COGNITIVE CONFLICTS IN FUNCTIONAL GASTROINTESTINAL DISORDERS

CONFLICTOS COGNITIVOS EN TRASTORNOS FUNCIONALES DIGESTIVOS

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Abstract

The importance of psychological factors in functional gastrointestinal disorders (FGID) is well-stablished in the literature; however, cognitive factors have hardly been researched and, in particular, cognitive conflicts have not been explored for these disorders. The aim of this study is to compare the cognitive and symptomatic characteristics of a group of 66 FGID patients (33 diagnosed with irritable bowel syndrome and 33 with functional dyspepsia) with a control group of participants without FGID or psychopathological symptoms. Both groups were matched by sex and age. The evaluation of the clinical sample was carried out following the criteria of the DSM-IV-TR. The SCL 90-R, and also the Repertory Grid for the identification of cognitive conflicts (implicative dilemmas) and self-ideal discrepancy, were administered to both the clinical sample and the control group. Results showed that 85% of FGID patients met the criteria for one axis I disorder of the DSM-IV-TR, mainly anxiety and somatization disorders. Regarding axis II, 23% presented at least one personality disorder, the most common ones being those of avoidance and dependence. Regarding axis IV, the patients reported a higher number of problems relative to the primary support group. FGID patients showed greater symptoms compared to the control group on various SCL 90-R scales. On the other hand, FGID patients presented more implicative dilemmas than healthy controls, as well as lower self-esteem. No significant differences were observed depending on the type of FGID (irritable bowel syndrome or functional dyspepsia).

Keywords: *irritable bowel syndrome, functional dyspepsia, repertory grid technique, constructivism, implicative dilemma, self-identity*

Resumen

La importancia de los factores psicológicos en los Trastornos Funcionales Digestivos (TFD) queda plasmada en la literatura, sin embargo, los factores cognitivos apenas se han investigado y en particular, los conflictos cognitivos nunca se han explorado en este tipo de trastornos. El objetivo de este estudio es comparar las características cognitivas y sintomáticas de un grupo de 66 pacientes con TFD (33 diagnosticados de Síndrome del Intestino Irritable y 33 de Dispepsia Funcional) en comparación con un grupo control de participantes sin síntomas de TFD ni psicopatológicos. Ambos grupos fueron apareados por sexo y edad. La evaluación de la muestra clínica se llevó a cabo siguiendo los criterios del DSM- IV-TR y tanto a la muestra clínica como al grupo control se les administró el SCL 90-R, y además la Técnica de la Rejilla para la identificación de los conflictos cognitivos (dilemas implicativos) y de la discrepancia yo-ideal. Los resultados mostraron que el 85% de TFD cumplía criterios para algún trastorno del eje I del DSM-IV-TR, principalmente trastornos de ansiedad y de somatización. Respecto al eje II, el 23% presentó por lo menos un trastorno de personalidad, siendo los más comunes los de evitación y dependencia. En cuanto al eje IV, los pacientes informaron de un mayor número de problemas relativos al grupo primario de apoyo. Los pacientes con TFD mostraron mayor sintomatología con respecto al grupo control en diversas escalas del SCL-90-R. Por otro lado, los pacientes con TFD presentaron más dilemas implicativos que los controles sanos, así como una menor autoestima. No se observaron diferencias significativas en función del tipo de TFD (Síndrome del Intestino Irritable o Dispepsia Funcional).

Palabras clave: *síndrome del intestino irritable, dispepsia funcional, técnica de rejilla, constructivismo, dilema implicativo, identidad personal*

Functional gastrointestinal disorders (FGID) are symptom-based entities characterized by chronic or recurrent symptoms not explained by known structural or biochemical abnormalities (Drossman, 1999; Jones et al., 2007; Lacy et al., 2016). Irritable Bowel Syndrome (IBS), defined as chronic abdominal discomfort with alternating bowel symptom, and functional dyspepsia (FD), defined as chronic upper abdomen discomfort, are two of the most commonly encountered FGID. Since diagnosis of FGID need to exclude organic of biochemical pathological alterations, it is based mainly on consensual criteria among experts.

Epidemiological studies reported prevalence rates between 10% and 20% in western population although they might vary notably depending of the set of criteria uses for the diagnosis (Chey et al., 2015; Hungin et al., 2003; Mearin et al., 2001). Furthermore, FGID have been associated with significant decrement in quality of life and increased healthcare resources (Hungin et al., 2003; Maxion-Bergemann et al., 2006; Sandler et al., 2002). Interestingly, several authors pointed out comorbidity as an explanatory factor for use of healthy resources in patients with IBS (Chey et al., 2015; Johansson et al., 2010). Specifically, one of the main predictors of health care costs was psychiatric comorbidity. In this sense, existing literature suggests a high presence of psychiatric comorbidity in FGID patients, roughly 42% to 90%, with the most common diagnoses being anxiety, mood, and somatoform disorders (Benasayag et al., 2004; Drossman et al., 1999b; North et al., 2007; Vandvik et al., 2004; Whitehead et al., 2002). FGID are heterogenous syndromes, therefore, psychiatric comorbidity in these patients could be key for choice of interventions and outcomes in design of treatment trials. Nevertheless, these evidences are based basically on IBS patients, but few are known about psychiatric comorbidity in other types of FGID patients such as FD patients.

Because the study of FGID cannot be focused only in pathophysiology, it has become a truly multidisciplinary inquiry (Chey et al., 2015). From a psychological perspective (see also Benasayag et al., 2002), the study of cognitive conflicts could offer a putative understanding of the severe psychological suffering of these patients as suggested by our previous exploratory study (Benasayag et al., 2004). Kelly's (Kelly, 1955/1991; Walker & Winter, 2007) Personal Construct Theory (PCT) probably represents the most elaborate framework for an understanding of cognitive conflict. This constructivist considers human activity as a meaning making process. According to PCT, individuals create informal theories about the self, other people, their health, and so on. Moreover, their response to events (bodily sensations, interpersonal experiences, professional interventions, etc.) is mediated by this interpretation. In this model, these theories or mental models are formed by a set of bipolar personal constructs which are distinctions drawn from the perception of similarities and differences encountered in daily experience of each person, and then incorporated into their construction system to anticipate and make sense of events. All these constructs are organized into an interdependent, complex and hierarchical network of meanings, so that the constructs of a lower hierarchical

level, or peripheral, can be directly related to other superordinate core constructs, i.e. those forming personal identity. The perspective of a change in these core constructs could be "resisted" by the person, as it would imply an overall change of the system and a possible "threat" to her or his sense of personal identity. Thus, facing change that involves core constructs entails a cognitive conflict or dilemma for the individual.

Personal constructs, viewed as the distinctions human draw on their experience, are not necessarily verbal or conscious, and even less so the implications of a construct for the network of other constructs that form a cognitive system. When the implications of a construct in the construct network entail a conflict, an implicative dilemma in the terms of PCT, the person may feel stressed and blocked in his or her movements (taking decisions or actions which are required for his or her development or well being) but may not necessarily be aware of the reasons of that distress. The source of this stress is internal but usually triggered by external events that require the entangled constructs forming the dilemma to be understood and to respond to them.

To put an example from Esther, one of the participants of our study, she sees herself as "sluggish" and wants to become "energetic" (in her own terms) but in her network of constructs (more information is provided below regarding the assessment of the construct system) people who are "energetic" are usually also "bad person". This implication is based on her experience of significant people in her life, most of them are either "energetic" and "bad person" or "sluggish" and "good person" like her. Thus, situations in her life in which acting with energy is needed are somehow problematic for her. Becoming able to do so might imply, in her network of meanings, to become more bad as a person, like some disliked figures in her life (the "persona non grata", in this example).

Both the content and structure of personal construct systems have been explored using the Repertory Grid Technique (RGT). We consider that the RGT is a particularly useful tool for studying a phenomenon as complex as the relationship between identity and pain or discomfort present in FGID patients because it is a form of evaluation that combines an idiographic approach, focusing on the constructs relevant to each particular person, with nomothetic measures, which allow for comparison among individuals (Feixas, 2003). In fact, the RGT has already been used for this purpose in other chronic pain samples (Aguilera et al., 2019; Compañ et al., 2011).

The RGT also allow to gauge self-esteem, a key concept in the construction of the identity of an individual. Low self-esteem has been widely related to a large number of psychological disorders as well as to subjective well-being and effective functioning (Cheng & Furhnham, 2003; Furnham & Cheng, 2000; Robson, 1998). The RGT provides a measure of discrepancy between "self now" (a person current view of him/her self) and "ideal self" (how a person would ideally like to be) could be considered a measure of self-esteem.

In this sense, a recent exploratory study with IBS patients showed more cognitive conflicts as well as less self-esteem compared to the normal sample (Benasayag et al., 2004). Further research is needed to understand the putative role of cognitive conflicts defined as implicative dilemmas in the maintenance of physical and/or psychological symptoms in FGID subgroup of patients (Feixas et al., 2000).

The first aim of this study was to gauge putative differences in psychiatric comorbidity and symptoms of IBS and FD patients between them and with respect to controls. The second goal was to explore the relevance of two cognitive indexes, implicative dilemmas and self-ideal discrepancy, to characterize the construal of self and others of FGID patients.

Methods

Participants

The clinical sample consisted of 66 patients with FGID, 52 women and 14 men with a mean age of 36.6 years (*SD* 11.7- range 18-72). Following Roma II criteria, 33 patients were diagnosed with IBS and 33 with FD. Patients were recruited in the Institute of Functional and Motor Digestive Disorders, *Centro Médico Teknon*, Barcelona. Clinical interview for mental disorders following American Psychiatric Association (2000) *Diagnostic and Statistical Manual of Mental Disorders* (4th TR ed., DSM-IV-TR) diagnostic criteria and thorough assessment for FGID following Roma II diagnostic criteria (Drossman et al., 1999a) were carried out by a psychologist (first author) and a senior digestologist (third author), respectively.

Control group was formed by 66 (52 women and 14 men) healthy individuals. Their average age was 35.6 years ($SD = 10.26$; range = 18-60) with no significant age differences with respect to the clinical group ($F = 0.28$; $p = 0.59$). These individuals were selected from databases derived from Multicentric Dilema Project (see www.usal.es/tcp for more information) and matched by sex and age (as approximate as possible). Exclusion criteria were presence of any psychiatric disorder or presence of FGID. Healthy sample was assessed by psychology students trained by expert psychologists from the *Universitat de Barcelona* and the *Universidad de Salamanca*.

Instruments and Measures

Repertory Grid Technique (RGT, Feixas & Cornejo-Alvarez, 2002; Fransella et al., 2004)*:* The administration of RGT involves three stages in the context of a structured interview. Firstly, a set of 10-20 elements representing the self and significant others (typically mother, father, siblings, partner, friends) is selected. Also, a "non grata person" ("someone whom you know but do not like") and the "ideal self" ("how I would like to be") are included. For the clinical sample of this study, we also included the element "I before the symptoms" to tap putative alterations in identity after developing a FGID. In the second phase, a dyad of elements (e.g., father and mother) is selected and the individual must compare them in terms of their similarities and differences according to the subject's view. In the

grid example of Esther, both parents were seen as “good person” and, then, she was asked to provide a label for the opposite (“bad person”). Additionally, one or more perceived differences between the two elements were explored, so that the father was seen as “passive” while the mother is described as “active”. The person is encouraged to provide more differences or similarities, and then a new dyad of elements is selected (e.g., self and brother). This process of selection of dyads of elements and construct elicitation is repeated until all elements appear at least once in the comparisons and the subject does not provide new constructs. These personal constructs, which reflect the interviewee’s subjective views (rather than previously set and standardized items, like those of questionnaires) are displayed in the rows of the grid form (see figure 1) whereas the elements are represented in the columns.

Figure 1
Repertory Grid as Completed by One of the Participants of the Study

		Actual Self	Father	Mother	Brother	Sister	Friend 1 (same gender)	Friend 2 (same gender)	Friend 3 (same gender)	Mate 1	Mate 2	Non grata	Self before symptoms	Ideal Self
1 - Dependent	Independent	2	4	2	5	4	7	7	4	4	4	7	2	5
2 - Active	Passive	2	7	3	5	1	5	2	2	4	4	1	2	2
3 - Lives from day to day	Pessimist	3	5	3	3	2	3	2	5	4	4	2	3	2
4 - Happy	Does not show joy	3	5	2	4	2	3	5	3	4	4	2	2	2
5 - Has everything under control	Does not control	1	3	5	3	5	5	3	2	2	4	4	1	3
6 - Stressed	Not stressed	2	3	5	1	3	2	4	4	4	4	4	3	4
7 - Faces problems	Fearful	2	3	3	3	2	3	1	3	4	4	4	2	3
8 - Knows how to prioritize	Without priorities	5	5	5	2	4	4	4	4	4	4	4	5	2
9 - Sluggish	Energetic	1	1	5	4	2	1	3	3	4	4	6	2	6
10 - Confident	Insecure	5	6	3	4	4	3	2	2	4	4	1	5	2
11 - Manipulative	Sincere	7	5	6	6	4	4	4	4	4	4	1	7	5
12 - Good person	Bad person	6	6	6	6	6	6	5	5	4	4	1	6	6

1	2	3	4	5	6	7
Very much so	Quite a lot	A little	Middle point	A little	Quite a lot	Very much so

Finally, the person rates each element in terms of all the elicited constructs, employing a 7-point Likert-type scale. For example, a score of “7” is given to the element “father” for the construct “active vs. passive” meaning that he is viewed as “very passive”, and a score of “3” for the mother (“a little active”), and thus a grid data matrix is created. We analyzed this matrix with the GRIDCOR 4.0 (Feixas & Cornejo-Alvarez, 2002) computer program designed specifically for repertory grid analysis.

Implicative dilemmas were identified when a positive correlation (higher than 0.34) was found between the scores given to a discrepant construct ("present self" and "ideal self" scored in opposite poles of the construct, like "sluggish vs. energetic" in the example) and those given to a congruent construct ("present self" and "ideal self" scored in the same pole of the construct, "good person" in the example). This correlation suggests that the change desired in the discrepant construct involves an undesired change in the congruent construct (in the example, becoming "energetic" would imply stopping to be a "good person"). Finally, self-ideal discrepancy, an indication of self-esteem, was measured by the Euclidian distance between the "ideal self" and "self now" elements, that is, the more distance, the fewer self-esteem.

Symptom Check List–Revised (SCL-90-R, Derogatis, 1994; Gonzalez de Rivera et al., 1989)*:* This is a self-administered questionnaire composed of 90 items that assesses psychological distress across nine dimensions: somatization, obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism. Additionally, a Global Severity Index (GSI) can be calculated.

Global Assessment of Functioning Scale (GAF): This scale reported the clinician's judgment of the individual's overall level of functioning and daily activities. It is a 100-point scale that measures a patients overall level of psychological, social, and occupational functioning on a hypothetical continuum, with ratings from 1 to 10 indicating severe impairment and ratings from 90 to 100 indicating superior functioning.

Statistical Analyses

Chi-squared tests were performed to test difference comorbidity rates in Axis I disorders between IBS and FD patients and to examine whether the proportion of participants having implicative dilemmas was different across samples. Analyses of Variance (ANOVA) were carried out to explore the differences between control and clinical groups (IBS and FD) concerning SCL-90-R scales and RGT variables. Post hoc tests were performed when differences between clinical groups were detected.

Results

Clinical diagnosis (DSM-IV-TR)

Fifty-five (85%) FGID patients were found to have currently one or more DSM-IV-TR Axis I disorders. Similar percentages were found between IBS (90%) and FD patients (79%). The predominant diagnoses were anxiety disorders (41%) and somatization disorders (34%). Generalized anxiety disorder was the most frequently encountered anxiety disorder, with 17 (26%) instances, followed by panic disorder with 8 (12%) (taking together those with and without agoraphobia). Mood disorders were also commonly observed. Specifically, dysthymic disorder was present in 11 patients and major depression in 4 (see table 1).

Table 1
Type of Diagnosis (n = 66)

Axis 1 of DSM-IV-R Diagnosis	N[1]
Generalized Anxiety Disorder	17
Panic attack without agoraphobia	2
Panic attack with agoraphobia	6
Social fobia	4
Posttraumatic Stress Disorder	1
Anxiety disorders in total	30
Somatization disorder	23
Hypochondriasis	2
Somatization disorders in total	25
Major depresssive disorder	4
Dysthymic disorder	11
Mood disorders in total	15
Adjusment disorder with mixed anxiety and depressed mood	4
Others	4
No diagnosis	10

Note. [1] Of the 56 patients receiving a diagnosis, 16 received more than one. The numbers here reflect the number of diagnostic categories employed in the sample overall (a total of 74).

Comorbidity between Axis I disorders was high in these FGID patients, sixteen patients (24%) presented more than one diagnosis at the moment of the assessment. No differences were found between IBS and FD patients concerning the number of diagnosis or type of diagnosis in Axis I ($x^2 = 1.95$, $p = 0.37$). With respect to Axis II disorders (American Psychiatric Association, 2000), sixteen patients (23%) presented at least one personality disorder. Avoidant and dependent personality disorders were the most common personality disorders.

Concerning psychosocial and environmental problems in FGID patients, results showed that these patients (IBS and FD) presented mainly problems with their primary support group (family) and occupational problems (see table 2). On the other hand, the mean of GAF for these FGID patients was 73.4 ($SD = 10.3$; min: 50 max: 90). GAF ratings did not differ much between IBS (mean = 73.6; $SD = 12.2$) and FD (mean = 73.6; $SD = 8.2$) patients.

Table 2
Types of Psychosocial and Environmental Problems (Axis IV, DSM-IV-TR)

Psychosocial and environmental problems*	IBS	FD
Problems with primary support group	23	21
Occupational dificulties	11	11
Problems with social environment	2	2
Economic problems	1	0
Without problems	3	5

Note. * Several patients had more than one problem.

Psychopathologic Symptomatology (SCL-90-R)

FGID patients and controls differed significantly on somatization, interpersonal sensitivity, depression, anxiety symptom scales and global severity index (*GSI*) (table 3). Least Significant Difference (*LSD*) post-hoc test showed that patients presented higher scores compared to controls, but no significant differences were found between IBS and FD patients.

Table 3
Analyses of Variance Results of SCL-90-R Scales (Mean ± Standard Deviation) for IBS (n = 33), FD (n = 33) and Control Groups (n = 66)

SCL-90-R scales	FGID		Control	F	p
	IBS Mean (SD)	FD Mean (SD)	Mean (SD)		
Somatization	1.20 (0.84)	1.12 (0.81)	0.76 (0.65)	4.94	0.009*
Obsessive-Compulsive	0.95 (0.82)	1.02 (0.65)	0.82 (0.59)	1.02	0.365
Interpersonal Sensitivity	0.99 (0.79)	1.14 (0.76)	0.74 (0.54)	4.34	0.015*
Depression	1.25 (0.86)	1.29 (0.79)	0.92 (0.66)	3.66	0.028*
Anxiety	1.09 (0.91)	0.99 (0.74)	0.65 (0.50)	5.67	0.004*
Hostility	0.73 (0.74)	0.65 (0.56)	0.67 (0.74)	0.12	0.890
Phobic Anxiety	0.39 (0.56)	0.46 (0.74)	0.25 (0.42)	1.92	0.151
Paranoid Ideation	0.82 (0.69)	0.88 (0.58)	0.66 (0.48)	1.99	0.141
Psychoticism	0.56 (0.54)	0.54 (0.49)	0.35 (0.42)	2.85	0.062
Global Severity Index	0.92 (0.62)	0.93 (0.55)	0.66 (0.43)	4.43	0.014*

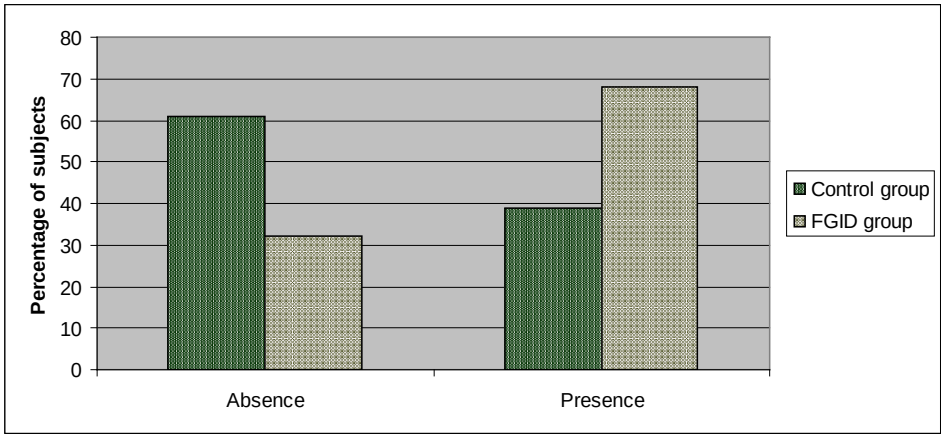
Note. * Least Significant Difference post-hoc tests revealed that differences were found only between controls and FGID patients (no significant differences were found comparing IBS to FD).

Cognitive Indexes (RGT)

Self-ideal discrepancy was significantly higher in the clinical sample (F = 10.20, $p < 0.001$). LSD post-hoc analyses revealed that control group had lower distance (higher self-esteem) compared to both IBS and FD patients, and no differences were found between IBS and FD patients (see Table 4). With respect to the presence of implicative dilemmas (IDs), we found that 68% of the patients in the clinical group had at least one ID in their grids, compared to the 39% found in the control group ($X^2 = 11.03$, $df = 2$; $p = 0.001$) (see figure 2). Again, no differences were found between IBS and FD patients ($X^2 = 0.63$, $df = 1$; $p = 0.428$).

Figure 2

Percentage Distribution of Presence/absence of Implicative Dilemmas between FGID (n = 66) and Controls (n = 66)



Note. $x^2 = 11.03$, $p = 0.001$.

To investigate further the relevance of the number implicative dilemmas among FGID patients, an additional analysis was made considering only those patients and controls who had at least one ID, so that participants with no IDs were excluded of this analysis. The percentage of IDs (which takes into account number of constructs in each grid) revealed significant differences between control group and FGID patients ($F = 5.85$, $p = 0.005$). No differences were found between IBS and FD patients (table 4).

Table 4
Analyses of Variance for Repertory Grid Technique (RGT) Measures between IBS (n = 33), FD (n = 33) and Control Group (n = 66)

RGT variables	FGID		Control	F	p
	IBS Mean (SD)	FD Mean (SD)	Mean (SD)		
Self-ideal discrepancy	0.48 (0.34) (n =33)	0.36 (0.22) (n =33)	0.24 (0.22) (n =66)	10.20	0.000*
Implicative dilemma percentage**	4.29 (3.43) (n =24)	3.59 (3.09) (n =21)	1.69 (1.35) (n =25)	5.85	0.005*

Note. * LSD post-hoc analyses revealed that differences were found only between controls and FGID patients (no significant differences were found comparing IBS to FD).
** Only patients with at least one implicative dilemma were computed for this measure.

Discussion

Our results showed a high prevalence of psychiatric disorders in FGID patients (85%, with similar percentages for IBS and FD patients) which is consistent with the prevalence range from 42% to 90% reported in previous studies (Benasayag et al., 2004; Drossman et al., 1999b; North et al., 2007; Vandvik et al., 2004; Whitehead et al., 2002). As previously reported in the literature (Jones et al., 2007; Whitehead et al., 2002), predominant concurrent diagnoses were anxiety, somatization, and affective disorders. Concerning anxiety disorders, the same prevalence of concurrent FGID and generalized anxiety disorder is found in our study and in Lydiard et al. (26%), although we found a lower prevalence of panic disorders (12%) than they did (26%). However, our prevalence rates are higher than those of Walker et al. (7%) (Lydiard et al., 1993; Walker et al., 1990). In respect to specific somatization disorders, we found a higher concurrent prevalence of somatisation disorder (35%) compared to Lydiard et al. (17%). Finally, we found a lower prevalence of current major depression (6%) compared with previous studies which reported a range from 23% to 21% (Lydiard et al. and Walker et al., respectively), but a higher prevalence of dysthymic disorder (17%). A possible explanation for this difference could be related to diagnostic criteria for affective disorders which could be applied in our study favouring the prevalence of dysthymic disorder or in the other studies favouring the prevalence of major depression. Additionally, when comparing with non-clinical sample, FGID patients presented higher scores on somatization, interpersonal sensitivity, depression, and anxiety symptom scales. Therefore, the high degree of overlap between functional-gastrointestinal and psychological disorders found in the literature was confirmed also in our study. It may point out the putative key role of psychological factors involved in etiopathology or/and mantainance of functional gut dysfunction.

Interestingly, our results showed that IBS and FD patients presented similar psychopathological symptom profile with relatively high levels of severity, sensibly higher from those in the control sample. In this sense, a categorical approach pointed out that there were no differences between IBS and FD patients in respect to number or type of diagnoses within Axis I disorders. Therefore, both types of patients seemed to present similar psychological distress despite of the differences related to physical symptomatology.

Comorbidity with Axis II disorders was lower (23%) compared to Axis I (85%). The most frequent personality disorders were avoidant and dependent, both included in Cluster C. The low number of cases precluded details analysis on the role of these disorders. Although personality features seem not to be directly associated in symptom-generation in FGID, they seem to influence healthcare-seeking and levels of distress (Jones et al., 2007). Further research is needed to elucidate such complex relationship between personality features and development of FGID.

According to the biopsychosocial model of FGID, our results showed that psychosocial stressors such as problems with primary support group and occupational problems are the most frequently reported in both IBS and FD patients before the onset of the disorder. Our clinical sample presented a reasonably good global functioning as assessed using the clinician-rated GAF scale, this result is not consistent with other studies focused on quality of life of these patients in which FGID were associated with significant decrement in quality of life (Mearin et al., 2001). This inconsistence could be attributed to the use of self-report instruments about quality of life that could contain more detailed information about environmental and psychical limitations of daily life.

Concerning cognitive measures derived from the RGT, our results showed a higher self-ideal discrepancy in the clinical sample than in control group. Since no significant differences were found between IBS and FD patients, we can consider this discrepancy as a common aspect of FGID. These results are consistent with a previous study in a group of patients with IBS (Benasayag et al., 2004). Along these lines, another study with chronic pain patients revealed that those with high self-discrepancies showed more pain levels and higher levels of psychological distress (Waters et al., 2004). High discrepancy between self and ideal self has been associated with self-esteem (Dada, 2008), and other studies had also pointed out self-esteem as a putative variable in the mediating effects between the impact of chronic pain and psychological well being (Nagyova et al., 2005).

Besides measuring self-ideal discrepancy, RGT allows for the identification of cognitive conflicts in construing self and others. Our results showed a higher number of participants with implicative dilemmas in the clinical sample than control group, while no differences were found between IBS and FD patients. Interestingly, 68% of patients presented at least one implicative dilemma compared to the 39% of control group. These results replicate our previous study (Benasayag et al., 2004) with IBS patients who also presented with more implicative dilemmas than controls.

This higher number of implicative dilemmas has also been reported in fibromyalgia (Compañ et al., 2011), depression (Feixas et al., 2014) and other disorders (Montesano et al., 2015). Therefore, future studies should focus on understanding cognitive mechanisms involved in symptom severity and/or maintenance of FGID patients and its implication for psychological treatment. Further, it should be interesting to clarify whether this type of cognitive conflicts is transdiagnostic or a common mechanism in functional disorders of different kinds (e.g., FGID, fibromyalgia and other medically unexplained syndromes) or there are patterns which are specific of FGID. For example, further content analysis of the conflicts found might reveal which aspects are dilemmatic in the cognitive system of FGID patients, and whether these issues are common in their content to those of other disorders.

Certainly, the role of internal conflicts in psychological distress has been a tenet of a variety of theories (e.g., psychoanalysis) but assessment methods for identifying these conflicts are scarce and, thus, there is little evidence about their role in mental wellbeing, and even less in FGID. The method employed in this study, based on the RGT, can be considered a plausible option to measure both cognitive conflicts and self-ideal discrepancy. Our results suggest that both cognitive factors are prevalent in FGID patients and might stimulate further research on their specific role in the development and maintenance of these disorders. But an additional merit of the study of implicative dilemmas is that there exist psychotherapeutic interventions designed to resolving those dilemmas in other disorders, like depression (Feixas & Compañ, 2015, 2016), which proved to be effective (Feixas et al., 2018) and could be adapted for FGID patients and this might help increase the efficacy of its current psychological treatment.

Finally, there are some limitations in this study. For the FGID diagnosis it was not possible the inclusion of biological diagnostic tests such as proctosigmoidoscopy, complete blood cell count, and erythrocyte sedimentation rate, although a senior digestologist was in charge of doing FGID diagnostics following Rome II criteria. Concerning clinical psychological diagnosis, a structured psychiatric interview was not used, although a senior clinical psychologist (second author) participated in the diagnosis along with the psychologist (first author) conducting the clinical interviews.

In summary, FGID patients presented high levels of psychopathology considering both categorical diagnosis and dimensional symptoms, and this psychopathological pattern was similar in IBS and FD subgroups of patients. Moreover, cognitive indexes such as self-ideal discrepancy (indicating low self-esteem) and high presence and number of implicative dilemmas proved to be involved in the psychological processes of patients with FGID.

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