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Depressive Symptoms in Youth with Inflammatory Bowel Disease Compared to a Community Sample

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Abstract

Background—Previous investigations have produced mixed findings on whether youth with Inflammatory Bowel Disease (IBD) experience elevated rates of depressive symptoms. Our first aim was to compare self-report of depressive symptoms by youth with IBD to a community sample. The second aim was to examine the relationship between symptoms of depression and measures of disease activity.

Methods—Item-level responses on the Children's Depression Inventory (CDI) among a sample of 78 youth diagnosed with IBD were compared to responses from a community sample using one-sample *t*-tests. Particular attention was given to items assessing somatic symptoms of depression given the potential overlap with IBD disease symptoms. The relationship between depressive symptoms and IBD disease activity was evaluated using Spearman's rank correlation coefficients and linear regression.

Results—Youth with IBD reported lower levels of depressive symptoms compared to the community sample on the CDI Total Score, and similar or lower levels of difficulty on items assessing somatic symptoms. The majority of the sample had inactive or mild disease activity at the time of participation, with 14% experiencing moderate/severe disease activity. Higher ratings of disease activity were related to greater depressive symptoms. Responses on somatic items from the CDI were not differentially related to disease activity.

Conclusions—As a group, pediatric patients with IBD did *not* experience clinical levels of depressive symptoms or elevations in depressive symptoms when compared to a community sample. Somatic symptoms of depression do not differentiate youth with IBD experiencing elevations in disease activity from youth experiencing non-somatic symptoms of depression.

Keywords

Pediatric Inflammatory Bowel Disease; depression; disease activity

Crohn's disease and ulcerative colitis, collectively known as inflammatory bowel diseases (IBD), are chronic, immune-mediated diseases of the gastrointestinal tract. Incidence of IBD is increasing among youth in the United States; 25 to 30% of patients with IBD have onset of symptoms before the age of 18 years¹. IBD is characterized by unpredictable remissions of disease activity followed by relapses of symptoms including abdominal pain, diarrhea, rectal bleeding, weight loss, growth and pubertal delay, fever, fatigue, and arthritis². Managing IBD requires attention to complicated medication regimens, side effects, disease symptoms, and nutritional modifications or supplementation. In addition, youth with IBD require frequent medical appointments, and may be faced with recurrent school absences and needing to answer potentially embarrassing questions from friends and relatives³. Youth with IBD have higher rates of school absences compared to healthy peers^{1,4}, and up to 35% of patients experience permanent growth failure⁵. They may appear younger than their chronological age, thereby increasing their risk of peer teasing or difficulty developing age-appropriate peer relationships.

Given these challenges, the prevalence of emotional difficulties including depression among youth with IBD has been a topic of ongoing interest^{6,7}. An accurate understanding of the prevalence and nature of mood disturbance in youth with IBD has important clinical and research implications. Decisions on how best to allocate clinical resources are guided based on perceived need, and documentation of base rates of depressive symptoms in youth with IBD is one indication of perceived need. Further, a better understanding of how youth with IBD compare to healthy youth on somatic symptoms of depression is needed to delineate the potential role of physical illness in elevating rates of depressive symptoms for those patients reporting difficulties. Youth with IBD reporting both higher levels of barriers to medication adherence as well as anxiety/depressive symptoms reported lower medication adherence, suggesting that the presence of depressive symptoms has important implications for disease management⁸.

Depressive symptoms have been of particular interest because of their potential association with steroid treatments and the inflammatory processes involved in IBD^{9,10}. Findings regarding depressive symptoms in youth with IBD have been mixed, however. Mackner and Crandall¹¹ reported that, compared to parents of healthy adolescents, parents of adolescents with IBD rated their adolescents as experiencing greater difficulties with anxiety and/or depression on the Child Behavior Checklist, a standard questionnaire assessing global emotional and behavior functioning. Adolescents at least one-year post diagnosis, however, self-reported emotional functioning comparable to their healthy peers¹². An early study, limited by a small sample size of 20 youth with IBD, found higher rates of self-reported depressive and parent-reported internalizing symptoms for youth with IBD compared to a healthy control group¹³. A recent meta-analytic review of psychosocial adjustment in youth with IBD differentiated the prevalence of depressive *symptoms* versus depressive *disorders*⁶. A formal diagnosis of depression requires the presence of a sufficient number and chronicity of depressive symptoms and is typically derived via diagnostic clinical interview whereas depressive symptoms may exist in isolation of one another and are commonly measured via patient report on checklists or questionnaires. When measured using self-report on the Children's Depression Inventory¹⁴, a standardized questionnaire assessing depressive symptoms, youth with IBD did not report elevations in symptoms when compared to both healthy youth and youth with other chronic illnesses. However, youth with IBD were found to experience higher rates of depressive disorders as measured via diagnostic interview when compared to youth with other chronic illnesses (odds ratio = 5.80)⁶. A psychiatric diagnostic interview is considered the most reliable and valid methodology for diagnosing depression with highest sensitivity and specificity. However, in standard clinical practice, depressive symptoms are most commonly assessed via patient

report, and the majority of the research on emotional functioning in patients with IBD is based on self or parent-report via questionnaires ⁶.

There are mixed findings on the relationship between emotional functioning and IBD disease activity, suggesting that psychosocial factors need to be considered in addition to illness related factors when predicting emotional outcomes ¹⁵. Maternal depression, stressful life events, family dysfunction, and steroid usage have been shown to relate to higher rates of depressive symptoms ^{16, 17}. Though not specific to youth with IBD, lower socioeconomic status is an additional risk factor for depressive symptoms ¹⁸. Given that youth with IBD are disproportionately from relatively advantaged backgrounds ^{19, 20} risk associated with lower SES may be less relevant for this population.

Ambiguity in the literature on whether youth with IBD experience elevated rates of depressive symptoms and disorders has led to increasing interest in symptoms that could be accounted for by both physical illness and depression ^{10, 21}. IBD is characterized by disease symptoms that overlap with somatic symptoms of depression including fatigue, changes in eating patterns, and sleep disturbance ¹¹. Consequently, scores from self or parent proxy-reports of depression in youth with IBD may be conflating mood disturbance with disease symptoms and producing elevated rates of depressive symptoms for some patients that are at least partially due to disease activity. Recently, the factor structure of the Children's Depression Inventory was evaluated in adolescents with IBD, with results yielding a 3-factor structure of mood, behavioral/motivational, and somatic complaint symptoms ²¹. Items comprising the somatic complaints factor assess reduced appetite, tiredness, worry about aches and pains, and sleep problems. Interestingly, only the somatic complaint factor predicted IBD disease severity above and beyond current steroid dose, highlighting the overlap of somatic symptoms in physical illness and depressive symptomatology. Conversely, youth with IBD have been shown to experience lower levels of symptoms on the majority of items on the CDI, including somatic items, following cognitive-behavioral therapy for depression¹⁰. Decreases in somatic symptoms were independent of changes in disease severity for the most part, suggesting that somatic symptoms of depression may be responsive to psychological treatment regardless of disease activity.

The first aim of the current study was to compare self-report of depressive symptoms by youth with IBD on the Children's Depression Inventory to a community sample from a similar geographic region with particular attention to somatic symptoms. The second aim was to examine the relationship between symptoms of depression and measures of disease activity. Interpretation of findings sought to (1) provide evidence of how youth with IBD compare to peers on symptoms of depression and (2) differentiate symptoms of mood disturbance from somatic symptoms potentially attributable to disease activity in order to gain a clearer understanding of how depressive symptoms are experienced by youth with IBD.

Materials and Methods

Participants

Patients (8-17.5 years old) with Crohn's disease (CD) or ulcerative colitis (UC) confirmed by endoscopic, pathologic, or radiographic findings were recruited as part of a larger study examining behavioral health factors associated with pediatric IBD outcomes. Eligibility was contingent upon enrollment in the Pediatric IBD Collaborative Research Group Registry ("Registry"), an ongoing, prospective, biomedical research registry being conducted at 24 pediatric gastroenterology centers in the United States and Canada. The purpose of the Registry is to study the contemporary natural history of children newly diagnosed with inflammatory bowel disease. Inclusion criteria for the Registry include (1) Definite

diagnosis of ulcerative colitis, Crohn's disease, indeterminate colitis, (2) Age up to 16 years and zero days at time of diagnosis (3) Informed consent/assent from parent/guardian and patient, and (4) Ability to be available for regular follow-up visits. Throughout enrollment for the current study (conducted at 1 of the 24 centers), all eligible patients were approached for participation in the Registry, and 88% agreed to enroll in the Registry. Of these, 86 eligible patients and their parents were approached for participation in the current study; 78 consented, representing a 91% participation rate. Participants in the current study consist of both newly-diagnosed patients as well as previously-diagnosed patients who had been previously enrolled in the Registry. Demographic and disease characteristics including average time since diagnosis can be found in Table 1.

Measures

Socio-demographics—Parents reported on household income, education, race, and ethnicity.

Children's Depression Inventory (CDI) ²²: The CDI is a 27-item self-report measure of depressive symptoms designed for children ages 7-17 years. Children rate items on a range from 0 (Absence of symptom) to 2 (Definite symptom). The CDI has been used extensively to assess symptoms of depression in youth with IBD ^{21, 23}. Higher scores indicate greater depressive symptom severity. The CDI demonstrated adequate internal consistency in this sample (Cronbach's $\alpha = .84$)

IBD Disease Activity

The Abbreviated Pediatric Crohn's Disease Activity Index (abbPCDAI) ^{24, 25}: Patients' gastroenterologists completed the abbPCDAI to assess disease activity in patients with CD. The abbPCDAI is a summation of 6 items from the PCDAI ²⁶ assessing pain, general well-being, number of stools per day, abdominal tenderness, peri-rectal disease, and body weight. Laboratory measures are not included. The abbPCDAI score ranges from 0-60: <15=inactive disease; 15-25=mild disease activity; >25=moderate-severe disease activity. The abbPCDAI has been found to be a reliable and valid measure of disease activity in pediatric patients with Crohn's disease, with correlations between abbPCDAI and PCDAI ranging from .68 to .85 and between the abbPCDAI and Physician's Global Assessment reported as .64 ²⁷.

The Pediatric Ulcerative Colitis Activity Index (PUCAI) ²⁸: The PUCAI is a standardized measure of disease activity in pediatric ulcerative colitis patients. Patients' gastroenterologists completed the PUCAI to assess disease activity in patients with UC via 6 history items (abdominal pain, rectal bleeding, stool consistency, number of stools per 24 hours, nocturnal bowel movements causing wakening, activity restriction). Disease activity scores range 0 to 85: <10=inactive; 10-34=mild disease activity, 35-64=moderate disease activity, and 65=severe disease activity.

Biomedical Factors—Data regarding patient diagnosis (Crohn's disease vs. ulcerative colitis), date of diagnosis, steroid use, and lab values related to disease severity (i.e., erythrocyte sedimentation rate (ESR) and c-reactive protein (CRP) levels) were obtained from the Registry database.

Procedures

Recruitment took place at a children's hospital in the Northeastern United States between July 2008 and July 2011. All data collection occurred during regularly scheduled clinic visits for IBD. All patients and their parents provided informed assent and consent prior to participating in the study, which was approved by the hospital's Institutional Review Board.

One of the aims of the current study was to disentangle depressive symptoms related to mood disturbance from symptoms possibly related to disease activity in youth with IBD. Consequently, we sought expert opinion from 6 clinical psychologists who work with pediatric GI populations, 2 pediatric gastroenterologists, and 1 pediatric gastroenterology nurse as to which items on the CDI are most likely affected by disease activity. Consensus was reached that items 16 (I have trouble sleeping every night), 17 (I am tired all of the time), 18 (Some days I do not feel like eating), and 19 (I worry about aches and pains all the time) have a high degree of overlap with symptoms of both depression and IBD. These items coincide with the items identified as falling on the Somatic Complaints factor in a recent factor analysis of the CDI in patients with IBD ²¹.

Data Analysis

One-sample t-tests were employed to test for differences in self-reported depressive symptoms between our sample of youth diagnosed with IBD and a community comparison group. The mean raw score for each CDI item as rated by our sample of youth with IBD was compared to the mean raw score reported by Steele, Little, S., Forehand, Brody and Hunter ²⁹ from a sample of 564 European American youth living within the Northeast U.S. Available demographic data from this sample are reported in Table 1. Data from this sample were utilized for several reasons including: (1) availability of item-level scores, (2) sample similarities in age, ethnicity, and geographic region, and (3) community sample not recruited for medical or psychiatric diagnoses.

Spearman's rank correlation coefficients were computed to examine relationships between depressive symptoms as measured via the CDI and disease activity. Given the differences in scaling for the abbPCDAI and the PUCAI, we collapsed score ratings across participants and formed a separate variable representing disease activity for both groups as inactive, mild, or moderate/severe for these analyses. Linear regression analyses, in which disease activity ratings were regressed on depressive symptoms, were used to further describe the magnitude of the relationship between depressive symptoms and disease activity.

Results

Between Group Analyses

The CDI Total Score was lower for youth with IBD ($M = 4.83$ $SD = 4.90$) in comparison to the community sample ($M = 6.08$ $SD = 5.79$). Results of one-sample t-tests indicated that compared to the community sample, youth with IBD reported lower levels of depressive symptoms on 11 CDI items and reported higher levels of depressive symptoms on only one item (Item 24 assessing their perception of being as good as other kids (Table 2)). Youth with IBD reported lower symptom levels on 2 of the 8 items measuring Anhedonia, 3 out of the 6 items assessing Negative Mood, 3 of the 4 items assessing Self-Esteem, 1 of the 4 items on the Ineffectiveness scale, and 2 of the 4 items measuring Interpersonal Problems.

Next, we examined the “somatic complaints” items from the CDI ²¹ to assess the overlap in mood disturbance and somatic symptoms potentially attributable to IBD disease activity. As can be seen in Table 2, youth with IBD reported similar or lower levels of difficulties with these particular symptoms when compared to a community sample.

Authors of the CDI recommend setting a raw score cut-point for determining clinical significance on the CDI based on the setting and screening goals. For general screening purposes, the authors recommend using a cut-point as high as 19 or 20 to minimize false positives. In fact, a cut-point of 20 produced a selection ratio most close to the identified base rate of 9.57% for depressive disorders in the norming sample described in the CDI

manual. For samples in which a higher incidence of depression is expected, cut-points as low as 12 or 13 are recommended to minimize false negatives²². Within the current sample, no participants had a score of 12 on the CDI, 4 participants had a score of 13, 5 participants had scores between 14 and 19, 1 participant scored 19, and no one scored higher. Thus, approximately 13% of the sample scored 12, the lowest of the recommended cut-points. Based on the CDI manual and norms, one would expect for 33% of a screening sample to score 12. Within the community comparison sample, the authors utilized a cut-point of 19 and found that 4.9% of youth screened positive²⁹. Together, these results demonstrate that our sample of youth with IBD reported lower levels of symptoms compared to both the general screening and community samples.

Within Group Analyses

Spearman's rank correlation coefficients were computed between IBD disease activity, as rated via the abbPCDAI and PUCAI, and the CDI Total Score as well as between disease activity and only the somatic symptoms of depression. Disease activity was significantly related to CDI Total Score ($r_s = .31, p < .01$) and CDI somatic items ($r_s = .32, p < .01$). Next, we removed the somatic items from the CDI Total Score. The CDI Total Score minus these items ($M = 3.42, SD = 3.80$) remained significantly related to participants' disease activity, $r_s = .26, p < .05$. Item-level analysis indicated that disease activity was positively related to 8 of the 27 items on the CDI, 3 of which were somatic in nature (Table 3). Of the 8 items related to disease activity, 2 were from the Negative Mood scale, 4 were from the Anhedonia scale, and 1 was each from the Ineffectiveness and Self-Esteem scales.

Given past research suggesting that IBD-related inflammation may be one mechanism at least partially driving the relationship between disease activity and depression^{7, 10}, we examined whether depressive symptoms were related to erythrocyte sedimentation rate (ESR) and c-reactive protein (CRP) levels, two inflammatory markers with data available for a subset of participants (Table 1). ESR was significantly related to the CDI Total Score, $r = .30, p < .05$, but unrelated to the subset of somatic items, $r = .11, p = .44$. CRP was unrelated to the CDI Total Score and the subset of somatic items. Current oral steroid use was not related to the CDI Total score.

To aid in interpreting the relationship between depressive symptoms and disease severity, disease activity ratings on the abbPCDAI and PUCAI were regressed on depressive symptoms. For patients with Crohn's disease, a patient rated 1 unit higher on disease activity using the abbPCDAI can expect a CDI score increase of .15 points, $F(1, 56) = 7.19, p = .01, B = .15, SE B = .05$. For patients with ulcerative colitis, a patient rated 1 unit higher on disease activity using the PUCAI can expect a CDI score increase of .12 points, $F(1, 14) = 6.78, p < .05, B = .12, SE B = .05$. Put another way, a 10-point increase on the abbPCDAI and the PUCAI would predict an increase of 1.5 points and 1.2 points on the CDI, respectively.

Discussion

The purpose of this investigation was to compare self-report of depressive symptoms by youth with IBD on the Children's Depression Inventory to a community sample, with particular attention to somatic symptoms. The second aim was to examine the relationship between symptoms of depression and disease activity ratings given the potential overlap in IBD disease symptoms and somatic symptoms of depression. We did not find elevated rates of depressive symptoms for our sample of youth with IBD compared to a community sample of youth from a similar geographic region. In fact, youth with IBD reported fewer depressive symptoms compared to the community sample with similar or lower levels of difficulty on CDI somatic symptoms. This was a surprising finding, given the disease and

illness management challenges faced by youth with IBD. Findings may be attributable in part to relatively low levels of active disease within the IBD sample as well as differences in family socioeconomic status. Within the community comparison sample, 28% were reportedly receiving free or reduced lunches, and the average monthly income was approximately \$967 ($SD = 853.9$). These rates are representative of families in the Northeast; 2011 U.S. Census data demonstrate that approximately 28% of families are below 185% of the poverty level, the uppermost limit for receiving free or reduced lunch³⁰. Similar to past research reported on youth with IBD^{19, 31}, our sample was a relatively privileged group with parents on average reporting at least some college education, majority two-parent households, and a comparatively high family annual income (Table 1). Consequently, economic and social resources may have buffered the risk for depressive symptoms related to chronic illness for our sample of youth with IBD and resulted in lower rates of symptoms compared to the community comparison sample.

Our findings are consistent with a literature suggesting that as a group, youth with IBD do not experience clinical levels of depressive symptoms^{6, 12}. Despite these findings, the belief that youth with IBD generally experience elevated rates of depression persists in many clinical and research settings. One reason for the relatively low rates of depressive symptoms in the current sample may be our use of the recommended CDI Total Score cut-off of 12, the lower limit of cut-points recommended for identifying depressive pathology¹⁴. Previous researchers have used cut-points as low as 9 to identify “subsyndromal depression”^{32, 33}. Cut-points of 9 correspond to T-scores of 47-50 on the CDI depending on the gender and age of the child and fall within the Average range. Although lower cut-points serve to minimize false negatives, the use of cut-points within the normal range leads to an overestimation of the clinical significance of depressive symptoms within this patient population. Appropriate cut-points for a particular population are best determined by conducting sensitivity and specificity statistics for various cut-points compared to known diagnosis by structured interview. Though a growing body of literature suggests that youth with IBD do *not* self-report elevated rates of depressive symptoms as a group, individual patients may remain at elevated risk. In fact, findings such as ours indicate that when patients report depressive symptoms, such difficulties should not be interpreted as a normative part of the disease process and should warrant referral to a mental healthcare provider for further assessment. However, our data also suggest that these elevations may be related to factors other than IBD disease severity.

In our sample higher ratings of disease activity were associated with greater depressive symptoms; however, increases in disease activity predicted relatively small increases in depressive symptoms. Thus, additional factors such as family functioning and resources should be considered when conceptualizing patients’ depression risk. Within the profile of depressive symptoms, somatic symptoms of depression were not differentially related to disease activity compared to other domains of depressive symptoms such as negative mood, self-esteem, ineffectiveness, or interpersonal problems. It is possible, however, that the CDI may not have adequately captured disease-related phenomena for youth with IBD including hypersomnia during times of increased disease activity or difficulties with appetite masked by steroid usage. However, results suggest that the somatic symptoms of depression do not differentiate youth with IBD experiencing elevations in disease activity from youth with IBD experiencing other symptoms of depression, as the CDI Total Score, somatic items, and non-somatic items were similarly related to disease activity.

The current study builds upon past literature documenting the prevalence and nature of depressive symptoms in youth with IBD and further clarifies the relationship between symptoms of depression and disease activity in this patient population. The comparison of depressive symptoms at the item-level to a community comparison sample is a strength of

the current study. Further, the comparison of total depressive symptoms as well as somatic and non-somatic symptoms to disease activity ratings suggests that somatically based symptoms are not differentially related to disease activity in youth with IBD. That being said, additional research is needed to identify predictors of depressive symptoms for the subset of youth with IBD who do experience mood difficulties. Recent research demonstrated that youth with Crohn's disease, but not ulcerative colitis, currently prescribed high-dose steroids self-reported higher rates of depressive symptoms compared to steroid-free controls³⁴. Group means even for the high-dose steroid group fell in the average range, however, suggesting that clinically significant symptoms were not present for the majority of patients. In addition, more detailed time-lagged designs may have utility in identifying relationships between disease activity and depressive symptoms not detectable in cross-sectional analyses. Small sample size and range restrictions in the item-level measurement of depressive symptoms on the CDI are limitations of the current study. To further examine the relationship between disease activity and depressive symptoms, future research should recruit participants based on active versus inactive disease and assess emotional functioning. Finally, it is possible that different rates of depressive symptoms may be found using parent proxy-report or diagnostic interviews.

Our findings clearly indicate that the majority of pediatric patients with IBD do *not* experience clinical levels of depressive symptoms. Using the recommended low cut-point to minimize false negatives, approximately 13% of the current sample reported depressive symptoms warranting further assessment. Clinicians should remain vigilant regarding the assessment of mood disturbance in youth with IBD, and also consider constructs such as health-related quality of life that may offer a broader and more applicable view of the difficulties experienced by this patient population.

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Table 1

Demographics and Treatment Characteristics

Variables	Descriptive Data IBD Sample (N = 78)	Comparison Sample (N = 564)
Gender (% male)	51%	49%
Age (years)		
Mean (SD)	13.79 (2.79)	12.43 (.87)
Race/ethnicity		
Caucasian	67 (86%)	564 (100%)
African American	1 (1%)	
American Indian	3 (4%)	
Mixed/Other	7 (9%)	
Latino ethnicity	8 (10%)	
Median Family Income	\$87,499 (30,981)	
Maternal marital status (% married)	77%	
Maternal education level (years)		
Mean (SD)	14.49 (2.72)	
Paternal education level (years)		
Mean (SD)	14.08 (2.86)	
Diagnosis		
Crohn's disease	62 (79%)	
Ulcerative colitis	16 (21%)	
Time since Diagnosis (months)		
Mean (SD)	18.84 (23.52)	
Disease Severity ^b		
Inactive	49 (63%)	
Mild	14 (18%)	
Moderate/Severe	11 (14%)	
Missing	4 (5%)	
ESR (n = 57)		
Mean (SD)	24.21 (19.77)	
Range (median)	3 – 77 (17.00)	
CRP (n = 47)		
Mean (SD)	13.05 (24.34)	
Range (median)	0 – 124 (4.21)	
Oral steroids ^a	31 (40%)	

^aEither budesonide and/or prednisone was indicated for the current time period or the ending dosage from the prior assessment time period was >5 mg for prednisone and >3 mg for budesonide.

^bBased on abbPCDAI and PUCAI scores

Table 2
Comparison of CDI items in study sample of youth diagnosed with IBD and community comparison

Item	Most Pathological Answer Choice	Study Sample Mean (SD)	Community Comparison ^a Mean (SD)	t	p
CDI Total Raw Score ^b					
Anhedonia					
4	Nothing is fun at all	0.15 (0.36)	0.09 (0.32)	1.55	0.13
16	I have trouble sleeping every night ^a	0.35 (0.58)	0.45 (0.64)	-1.29	0.12
17	I am tired all the time ^a	0.51 (0.70)	0.38 (0.65)	1.68	0.10
18	Some days I do not feel like eating ^a	0.24 (0.56)	0.32 (0.54)	-1.20	0.23
19	I worry about aches and pains all the time ^a	0.35 (0.60)	0.24 (0.46)	1.56	0.12
20	I feel alone all the time	0.15 (0.36)	0.33 (0.55)	-4.28	<.001
21	I never have fun at school	0.37 (0.58)	0.25 (0.45)	1.84	0.07
22	I do not have any friends	0.03 (0.16)	0.13 (0.38)	-5.79	<.001
Negative Mood					
1	I am sad all the time	0.06 (0.25)	0.20 (0.45)	-4.87	<.001
6	Terrible things will happen to me	0.21 (0.44)	0.21 (0.45)	-0.10	0.92
8	All bad things are my fault	0.04 (0.19)	0.12 (0.33)	-3.72	<.001
10	I feel like crying every day	0.05 (0.22)	0.26 (0.33)	-8.30	<.001
11	Things bother me all the time	0.19 (0.43)	0.13 (0.53)	1.29	0.20
13	I cannot make up my mind about things	0.44 (0.64)	0.45 (0.58)	-0.20	0.85
Negative Self-esteem					
2	Nothing will work out for me	0.15(0.43)	0.10 (0.31)	1.11	0.27
7	I hate myself	0.05 (0.27)	0.12 (0.37)	-2.21	0.03
9	I want to kill myself ^b	0.04 (0.19)			
14	I look ugly	0.23 (0.45)	0.38 (0.63)	-2.91	0.01
25	Nobody really loves me	0.03 (0.16)	0.15 (0.36)	-6.90	<.001
Ineffectiveness					
3	I do everything wrong	0.01 (0.11)	0.16 (0.37)	-11.48	<.001
15	I have to push myself all the time to do my schoolwork	0.41 (0.71)	0.32 (0.58)	1.12	0.27

Item	Most Pathological Answer Choice	Study Sample Mean (SD)	Community Comparison [*] Mean (SD)	<i>t</i>	<i>p</i>
23	I do very badly in subjects that I used to be good in	0.19 (0.46)	0.24 (0.47)	-0.92	0.36
24	I can never be as good as other kids	0.26 (0.47)	0.15 (0.41)	2.01	0.05
Interpersonal Problems					
5	I am bad all the time	0.05 (0.22)	0.24 (0.45)	-7.39	<.001
12	I do not want to be with people at all	0.12 (0.36)	0.47 (0.61)	-8.71	<.001
26	I never do what I am told	0.13 (0.34)	0.12 (0.35)	0.22	0.83
27	I get into fights all the time	0.06 (0.25)	0.10 (0.33)	-1.29	0.20

Note. The suicidal ideation item (#9) was omitted from data collection for the community comparison sample²⁹.

^a Somatic items

^b Suicidal ideation item (#9) removed for comparison with community sample. With item #9 included, IBD study sample mean = 4.87 (*SD* = 4.97).

^{*} (Steele et al., 2006)

Table 3

Correlations between items on the CDI and disease activity as rated using the abbPCDAI and PUCAI

Item	Most Pathological Answer Choice	r_s	p
1	I am sad all the time	.30	<.01
2	Nothing will work out for me	-.01	.96
3	I do everything wrong	.12	.29
4	Nothing is fun at all	.26	.03
5	I am bad all the time	.09	.45
6	Terrible things will happen to me	.06	.63
7	I hate myself	.02	.85
8	All bad things are my fault	-.12	.32
9	I want to kill myself	.10	.41
10	I feel like crying every day	.19	.10
11	Things bother me all the time	.13	.28
12	I do not want to be with people at all	.17	.15
13	I cannot make up my mind about things	.24	.04
14	I look ugly	.03	.79
15	I have to push myself all the time to do my schoolwork	.20	.08
16	I have trouble sleeping every night ^a	.19	.10
17	I am tired all the time ^a	.34	<.01
18	Some days I do not feel like eating ^a	.25	.04
19	I worry about aches and pains all the time ^a	.33	<.01
20	I feel alone all the time	.13	.27
21	I never have fun at school	.14	.24
22	I do not have any friends	.09	.45
23	I do very badly in subjects that I used to be good in	.36	<.01
24	I can never be as good as other kids	.15	.19
25	Nobody really loves me	.24	.04
26	I never do what I am told	.10	.40
27	I get into fights all the time	.09	.47

^aSomatic items