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## Defense mechanisms and alexithymia in Inflammatory bowel disease and Irritable bowel disease

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### ABSTRACT

**Objectives:** This study aimed to examine the differential contribution of demographic and medical characteristics on severity of gastrointestinal symptoms in a sample of patients with IBS or IBD recruited from outpatients with gastrointestinal disorders. In addition this study aimed to explore the role of alexithymia and defense style on gastrointestinal symptoms.

**Methods:** The participants consisted of 65 outpatients with an IBS or IBD diagnosis who completed a demographic questionnaire, the Toronto Alexithymia Scale – 20 (TAS-20), the Defense Style Questionnaire (DSQ), and the Gastrointestinal Symptom Rating Scale (GSR).

**Results:** ANOVA showed no significant effect of specific diagnosis on the severity of gastrointestinal symptoms. Results of MANCOVA showed that there was a significant multivariate effect of gender with female scoring significantly higher than males on severity of intestinal symptoms. Other variables such as age, level of education, years since diagnosis did not reach a significance on the dependent variables. In addition the defense style defined “maladaptive” had a significant effect on dyspeptic symptoms.

**Conclusions:** Our results have shown the influence of the maladaptive defense style on the severity of symptoms with no differences for the two considered diagnosis. Moreover they are coherent with past studies highlighting the risk for the female gender to develop a somatic disease

**Keywords:** *IBS; Inflammatory bowel disease; DSQ; TAS-20*

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## **Introduction**

The Irritable Bowel Syndrome (IBS) is classified as functional gastrointestinal disorders (Schmulson & Drossman, 2017). Symptoms of functional gastrointestinal disorders are associated with a strong impairment in daily functioning and a worse health-related quality of life, work absenteeism, and high medical costs (Gralnek, Hays, Kilbourne, Naliboff, & Mayer, 2000; Portincasa, Moschetta, Baldassarre, Altomare, & Palasciano, 2003). Individuals with IBS have higher levels of anxiety and depression compared with controls (Sibelli et al., 2016). The quality of life of IBS patients is significantly lower than the general population and it is correlated with perceived stress (Edman et al., 2017). Psychological disorders often head or worsen symptoms and correlate with symptom severity and health outcomes (Wouters & Boeckxstaens, 2016).

Alexithymia is considered a reliable and stable predictor of treatment in patient with functional gastrointestinal disorders (Porcelli et al., 2003). Alexithymia was found to be a stronger predictor of treatment outcome than gastrointestinal-specific anxiety in IBS (Porcelli, De Carne, & Leandro, 2017). Hence, treatment outcome could be more efficacy by identifying patients with high alexithymia.

Nevertheless, there are more evidences for the use of psychological interventions in IBS than in Inflammatory Bowel Disease (IBD) and further research is still necessary (Ballou & Keefer, 2017). Anxiety and depression were common in IBD patients and were correlated with an impairment quality of life (Chan et al., 2017). On the other hand, agreement between gastroenterologists and IBD patients regarding the presence of clinically significant anxiety or depression was low (Janmohamed & Steinhart, 2017). Among patients with IBD, anxiety and depression can exacerbate symptoms of the disease mostly during active phase (Graff, Walker, & Bernstein, 2009). Moreover, there is a relationship between anxious and avoidant attachment styles and severity of the symptoms in IBD patients (Agostini et al., 2010; Gick & Sirois, 2010). Several research have attempt to explore alexithymia in IBD patients. In fact alexithymia has an independent influence on the subjective health status of patients with IBD (Verissimo, Mota-Cardoso, & Taylor, 1998). An highly prevalence of alexithymia was found in patients with IBD (Iglesias-Rey et al., 2012). Alexithymia is a stable personality variable differently from anxiety and depression that are influenced by the level of disease activity (Porcelli, Leoci, Guerra, Taylor, & Bagby, 1996). Regarding gender, it seems that females with high alexithymic level are more inclined to developed IBD and other psychosomatic diseases (La Barbera et al., 2017).

In addition, defense mechanisms ad reaction-formation and somatization seem to be independent correlates quality of life in IBD patients (Hyphantis et al., 2009). Hence, these aspects of

personality are likely to influence the patients' adaption to the IBD. More specifically Crohn's disease patients showed a more immature defensive profile than Ulcerative colitis patients using style as maladaptive action (Hyphantis et al., 2005). However, few studies have evaluated defense mechanisms and other personality variables in IBD patients comparing with IBS.

Personality traits and emotional control such as alexithymia should be addressed by clinicians to improve adjustment in IBD patients (Jordan, Sin, Fear, & Chalder, 2016).

The first aim of this study was to explore the role of demographic and medical variables on the gastrointestinal symptoms in IBS and IBS patients. The second aim of this study was to examine the role of alexithymia and defense style on gastrointestinal symptoms.

## Methods

### *Participants*

A convenience sample of 65 outpatients from the Clinical Unit for Chronic Bowel Disorders of the Department of Clinical and Experimental Medicine, University Hospital of Messina participated in this study.

All patients were native Italian speakers and Italian nationals. Inclusion criteria were a diagnosis of IBD or IBS, be older than 18 years, able to understand Italian language and answer to questionnaire. Exclusion criteria included pre-existing psychopathology or neurological disorders that could interfere with the completion of the instruments.

### *Procedure*

Ethical approval was obtained from the Ethics Committee of the hospital. Patients were enrolled over a 6-month period in the Clinical Unit for Chronic Bowel Disorders of the hospital. Patients were recruited on a voluntary basis and were informed about the aim of the study before to sign an informed consent sheet. The consent form informed participants of their right to withdraw the study. All the procedures of this study were in accordance with the ethical standards of the Helsinki Declaration. All patients were recruited after an assessment by a gastroenterologist for verify an IBD or IBS diagnosis. Psychological assessment were conducted according to standardized procedures. Medical information was obtained by the gastroenterologists of the unit.

### *Measures*

*Demographic information* included age, gender, educational degree, nationality, marital status.

*Medical information* included diagnosis, data on the disease and the history of treatment.

*The Twenty-Item Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994).* This a 20 item self-report scale that measures the alexithymia construct. The items are rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The TAS-20 scores for three factors named: difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally oriented-thinking (EOT). Moreover, a total score of the TAS-20 is calculated by the sum of the subscales. In this study, a validated Italian version (Bressi et al., 1996) of the TAS-20 was used that has good psychometric properties as the original version. Reliability of all three factors and the total score was good, with Cronbach's  $\alpha$  of .85 for DIF, .75 for DDF, .75 for EOT, and .85 for the total score.

*Defense Style Questionnaire-88 (DSQ-88; Bond, 1986).* This is a 88 item self-report scale that assess ego defense mechanisms through their conscious derivatives in everyday life. This version of the DSQ consists of 88 items evaluated on a 9-point Likert ranging from 1 (strongly disagree) to 9 (strongly agree) that reflect 25 defense mechanisms and four defense styles. The four defense styles are named, respectively, "maladaptive" (Style 1), "image-distorting" (Style 2), "self-sacrifice" (Style 3), and "adaptive styles" (Style 4). A "Lie Scale" is included through items that represent social desirability. In this study, a validated Italian version of the MCQ-30 was used to assess defense styles (San Martini, Roma, Sarti, Lingiardi, & Bond, 2004). The Italian version of the DSQ-88 showed a hierarchical model of defensive functioning compatible with the original questionnaire. A sufficient internal consistencies was found for the defense styles, with the exception of the Adaptive Style scale. Reliability of all four defense styles in the present sample was sufficient to good for the Maladaptive Style ( $\alpha = .90$ ), the Image-distorting Style ( $\alpha = .75$ ), and Self-sacrificing Style ( $\alpha = .69$ ) but not for the Adaptive Style ( $\alpha = .49$ ).

*Gastrointestinal Symptom Rating Scale (GSRS; Svedlund, Dotevall, & Sjodin, 1998).* This is an observer-rated illness specific questionnaire. The scale includes 15 symptoms rated on a 4-point Likert scale ranging from 0 (which denotes no symptoms) to 3 (which denotes the most pronounced symptoms) divided in three subscales and a total score. The three subscales correspond to dyspeptic (DYS), digestive (DIG), and intestinal (INT) syndromes. The total score represents overall frequency and severity of gastrointestinal symptoms.

In this study, a validated Italian version of the GSRS was used to assess gastrointestinal symptoms (Kulich et al., 2004). The GSRS is a well-validated and used widely measure in gastrointestinal research (Wiklund, 1993) and the Italian version has good psychometric properties.

Reliability of the three scales and the total score was sufficient to good, with Cronbach's  $\alpha$  of .66 for SD, .69 for SCD, .67 for SDI, and .79 for the total score.

### ***Statistical analyses***

Analyses were performed with SPSS v.22 (SPSS Inc. 2013) statistical software and Excel software. Data obtained from the research was checked and subsequently analyzed by descriptive and inferential statistical analysis. Descriptive statistics such as the means and standard deviations of the variables are reported. The data shows a good range of variance and there were no unvaried outliers for all the variables considered.

Statistical analysis was carried out with the use of means and SDs, multivariate analysis of variance (MANOVA), and test post-doc. Subsequently, an identical MANCOVA was performed, controlling for participant age, gender, level of education and medical variables. Another MANCOVA was performed, controlling the three factors of the TAS-20 and the three defense styles of the DSQ-88. The levels of statistical significance were set at  $p \leq .05$  and  $p \leq .01$ .

## **Results**

### ***Demographic and medical characteristics***

The convenience sample consisted of 22 patients with UC, 20 patients with IBS, and 19 patients with CD. Demographic and medical characteristics of the sample are presented in Table 1.

The sample of patients with UC consisted of 10 males and 12 females, the mean age was 37.32 years (SD = 12.71; range = 21-62), the level of education in years was 11.05 (SD = 3.48; range = 5-18). Fifty-nine percent were married and seventy-three percent were employed.

With respect to medical status, the mean of years since symptoms began was 7.42 years (SD = 8.61; range = 0.25- 30) and the mean of treatment was 5.04 years (SD = 6.03; range = 0.08-22).

The sample of patients with IBS consisted of 9 males and 11 females, the mean age was 39.30 years (SD = 19.80; range = 17-76), the level of education in years was 11.05 (SD = 4.54; range = 5-18). Fifty percent were married and sixty percent were married.

With respect to medical status, the mean of years since symptoms began was 6.22 (SD = 10.53; range = 0.08-30) and the mean of treatment was 2.93 years (SD = 6.82; range = range = 0.08-30).

The sample of patients with CD consisted of 12 males and 7 females, the mean age was 39.84 years (SD = 14.46; range = 21-68), the level of education in years was 14.32 (SD = 3.67; range = 8-18). Fifty-three percent were married and seventy-four were employed.

With respect to medical status, the mean of years since symptoms began was 8.72 (SD = 5.54; range = 2-17) and the mean of treatment was 4.68 years (SD = 4.74; range = 0.08-15)

Variables	Groups		
	UC (n = 22)	IBS (n = 20)	CD (n = 19)
Age (years) - M(SD)	37.32(12.71)	39.30(19.80)	39.84(14.46)
Level of education (years) - M(SD)	11.05 (3.48)	11.05 (4.54)	14.32 (3.67)
Male (%)	45	45	63
Female (%)	55	55	37
Single (or separated/widowed) (%)	41	50	47
Married (%)	59	50	53
Employed (%)	73	60	74
Unemployed (%)	27	40	26
Years since diagnosis - M(SD)	7.42(8.61)	6.22(10.53)	8.72(5.54)
Years undergoing treatment - M(SD)	5.04(6.03)	2.93(6.82)	4.68(4.74)

Notes: UC: ulcerative colitis; IBS: irritable bowel syndrome; CD = Chron's disease.

Table 1. Demographic and medical characteristics of the sample

### ***Analysis of multivariate effects of diagnosis sample on gastrointestinal symptoms***

A MANOVA was carried out with the three subscales and the total score of GSRS as the dependent variables and diagnosis sample (UC, IBS, and CD) as independent variables. Results did not show a significant multivariate effect of diagnosis [Wilks' Lambda = .884,  $F_{(6, 112)} = 1.182$ ,  $p = .32$ ,  $\eta_p^2 = .060$ ] on the dependent variables.

Variable	$\alpha$	UC (n = 22)		IBS (n = 20)		CD (n = 19)		F	p
		M	SD	M	SD	M	SD		
DYS	.66	4.05	2.59	4.40	1.93	4.37	2.41	.149	.86
DIG	.69	4.55	2.30	4.20	2.71	4.73	2.33	.254	.78
INT	.67	3.32	2.78	5.40	3.07	5.21	3.51	2.887	.06
Total score GSRS	.79	11.91	5.85	14.32	6.99	14.00	5.74	.936	.40

Notes: DYS: dyspeptic symptoms; DIG: digestive symptoms; INT: intestinal symptoms; GSRS: Gastrointestinal Symptom Rating Scale.

Table 2. Descriptive statistics and analysis of the effect of patient sample on gastrointestinal symptoms

### ***Analysis of multivariate effects of diagnosis sample on gastrointestinal symptoms adjusting for age, gender, level of education, years since diagnosis, and years undergoing treatment***

An identical MANCOVA, with age, gender, level of education, years since diagnosis, and years undergoing treatment as covariates was carried out. After adjustment for these variables, there was a significant multivariate effect of gender [Wilks' Lambda = .860,  $F_{(3, 51)} = 2.769$ ,  $p < .05$ ,  $\eta_p^2 = .140$ ] with females scoring significantly higher than males on severity of intestinal symptoms,  $F_{(7, 15)} = 7.050$ ,  $p < .01$ ,  $\eta_p^2 = .117$ . The other variables did not reach significance on the dependent variables.

### ***Analysis of multivariate effects of diagnosis sample on gastrointestinal symptoms adjusting for alexithymia factors and defense styles***

A MANCOVA was carried out with the three subscales of GSRS as the dependent variables and diagnosis sample (UC, IBS, and CD) as independent variables, adjusting for the three factors of the TAS-20 and the three defense styles of the DSQ-88. There was a significant multivariate effect of the Style 1, named “maladaptive”, on the dependent variables [Wilks' Lambda = .844,  $F_{(3, 49)} = 3.017$ ,  $p < .05$ ,  $\eta_p^2 = .156$ ]. In fact, the Style 1 had a significant effect on dyspeptic symptoms,  $F_{(9, 51)} = 5.359$ ,  $p < .01$ ,  $\eta_p^2 = .095$ .

### **Discussion**

In the present study, we examined the role of demographic and medical characteristics on IBS and IBD patients. Moreover we investigated the influence of alexithymia and defense styles on the severity of gastrointestinal symptoms. Past studies have separately considered these diagnoses even though psychological variables play a key role in both conditions. At this regard three diagnosis (Chron's disease, Ulcerative colitis, and Irritable bowel syndrome) were included and results did not show any significant difference for severity of symptoms.

The subsequent step was to include demographic and medical characteristics such as age, gender, level of education, years since diagnosis, and years undergoing treatment. The only variable that showed a significant multivariate effect was the gender. In fact, females displayed higher severity of symptoms than males. This result is coherent with past studies highlighting the risk for the female gender to develop a somatic disease. Hence, clinicians should address not only medical variables but also demographic characteristics such as gender.

Past studies have also shown the role of personality traits on the quality of life of patients. At this regard many research pointed out the role of variables such as neuroticism, emotional control, and alexithymia. Results of this study have shown the influence of the maladaptive defense style on the severity of symptoms with no differences for the three considered diagnosis. In this perspective, a multidisciplinary approach to these diseases is fundamental to a better compliance and efficacy of the patients. The assessment of psychological functioning and the subsequent psychological intervention could help the patient with IBS or IBD to obtain a higher quality of life.

The results of this study highlighted the role of demographic variables taken together to some personality traits for a better efficacy of treatment.

This study has two major limitations. The first was the absence of a control sample from the normal population even though our aim was to compare organic and functional diseases. The second limit was the small size of the sample. Future research should extend the sample to verify the finding in a larger sample.

### ***Compliance with Ethical Standards***

The authors declare no conflict of interest and no source of funding for the present research. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all parents of participants included in the study

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