionnaires were sent on to potential participants. A total of 1061 questionnaires were returned. Forty-three of these were unusable: 36 were returned to sender because they were incorrectly addressed, and 7 were returned without consent forms, making it impossible to contact these participants for follow-ups. Consequently, there were 1018 usable questionnaires, an estimated response rate of 52%.

Of these 1018 participants, 171 were excluded from the study because they reported either a history of confirmed or suspected CFS and/or IBS or a medical condition known to produce similar symptoms to these syndromes. These included conditions known to cause bowel symptoms such as bowel cancer or Crohn's disease and conditions related to fatigue such as multiple

sclerosis or fibromyalgia. Individuals who completed questionnaires well after their laboratory specimen was collected were also excluded from further analysis ($n = 12$). The flow of participants through the study is presented in the Figure. After exclusions, 835 people were included in the study; 592 with *Campylobacter* gastroenteritis and 243 with infectious mononucleosis.

A power analysis based on previous research was conducted to determine the sample size needed. We based our calculation on the 17% of post *Campylobacter* IBS cases reported by the Parry et al. (10) study because this study used a similar recruitment method and criteria to diagnose IBS. The only prospective infectious mononucleosis study to report rates of new-onset CFS rather than idiopathic CF reported a conservative estimate of 9% (12). Using 80% power and the 0.05 level of significance, a sample of 780 (585 *Campylobacter* and 195 glandular fever) was needed to detect a true difference in the proportions, becoming a case of 17% and 9%.

Measures

The baseline questionnaire gathered data on the symptoms of the acute illness, medical history, demographics, and levels of anxiety and depression. The Hospital Anxiety and Depression Scale (HADS) (20), a well-known instrument designed for use with patients with medical illnesses, was used to detect cases of anxiety and/or depression at the time of the acute infection. Scores for each of the subscales range from 0 to 21, with a score of 8 or more suggestive of a possible anxiety or depressive disorder (20). Scores were dichotomized for each of the subscales, with those scoring less than 8 considered noncases and those greater than 8, cases of anxiety or depression.

The 3- and 6-month follow-up questionnaires were designed to identify participants who had developed IBS and/or CFS. In order to gain the most representative group of CFS and IBS cases, the Centers for Disease Control and Prevention (CDC) (21) and the British criteria (22) were used to determine CFS caseness, while Rome I modified (23) and Rome II criteria (24) were used to identify cases of IBS in this study. To date, there is no international agreement as to whether the CDC criteria or British criteria are more appropriate for identifying CFS cases (25). Similarly, although the Rome II criteria were developed in response to criticisms of the Rome I criteria, the usefulness of the distinction between the two has been questioned in recent years (26). It should be noted that the CFS criteria require that patients experience the fatigue for 6 months, whereas IBS criteria require 3 months. Therefore, as per the CDC recommendations, this paper refers to chronic fatigue at 3 months and CFS at 6 months (21).

Self-report questions (available from the authors) were designed to approximate as closely as possible the abovementioned criteria from which a designation of CFS and/or IBS caseness was made. To diagnose CFS, participants were asked to rate the severity of their fatigue (mild, moderate, or severe) and answer a range of questions regarding the type of fatigue experienced (physical or mental), the onset of the fatigue, the extent of the fatigue, any moderating effects experienced, and the impact of their fatigue on daily activities. In addition, participants were asked if they suffered from any of the seven symptoms specified in the Fukuda criteria as being associated with CFS, such as headaches, sore throat, impaired memory or concentration, and muscle pain (21). To diagnose IBS, participants were asked about the frequency of their bowel movements, if they experienced urgency, straining, abdominal 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 alleviated by bowel movements or related to their frequency or consistency.

RESULTS

Demographic Characteristics

The total sample had slightly more females (56%) than males and a mean age of 37.2 (SD = 17.2). The majority of participants were NZ European (94%). The sample was relatively well educated (university = 26%, polytechnic = 26%, secondary = 43%), and 79% were in some form of paid work. With regard to each separate illness sample, the infectious mononucleosis group had slightly more females (62%) com-

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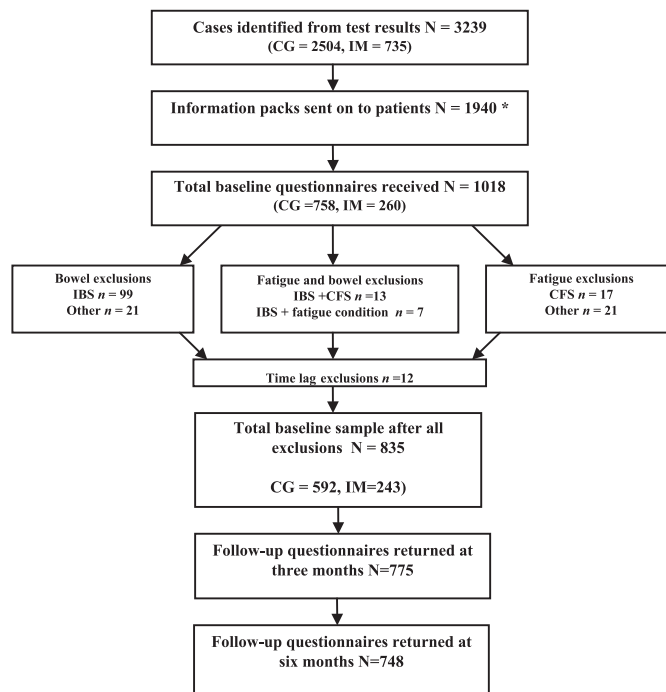


Figure 1. Flow of participants through the study. * This is an estimated number rather than an exact number. CG = *Campylobacter* gastroenteritis; IM = infectious mononucleosis.

pared with the *Campylobacter* gastroenteritis group (55%) and was significantly younger (mean age, 22.8 years; SD = 8.3) than the *Campylobacter* gastroenteritis group (M = 43.4; SD = 16.4).

A total of 775 questionnaires were returned at 3 months (93% follow-up) and 748 at 6 months (90% follow-up). Independent-samples *t* tests indicated that those who failed to return follow-up questionnaires were significantly more likely to be younger in age at both 3 ($t(70.9) = 3.09, p = .003$) and 6 ($t(117.3) = 3.88, p < .001$) months' follow-up than those who returned questionnaires. χ^2 Analyses indicated that this group was also significantly more likely to be male than those who responded at both 3 (Pearson $\chi^2(1, n = 835) = 4.2, p = .04$) and 6 (Pearson $\chi^2(1, n = 835) = 6.03, p = .01$) months' follow-up.

Prevalence Rates of New-Onset CFS and IBS

The prevalence of new cases of irritable bowel syndrome (IBS) and chronic fatigue/chronic fatigue syndrome (CF/CFS) in the two acute illness populations is presented in Table 1. Three months after the acute infection, the percentage of patients developing IBS after *Campylobacter* gastroenteritis was twice as many as those developing IBS post-infectious mononucleosis. The opposite pattern was evident for new-onset CF, with almost twice the rate of CF in the infectious mononucleosis group as there was in the *Campylobacter* gastroenteritis group. The differences appear less marked at the 6-month point.

We also looked at how many of the new-onset cases met criteria for both CF/CFS and IBS regardless of the original infection. At 3 months, 14 (9.7%) of the 145 identified cases

met criteria for both illnesses. At 6 months, only 7 (5.9%) of the 118 identified cases met criteria for both CFS and IBS, suggesting that the overlap between these conditions was minimal.

Testing the Study's Hypotheses

Multinomial logistic regression was used to test the study's hypothesis that the odds of developing CF/CFS would be significantly greater after infectious mononucleosis than *Campylobacter* gastroenteritis but that the opposite would be true for IBS. For these analyses, participants with the dual diagnosis of IBS and CF/CFS were excluded to ensure there was no overlap between the two illness outcome groups. Because there were significant age and gender differences between the *Campylobacter* gastroenteritis and infectious mononucleosis groups, these variables were entered into all the logistic regressions as covariates.

Separate analyses were carried out for outcomes at 3 and 6 months. Outcome was entered as the dependent variable (coded 0 for "noncases," 1 for "CF/CFS," and 2 for "IBS"), with acute illness (*Campylobacter* gastroenteritis or infectious

TABLE 1. Frequencies and Percentages of New Cases of CF/CFS and IBS Across Acute Infection Type at 3 and 6 Months Postinfection

	<i>Campylobacter</i> Gastroenteritis	Infectious Mononucleosis	N of Total Sample
IBS at 3 mo	83 (15%)	16 (7%)	775
IBS at 6 mo	59 (11%)	17 (8%)	748
CF at 3 mo	26 (5%)	20 (9%)	775
CFS at 6 mo	26 (5%)	16 (8%)	748

mononucleosis) entered as a factor and age and gender (coded 1 for "male" and 2 for "female") entered as covariates. "Non-cases" was nominated as the reference category.

Table 2 shows that at 3 months, the odds of patients who experienced *Campylobacter* gastroenteritis developing irritable bowel syndrome (IBS) were 3.5 times those of patients who experienced infectious mononucleosis. Gender and age were also significant risk factors, with females and those younger in age more at risk for developing IBS 3 months postinfection. At 6 months, patients who had *Campylobacter* gastroenteritis still had more than twice the odds of developing IBS compared with patients with infectious mononucleosis.

With regard to the onset of CF, at 3 months those with infectious mononucleosis had almost 3 times the odds of developing CF compared with those who had *Campylobacter* gastroenteritis. Females were also more than twice as likely to develop CF as males. However, by 6 months neither the nature of the acute illness (odds ratio, 1.5) nor gender was significantly associated with the development of CFS. Age was not a significant risk factor for the development of CF/CFS at either time point.

A similar sequence of multinomial logistic regressions was used to investigate the relative risks of anxiety, depression, and the nature of the acute infection in the development of CF/CFS and IBS. The same variables were entered as before, with caseness of anxiety and depression entered as additional factors. Table 3 shows that for IBS, *Campylobacter* gastroenteritis remained a significant predictor at both 3 and 6 months postinfection, and the odds ratios remained largely unchanged by the addition of anxiety and depression. The presence of anxiety at the time of infection was also a significant predictor of IBS at both follow-ups, but the odds ratios were slightly lower than those for the nature of the infection. The presence of depression at the time of acute infection appeared to have little effect on the development of IBS.

For CF/CFS, infectious mononucleosis remained a significant predictor at 3 months postinfection, but as before, the

nature of the infection failed to predict CFS at 6 months' follow-up. The most important predictors of CF/CFS at both 3 and 6 months' follow-up appeared to be the presence of depression and/or anxiety, with depression appearing the strongest predictor. At 6 months, those with depression had 4 times the odds of developing CFS, and those with anxiety, almost 3 times the odds.

To investigate further the role of anxiety and depression in IBS and CF/CFS, we looked at the prevalence of HADS-defined anxiety and depression measured at the time of acute infection across the 3 groups: noncases, IBS, and CF/CFS, at 3 and 6 months' follow-up. Table 4 shows that a substantial percentage of IBS and CF/CFS patients did not meet Hospital Anxiety and Depression Scale criteria for depression or anxiety. Indeed, the rates of depression in the IBS group appear comparable to those of the noncases, although the rates for anxiety are higher. The rates of anxiety and depression were highest for the CF/CFS group; just over half met criteria for anxiety at both time points, and around 40% met criteria for depression.

DISCUSSION

This is the first study to show that the nature of the precipitating acute infection appears to be important in distinguishing between postinfectious IBS and CF. *Campylobacter* gastroenteritis is a greater risk factor for developing IBS than infectious mononucleosis, whereas infectious mononucleosis is a more significant risk factor for developing CF but not CFS.

There were also significant differences in the role of psychopathology in the onset of the two conditions. Depression predicted CF/CFS but not IBS. Depression was also the most significant risk factor for CFS. Anxiety predicted both CF/CFS and IBS; however, for IBS, the odds for the nature of the acute infection were higher than the odds for anxiety at both time points. For CFS, at the 6-month follow-up, the odds for anxiety were almost twice those of the nature of the infection.

TABLE 2. Multinomial Logistic Regression Analyses of Outcome (CF/CFS and IBS Compared to Noncases) at 3 and 6 Months Postinfection as a Function of Acute Illness Type, Gender, and Age

	Three mo (<i>n</i> = 775)			Six mo (<i>n</i> = 748)		
	Odds Ratio	95% CI	<i>p</i>	Odds Ratio	95% CI	<i>p</i>
		IBS vs. noncases			IBS vs. noncases	
Gender (M vs. F)	3.22	1.85–5.60	<.001	2.44	1.37–4.36	.003
Age	0.98	0.96–1.00	.02	0.98	0.97–1.00	.07
Acute illness type (IM vs. CG)	3.45	1.75–6.67	<.001	2.22	1.11–6.67	.02
Intercept			.03			.02
		CF vs. noncases			CFS vs. noncases	
Gender (M vs. F)	2.42	1.06–5.57	.04	1.50	0.72–3.10	.28
Age	1.00	0.97–1.03	.91	1.00	0.97–1.02	.83
Acute illness type (CG vs. IM) ^a	2.77	1.08–7.11	.03	1.48	0.62–3.55	.38
Intercept			<.001			.001

IM = infectious mononucleosis; CG = *Campylobacter* gastroenteritis.

^aOdds ratios have been inverted to reflect the relative risk for CG vs. IM as opposed to IM vs. CG.

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TABLE 3. Multinomial Logistic Regression Analyses of Outcome (CF/CFS and IBS Compared to Noncases) at 3 and 6 Months Postinfection as a Function of Acute Illness Type, Anxiety, Depression, Gender, and Age

	Three Months (n = 775)			Six Months (n = 748)		
	Odds Ratio	95% CI	p	Odds Ratio	95% CI	p
		IBS vs. noncases			IBS vs. noncases	
Gender (M vs. F)	3.12	1.79–5.45	<.001	2.36	1.23–3.98	.01
Age	0.98	0.97–1.01	.04	0.99	0.97–1.01	.11
Acute illness type (IM vs. CG)	3.27	1.66–6.44	.001	2.42	1.18–4.94	.01
Anxiety	2.37	1.43–3.92	.001	1.82	1.05–1.22	.03
Depression	0.94	0.47–1.88	.86	1.39	0.90–1.07	.35
Intercept			<.001			<.001
		CF vs. noncases			CFS vs. noncases	
Gender (M vs. F)	2.39	1.03–5.56	.04	1.49	0.71–3.13	.29
Age	1.00	0.97–1.03	.95	1.00	0.97–1.03	.94
Acute illness type (CG vs. IM) ^a	2.61	1.00–7.14	.05	1.30	0.52–3.22	.58
Anxiety	2.63	1.50–6.92	.01	2.58	1.24–5.35	.01
Depression	3.22	1.17–5.85	.02	3.95	1.87–8.36	<.001
Intercept			<.001			<.001

IM = infectious mononucleosis; CG = *Campylobacter* gastroenteritis.

^aOdds ratios have been inverted to reflect the relative risk for CG vs. IM as opposed to IM vs. CG.

When interpreting the results of this study, certain limitations of the study need to be taken into account. First, the study relied on self-report data to diagnose IBS and CFS, rather than clinical examination. It is possible that patients had experienced IBS or CFS before their infections but had never been diagnosed with one of these conditions. Second, the two-stage recruitment process meant that we were unable to provide an accurate response rate, or a description of responders versus nonresponders as a percentage of general practitioners did not send the information on to patients. Our estimates suggest that just over 50% of participants returned questionnaires, which is at the lower end of acceptable. However, our follow-up rate was over 90% at both time points, meaning that few of our initial responders were lost to the study. Third, there were significant age and gender differences between the gastroenteritis and infectious mononucleosis groups and between the nonresponders and responders at follow-up, which may have affected the results. However, we controlled for these possible effects in all our analyses, and although gender appeared to be a significant predictor of both CF and IBS, the effect was independent of that of the acute infection type. Finally, postinfectious patients may represent a distinct

subgroup of IBS and CFS because not all patients who develop these conditions predate the onset of their condition to a viral or bacterial infection. There is some evidence that IBS patients who report that their illness was triggered by an initial infective episode have fewer psychiatric symptoms than patients who do not (27). Consequently, the results of this study may only be generalized to functional somatic illnesses that appear to be precipitated by an infectious episode.

The rates of IBS and CFS reported in the current study tend to be at the lower end of those reported in previous studies, which may reflect our wide range of exclusion criteria. Because we were looking at two functional syndromes rather than one, we excluded people with a history of IBS and CFS, rather than one or the other. On the basis of this, we found that 11% of gastroenteritis patients met our criteria for IBS at 6 months. These rates are slightly lower than the 16.7% of new-onset cases reported by a recent prospective study, which also recruited through a diagnostic laboratory and used Rome II criteria for diagnosing IBS (10). Studies that have reported significantly higher rates looked at hospital inpatients rather than general practice patients (11,16). One study reported a much lower rate of 4.4%, but this relied on general practitioner diagnosis of IBS (9), and reports suggest that only around 45% of patients who meet criteria for IBS present to their doctors (28).

It is important to note that although the odds of developing IBS post-gastroenteritis were significantly greater than the odds for developing the condition post-infectious mononucleosis, this does not rule out infectious mononucleosis as a risk for developing IBS. Eight percent of the infectious mononucleosis patients in the current study developed IBS. Studies that have looked at new-onset IBS over a period of 6 months in the general population and in community controls have

TABLE 4. Percentage of Participants Classified as HADS Cases of Anxiety and Depression at the Time of Acute Infection Across Noncases, CFS, and IBS Groups at 3 and 6 Months Postinfection

Groups at 3 months			
	Noncases (n = 640)	CF (n = 32)	IBS (n = 85)
Anxiety	20.5%	53.1%	34%
Depression	13.0%	37.5%	14.1%
Groups at 6 months			
	Noncases (n = 633)	CFS (n = 35)	IBS (n = 68)
Anxiety	22.0%	51.4%	36.8%
Depression	12.5%	42.9%	17.6%

reported rates of 0.3% to 1.9% (9,10). This suggests that infectious mononucleosis may put people at greater risk for developing IBS than no illness, but the risk is significantly less than that of gastroenteritis.

With regard to the prevalence of the onset of CFS postinfectious mononucleosis, our rate of 8% at 6 months was at the lower end of that reported by White and colleagues (12), who found a rate of 9% to 22%, depending on the diagnostic criteria used. In that study, they used clinically rated CDC and British criteria. It may be that our self-report questionnaire underreported the number of patients suffering from disabling CF and CFS or that our exclusions were more stringent. A small percentage of patients (5%) also went on to develop CFS after gastroenteritis. Studies that have looked at the development of CFS following an upper respiratory tract infection have reported rates of CFS ranging from 1.3% to 4.4% (12,19). Therefore, the rates of CFS following gastroenteritis appear to be similar to the rates following other more minor infections.

Our findings that high distress levels at the time of infection are predictors of CFS and IBS are in accordance with previous studies (16,18,19). However, our results also suggest that it is important not to overstate the role of psychopathology in these disorders. Many of the patients who went on to develop CFS or IBS were not cases of anxiety or depression. This is particularly true for IBS, where almost two thirds of the group did not meet the cutoff for anxiety at the time of acute infection, and rates of depression were very similar to those reported by the noncases. The rates of mood disorder were higher in the CFS group, but still 50% to 60% of patients did not meet case levels of distress at the time of infection.

A study by White and colleagues (18) also suggests that the role of psychopathology in the onset of CFS following glandular fever should not be overstated. These authors showed that a history of mood disorders and an emotional personality predicted CFS as defined by CDC and British criteria. However, if they used their empirically defined criteria that separated CF from mood disorder, neither mood disorders nor personality was a significant predictor of the onset of CF.

Two other findings from this study should be noted. First, in accordance with previous research, being female was a strong risk factor for the development of both CFS and IBS (10,18,19,29,30). Why women are more at risk for these illnesses warrants further attention. Second, the diagnostic overlap between CFS and IBS in this study was minimal (between 6% and 10%). This suggests that there is little overlap in the symptom presentation of patients with relatively new-onset IBS and CFS.

Taken together, the results suggest that there may be clear current distinctions between postinfectious IBS and CFS in primary care patients. The nature of the precipitating infection appears to be important, and anxiety and depression play a more significant role in the onset of CFS than they do in the onset of IBS. The symptom presentations of the two groups also appear relatively distinct. The data support the need to distinguish between different functional somatic syndromes, particularly early

on in the presentation. Care needs to be taken when interpreting findings from secondary care studies on functional somatic syndromes because these may reflect a group of patients on the far end of the spectrum who have a wider range of symptoms and greater distress.

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