

A randomized controlled trial of brief psychoanalytic psychotherapy in patients with functional dyspepsia^{☆,☆☆}

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ABSTRACT

Functional dyspepsia (FD) is a common cause of upper gastrointestinal symptoms and discomfort. The present study aimed to assess the effectiveness of brief core conflictual relationship theme (CCRT) psychoanalytic psychotherapy on changing gastrointestinal symptoms, alexithymia, and defense mechanisms in patients with FD. In a randomized controlled trial study, 49 patients with FD were randomly assigned to medical treatment with brief psychodynamic therapy (24 subjects) or medical treatment alone (25 subjects). Gastrointestinal symptoms, defense mechanisms, and alexithymia were assessed before the trial, after treatment, and at 1- and 12-month follow-ups. The results showed that brief psychodynamic therapy improved all of the gastrointestinal symptoms, including heartburn, nausea, fullness, bloating, upper abdominal pain, and lower abdominal pain, after treatment and at two follow-ups. The CCRT therapy significantly improved many psychological symptoms, including mature defenses, neurotic defenses, immature defenses, difficulties in identifying feelings, difficulties in describing feelings, and total alexithymia score. In conclusion, brief psychodynamic therapy is a reliable method to improve gastrointestinal symptoms, mature defenses, and alexithymia scores in patients with functional dyspepsia.

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1. Introduction

Functional dyspepsia (FD) is defined by the Rome II consensus as persistent or recurrent pain or discomfort centered in the upper abdomen, without evidence of organic disease (Talley et al., 1999). The upper abdominal discomfort is often described as fullness, bloating or early satiety accompanied by belching, nausea, and vomiting.

Community studies reveal that FD has an annual prevalence of 17–29% in developed countries (Shaib and El-Serag, 2004; Okumura et al., 2010). Although only approximately 25% of

dyspeptic subjects present to a physician (Jones et al., 1990), dyspepsia impairs quality of life (Talley et al., 1995) and influences absenteeism and direct and indirect healthcare costs (Brook et al., 2010). Unfortunately, the treatment of FD remains a major challenge. The symptomatic improvement of patients with FD after pharmacological interventions remains controversial (Holtmann and Gapsin, 2008). Some research has shown that selective serotonin and norepinephrine reuptake inhibitors are no more effective as treatment than placebos in patients with functional gastrointestinal disorders (Van Kerkhoven et al., 2008; Talley et al., 2008).

Research has demonstrated the influence of psychological processes on gastrointestinal sensorimotor functions and symptoms (Van Oudenhove et al., 2004). Negative correlations have been demonstrated between state anxiety levels and both gastric sensitivity and compliance in FD patients (Van Oudenhove et al., 2007). It has been established for some time that comorbidity of mood and anxiety disorders in functional gastrointestinal disorder patients is higher than in the general population (Henningsen et al., 2003), with rates up to 50% or more, depending on the population studied (Van Oudenhove et al., 2004; Lydiard, 2005).

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Little research is available regarding the role of psychotherapy in dyspeptic syndromes. Haug (2002) found that cognitive therapy may be effective in patients with FD, and Hamilton et al. (2000) reported the same findings for psychodynamic-interpersonal psychotherapy. Short-term psychodynamic psychotherapies (STPP) are a group of brief therapeutic techniques that aim to acquire insight into various unconscious phenomena and any difficulties in identifying and experiencing emotions (Abbass et al., 2009). A systematic review of randomized controlled trials of manual-guided psychodynamic psychotherapy revealed that STPP is superior to control conditions and, on the whole, as effective as already established treatments (e.g. cognitive-behavioral therapy) in specific psychiatric disorders (Leichsenring and Leibling, 2007). The core conflictual relationship theme (CCRT) is one the most widely employed of these short-term psychoanalytic psychotherapy methods for changing or assessing relationship patterns (Book, 2007). Previous studies have shown that prevalence of alexithymia, depression, anxiety, somatization, and interpersonal sensitivity is high among FD patients (Porcelli et al., 1999), that many alexithymic patients also have relationship disturbances (Vanheul et al., 2010), and that there is a strong association between alexithymia and maladaptive ego defense style (Parker et al., 1998). Consequently, we hypothesized that the CCRT therapy may improve interpersonal function, alexithymic disturbances, ego defense mechanisms, and FD symptoms. The CCRT psychotherapy focuses on interpersonal conflicts and emotional changes. It seems that a release from interpersonal conflicts will improve the regulation of emotional affect and alexithymia. When relationship conflicts are resolved, interpersonal sensitivity will decrease, and social functioning will be improved.

In the present study, we compared the outcome of combined CCRT psychotherapy and medical therapy with the outcome of medical therapy alone in patients with FD. The effects of CCRT psychotherapy on FD symptoms, alexithymia symptoms and defense mechanisms were investigated.

2. Methods

2.1. Participants

The trial is registered at the Iranian Registry of Clinical Trials, number IRCT 201102285931N1. The patients were recruited from the gastroenterology clinics in two teaching hospitals at the Babol University of Medical Sciences (Babol, northern Iran) from April 2010 to September 2011. The case notes of all the clinic patients

were screened by a researcher associated with the study to determine their recruitment eligibility. Any patients experiencing recurrent or persistent upper abdominal pain or discomfort more than 2–3 days per week for at least 3 months were considered to have FD. All of the patients were 20–40 years old and had earned high school diplomas or university degrees. Table 1 shows the characteristics of the study sample. There were no significant differences in the variables between the groups.

2.2. Procedure

After assessing the inclusion criteria (dyspeptic symptoms, age, and education), the patients were referred to two gastroenterologists to confirm their FD diagnosis. Rome III criteria were applied to identify subjects with dyspepsia (Tack et al., 2006). Biochemical, ultrasonographic, and endoscopic examinations were performed to exclude any structural organic gastrointestinal diseases. Exclusion criteria were: peptic ulcer, gastroesophageal reflux, biliary tract disease, and gastric cancer. Then, all of the subjects with diagnosis of FD were interviewed by a female psychoanalytic psychotherapist who had sufficient experience in long-term psychoanalysis and the CCRT psychotherapy to assess the inclusion and exclusion criteria for the therapy. The therapist was trained in the CCRT psychotherapy before starting the trial by a supervisor (H.E. Book) through face-to-face distance learning with Skype software. Therefore, patients with diagnosed psychosis, borderline, dependent personality, schizoid or paranoid personalities were excluded from the study (Luborsky et al., 1993; Crist-Christoph & Connolly, 1993). At the end of the interview session, if the patient agreed to participate, she/he was randomly assigned on a paper list, which was used to assign her/him to either a medical therapy (control group) or CCRT-based psychoanalytic therapy in combination with medical therapy (experimental group). The block randomization was by a paper list (random numbers supplied from 1 to 49 by the trial statistician) prepared by an investigator with no clinical involvement in the trial (odd numbers were assigned to the control group, and even numbers to the experimental group). Fig. 1 shows flow diagram in the patients.

At the beginning of the study, all of the participants in both groups were asked to complete the Patient Assessment of Upper Gastrointestinal Symptom Severity Index (PAGI-SYM), 40-item Defense Style (DSQ-40), and 20-item Toronto Alexithymia Scale (TAS-20). As the duration of the interventions in the two groups was not equivalent (for the medical therapy the duration was 4–6 weeks, and for the CCRT psychotherapy the duration was 18 weeks,

Table 1
Baseline demographic and characteristics of study sample.

	CCRT		Control	
	Women (n = 17) N (%)	Men (n = 7) N (%)	Women (n = 17) N (%)	Men (n = 8) N (%)
Age (mean, SD)	31.6 (7.0)	32.7(7.6)	32.8 (5.7)	34.1(4.5)
Education				
High school	9.0 (18.4)	3.0 (6.1)	11.0 (22.5)	5.0 (10.2)
College degree	8.0 (16.3)	4.0 (8.2)	6.0 (12.2)	3.0 (6.1)
Occupational status				
Employed	6.0 (12.2)	7.0 (14.3)	10.0 (20.4)	7.0 (14.3)
Unemployed	11.0 (22.5)	0.0 (0.0)	7.0 (14.3)	1.0 (2.0)
Marital status				
Single	5.0 (10.2)	1.0 (2.0)	3.0 (6.1)	1.0 (2.0)
Married	12.0 (24.6)	6.0 (12.2)	14.0 (28.6)	7.0 (14.3)
Helicobacter status				
Positive	11.0 (22.5)	4.0 (8.2)	11.0 (22.5)	5.0 (10.2)
Negative	6.0 (12.2)	3.0 (6.1)	6.0 (12.2)	3.0 (6.1)
Duration of symptoms				
≤2 years	3.0 (6.1)	2.0 (4.1)	4.0 (8.2)	1.0 (2.0)
>2 years	14.0 (28.6)	5.0 (10.2)	13.0 (26.5)	7.0 (14.3)

Abbreviation: CCRT, Core conflictual relationship theme.

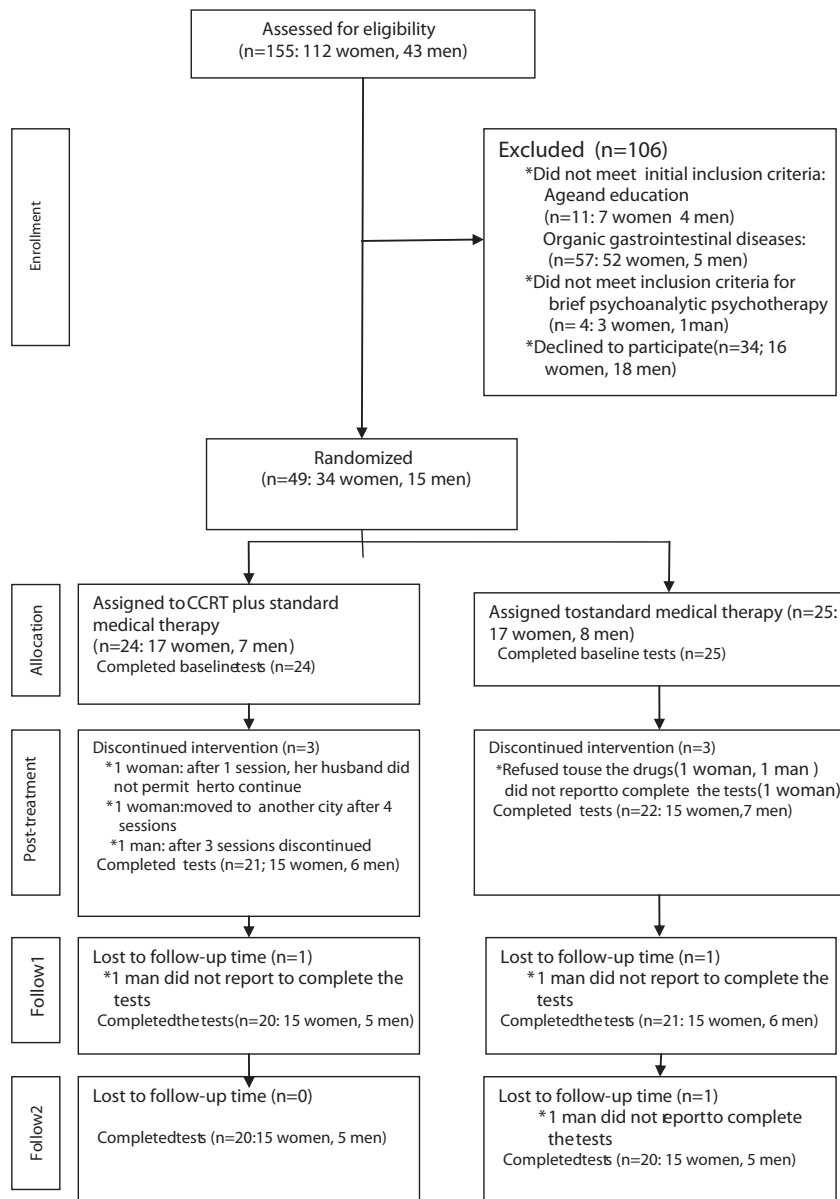


Fig. 1. Flow diagram of psychotherapy compared with medical treatment in patients with functional dyspepsia.

where 2 weeks consisted of the social interview and 16 weeks of the formal treatment), we considered time of post-treatment assessment based on the CCRT psychotherapy group with the longer intervention period (18 weeks). Serial evaluations of patients' symptoms with four questionnaires were performed by a rater who was blind to treatment status of the patients (CCRT or medical therapy) at four time points: the beginning of study (baseline), at post-treatment (18 weeks after the baseline), at follow-up 1 (1 month after the post-treatment), and at follow-up 2 (12 months after the post-treatment). All aspects of this protocol were approved by the Medical Ethics Committee of the Babol University of Medical Sciences and the Ethics Committee of Tarbiat Modares University.

2.2.1. Medical therapy

The patients who were positive for *Helicobacter pylori* (31 persons) were given a combination of bismuth subcitrate (3×500 mg), metronidazole (3×250 mg), amoxicillin (3×500 mg) and either omeprazole (2×20 mg) or ranitidine (2×150 mg) for two weeks. After two weeks of this treatment protocol, omeprazole

(2×20 mg) or ranitidine (2×150 mg) only was continued for four weeks. Patients who were negative for *H. pylori* (18 persons) were given omeprazole (2×20 mg) or ranitidine (2×150 mg) for six weeks.

2.2.2. Brief psychodynamic therapy

The brief psychodynamic therapy was derived from the work of Luborsky (1984), as developed by Book (1998). Book (1998) wrote a book as the first brief CCRT-guided psychotherapy manual that is devoted to showing the therapist how to conduct the therapy while the therapist is part of the session with the patient.

CCRT can be determined by examining three aspects of the relationship episode. What the individual wanted from the interaction is termed a *Wish* (W). The second aspect is the *response from the other person* (RO). The third component to the CCRT is *response of the self* (RS). The CCRT itself is generated from a number of relationship episodes (REs), which are stories that patients tell about his or her interaction with another person. After a review of multiple REs, a common or overarching theme often emerges. This

identified theme is at the “core” since it lies at the heart of the client’s symptoms and interpersonal difficulties, and represents the repetitive, interpersonal concern that brings the client in for treatment (Sue and Sue, 2008).

In this study, the patients who were allocated to the psychotherapy group received 16 individual sessions (50 min each) once a week over four months. Before formal psychotherapy began, the therapist had two sessions with each patient: one for assessment and one for a socialization interview. During the assessment session, the therapist took a history, carried out a mental status examination and listened to REs of patients to extract and build the main conflictual relationship theme. The socialization interview was used to present to the patient her CCRT statement and to evaluate her responses to it. CCRT-based psychodynamic therapy requires from the therapist a blend of supportive and expressive techniques. Supportive techniques consist of the following elements: defining the therapeutic frame, offering empathic comments, maintaining vital defense, maintaining appropriate self-object transferences, and returning to Here-and-Now perspective. The goal of expressive techniques (empathic comments, clarification, confrontation, and interpretation) is to encourage previously painful material to emerge and be expressed in the safety of the supportive relationship so that this material can be safely observed, understood, and resolved (Book, 2007).

The treatment divides the 16 sessions into three phases. The first phase (sessions 1–4) involves identifying the CCRT with the patient, determining the goals for therapy, and providing the treatment rationale. During the second phase (sessions 5–12), the primary focus is working through the RO by examining the childhood roots of this pattern. The response from others is interpreted as the transference of unconscious attitudes and behaviors derived from past relationships with parents or other caregivers. The third phase (sessions 13–16) of the therapy involves dealing with termination issues. The therapist should be alert for separation anxiety or any regression on the part of the patient. Fantasies from the patient regarding why treatment is ending should be explored (Sue and Sue, 2008).

2.3. Instruments

2.3.1. PAGI-SYM

Gastrointestinal symptoms were evaluated using the PAGI-SYM, which is a disease-specific, self-report questionnaire developed by Rentz et al. (2004). PAGI-SYM is a reliable and valid measure of upper gastrointestinal symptoms and is widely used in gastrointestinal research (Cherian et al., 2010). This instrument contains 20 items and 6 subscales that cover heartburn/regurgitation (7 items), nausea/vomiting (3 items), postprandial fullness/early satiety (4 items), bloating (2 items), upper abdominal pain (2 items), and lower abdominal pain (2 items). The subscale scores vary from 0 (none or absent) to 5 (very severe).

2.3.2. DSQ-40

Ego defense styles were assessed by the DSQ-40. DSQ-40 is a valid instrument for the assessment of defense mechanisms and change in these mechanisms after psychotherapy (Schauenburg et al., 2007). The DSQ-40 can yield both 20 individual defense scores and three higher-order factor scores (mature, neurotic, and immature). The subscale scores vary from one (strongly disagree) to nine (strongly agree). There are two items for each of the 20 defenses. A valid Persian version of the DSQ-40 was used in this study (Besharat et al., 2001).

2.3.3. TAS-20

Alexithymia was evaluated with the self-reported 20-item TAS-20, which is a widely used and well-validated measure of this

construct (Bagby et al., 1994). This instrument contains 20 items and three subscales that cover difficulty in identifying feelings (7 items), the difficulty in describing feelings (5 items), and externally oriented thinking (8 items). The subscale scores vary from one (strongly agree) to five (strongly disagree). Some items are reverse scored. A valid Persian version of the TAS-20 was used in this study (Besharat, 2007).

2.4. Statistical analyses

We used an intention-to-treat analysis to examine the data. A last observation carried forward technique was used to handle missing data. The characteristics of the two subject groups were compared using the Student’s *T* test for continuous variables and the χ^2 test for categorical variables. Primary outcome measure was gastrointestinal symptom reduction (PAGI-SYM). Reduction in alexithymia, and modification of defense mechanism were secondary outcome measures (DSQ-40 and TAS-20).

The results were analyzed using repeated-measure ANOVAs, with 4 times (baseline, post-treatment, follow-up one, follow-up two) as a within-subjects factor and group (CCRT psychotherapy and control) as a between subjects factor. This model was used for all the dependent variables to assess whether the interaction effect time \times group was significant. For each group of trials, repeated-measure ANOVAs, with four times (baseline, post-treatment, follow-up one, and follow-up two) as within-subjects used to determine the changes dependent variables during four series of measurements. If the repeated-measure ANOVAs showed that tests of within-subjects effects were significant, Bonferroni tests were conducted to explore pairwise comparisons at each time of administration. A Bonferroni correction to the level of significance was applied, resulting in of 0.013 (0.05/4). All of the statistical analyses were performed using SPSS software, version 14; $p < 0.05$ was regarded as statistically significant.

3. Results

3.1. Gastrointestinal symptoms

Table 2 shows the trend of changes in mean scores of the gastrointestinal symptom scores in two groups from pretreatment to post-treatment and the two follow-ups. Repeated-measure ANOVAs on PAGI-SYM subscales revealed a significant interaction effect for group \times time in all of the gastrointestinal symptoms. There were differences between the CCRT psychotherapy and control group in terms of the improvement of all dyspepsia symptoms over the trial period; heartburn/regurgitation ($F[3,45] = 8.67$; $p < 0.001$), nausea/vomiting ($F[3,45] = 4.38$; $p < 0.01$), postprandial fullness/early satiety ($F[3,45] = 7.28$; $p < 0.001$), bloating ($F[3,45] = 11.78$; $p < 0.001$), upper abdominal pain ($F[3,45] = 16.48$; $p < 0.001$), lower abdominal pain ($F[3,45] = 5.60$; $p < 0.01$), and total gastrointestinal symptom scores ($F[3,45] = 16.57$; $p < 0.001$). ANOVAs on each group over time of the trial revealed that the CCRT psychotherapy group improved all of the mean scores of FD symptoms significantly from pretreatment to post-treatment and the two follow-ups: heartburn/regurgitation ($p < 0.001$), nausea/vomiting ($p < 0.001$), postprandial fullness/early satiety ($p < 0.001$), bloating ($p < 0.001$), upper abdominal pain ($p < 0.001$), lower abdominal pain ($p < 0.001$), and total gastrointestinal symptom scores ($p < 0.001$). Medical therapy did not improve gastrointestinal symptoms from pre-treatment to post-treatment and the two follow-ups.

3.2. Psychological symptoms

Table 3 shows the trend of changes in the mean scores of the psychological symptoms in the two groups from pretreatment to

Table 2
Gastrointestinal symptom scores in two groups over the trial period.

PAGI-SYSM	Baseline		Post treatment		Follow-up 1-month		Follow-up 12-months	
	CCRT	Control	CCRT	Control	CCRT	Control	CCRT	Control
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Heartburn/regurgitation	12.8 (8.1)	13.9 (8.5)	5.8 ^a (5.0)	12.8 (8.3)	4.8 ^a (4.1)	12.8 (7.7)	4.8 ^a (4.2)	12.6 (8.0)
Nausea/vomiting	4.0 (3.5)	4.5 (3.6)	1.6 ^a (2.4)	4.5 (3.3)	1.2 ^{a,b} (2.2)	4.2 (3.2)	1.4 ^a (2.3)	4.4 (3.2)
Post-prandial fullness/early satiety	10.7 (4.5)	10.5 (5.9)	5.7 ^a (4.6)	10.0 (5.9)	5.5 ^a (4.9)	10.6 (5.1)	5.7 ^a (4.5)	9.6 (5.2)
Bloating	6.5 (3.1)	5.8 (2.3)	3.5 ^a (2.5)	6.8 (3.9)	3.4 ^a (2.6)	6.2 (3.3)	3.8 ^a (2.7)	6.8 (3.9)
Upper abdominal pain	5.7 (2.9)	6.9 (2.8)	2.7 ^a (2.0)	7.5 (2.8)	2.8 ^a (2.3)	7.8 ^a (2.5)	2.9 ^{a,c} (2.1)	7.6 ^a (2.7)
Lower abdominal pain	3.7 (3.5)	4.1 (3.7)	1.3 ^a (1.5)	4.2 (3.6)	1.2 ^a (1.8)	4.0 (3.7)	1.3 ^a (1.9)	4.2 (3.7)
Total mean score	43.6 (12.4)	45.9 (20.6)	20.7 ^a (13.3)	44.0 (21.4)	19.2 ^a (14.1)	43.6 (19.4)	20.1 ^a (13.0)	43.6 (20.0)

Note: Ranges: heartburn/regurgitation, 0–35; nausea/vomiting, 0–15; post-prandial fullness/early satiety, 0–20; bloating, 0–10; upper abdominal pain, 0–10; lower abdominal pain, 0–10; total scores, 0–100; one-way ANOVA repeated measure analysis: within-group values with alphabetic superscripts for each measure are statistically significant at each phase of administration.

Abbreviations: PAGI-SYM, patient assessment of upper gastrointestinal symptom severity index; CCRT, core conflictual relationship theme.

^a Post treatment and two follow-ups with baseline.

^b Post treatment with follow-up 1.

^c Post treatment with follow-up 2.

post-treatment and the two follow-ups. Repeated-measure ANOVAs on DSQ-40 subscales revealed a significant interaction effect for group \times time in three ego defense styles. There were differences between the CCRT psychotherapy and control group in terms of mature defenses score ($F[3,45] = 11.26$; $p < 0.001$), neurotic scores ($F[3,45] = 10.75$; $p < 0.001$), and immature defenses ($F[3,45] = 11.74$; $p < 0.001$). ANOVAs on each group over the trial period revealed that the CCRT psychotherapy group improved significantly the mean scores of mature defenses ($p < 0.001$), neurotic scores ($p < 0.001$), and immature defenses ($p < 0.001$), from pretreatment to post-treatment and the two follow-ups.

Repeated-measures ANOVAs on TAS-20 subscales revealed a significant interaction effect for group \times time in several of the alexithymia symptoms. There were differences between the CCRT psychotherapy and control group in terms of total alexithymia score ($F[3,45] = 25.80$; $p < 0.001$) and improvement of two symptoms over the trial period: difficulties in identifying feelings improved significantly ($F[3,45] = 16.00$; $p < 0.001$) and difficulties in describing feelings ($F[3,45] = 11.70$; $p < 0.001$). The interaction effect for group \times time in the subscale of externally oriented thinking was not significant. ANOVAs on each group over the trial period revealed that the CCRT psychotherapy group significantly

improved the mean scores of two alexithymia symptoms from pre-treatment to post-treatment and the two follow-ups: difficulties in identifying feelings ($p < 0.001$) and difficulties in describing feelings ($p < 0.001$), total alexithymia score ($p < 0.001$). The CCRT psychotherapy did not significantly improve the mean score of the subscales of externally oriented thinking from pretreatment to post-treatment and the two follow-ups. Medical therapy did not improve ego defense styles and alexithymia symptoms from pre-treatment to post-treatment and the two follow-ups.

4. Discussion

The results show that the CCRT psychotherapy improved all of the dyspepsia symptoms by the end of the treatment, and this effect persisted at the 12-month follow-up. Few published studies have reported the effects of psychotherapy on the symptoms of FD, and no study has previously reported that psychotherapy can decrease all dyspepsia symptoms. Calvert et al. (2002) reported that the percentage change in dyspepsia scores was statistically significantly better in the hypnotherapy group than in the supportive and medical group. Haug (2002) reported that patients receiving cognitive behavioral therapy showed a statistically significant reduction in three gastric

Table 3
Psychological Scores in two groups over the trial period.

	Baseline		Post treatment		Follow-up 1 (1-month)		Follow-up 2 (6-month)	
	CCRT	Control	CCRT	Control	CCRT	Control	CCRT	Control
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
DSQ-40								
Mature	22.5 (5.8)	24.0 (7.7)	29.5 ^a (6.7)	25.0 (7.6)	30.4 ^a (6.9)	25.1 (7.5)	29.9 ^a (6.7)	23.8 (7.1)
Neurotic	45.9 (9.8)	46.0 (10.5)	38.6 ^a (10.1)	47.3 (10.0)	38.1 ^a (9.7)	47.8 (10.3)	38.1 ^a (9.6)	48.4 (10.1)
Immature	119.3 (21.4)	110.6 (18.9)	92.7 ^a (21.5)	114.2 (18.5)	92.2 ^a (22.1)	113.5 (19.0)	94.0 ^a (22.5)	110.6 (15.0)
TAS-20								
Difficulty identifying feelings	27.3 (4.0)	26.9 (4.9)	17.6 ^a (4.5)	26.1 (4.8)	16.0 ^a (5.1)	25.6 (5.3)	16.5 ^a (5.1)	25.6 (4.6)
Difficulty describing feelings	17.5 (3.5)	17.3 (4.4)	13.8 ^a (3.5)	18.1 (4.4)	14.0 ^a (4.3)	17.6 (4.3)	14.2 ^a (3.4)	18.1 (4.4)
Externally-oriented thinking	18.6 (3.5)	16.0 (2.7)	16.8 (3.5)	16.6 (2.7)	16.5 (3.5)	16.4 (2.5)	16.6 (2.9)	16.5 (2.5)
Total of mean score	63.5 (5.2)	60.4 (8.1)	47.2 ^a (9.0)	60.9 (8.9)	47.9 ^a (10.0)	57.0 (10.4)	47.7 ^a (9.8)	60.3 (8.5)
SCL-90-R								
Total score	159.5 ^{a,c} (46.1)	157.9 (45.6)	121.5 ^{a,b,c} (43.2)	148.8 (31.6)	107.8 ^{a,b} (41.3)	152.2 (45.4)	107.0 ^{a,c} (41.2)	143.7 (39.3)

Ranges of scores: Mature, 1–72; neurotic, 1–72; immature, 1–216; difficulty identifying feelings, 1–35; difficulty describing feelings, 1–25; externally-oriented thinking, 1–40; total score of TAS-20, 1–100; total score of SCL-90; 0–360 one-way ANOVA repeated measure analysis: within-group values with alphabetic superscripts for each measure are statistically significant at each phase of administration.

Abbreviations: CCRT, core conflictual relationship theme; DSQ-40, 40-item defense style; TAS-20, 20-item toronto alexithymia scale.

^a Post treatment and two follow-ups with baseline.

^b Post treatment with follow-up 1.

^c Post treatment with follow-up 2.

symptoms than the control group. Hamilton et al. (2000) reported that, at the end of treatment, patients receiving psychodynamic interpersonal therapy (IP) exhibited significantly greater improvement in their FD symptoms (upper abdominal pain, fullness, bloating, as well as total scores) than did controls. Our study had methodological differences with the Hamilton et al. (2000) study that may have led to the different outcomes. The first difference involved the patient population (the Hamilton study included patients with chronic symptoms of FD who had failed to respond to conventional pharmacologic treatments, whereas the present study included typical FD patients). The second difference involved the use of interventions (in the Hamilton study, experimental patients received psychotherapy that focused more on the therapist-patient relationship).

Our data support the conclusion that CCRT psychotherapy has a positive effect on defensive functioning. No study has previously been published to assess the effects of CCRT psychotherapy on ego defense, although a few studies have confirmed that psychotherapy can change defensive mechanisms and alexithymia. The work of Kramer and colleagues (2010) showed that short-term dynamic psychotherapy in 32 patients with adjustment disorder had an effect on the target variable of overall defensive functioning but no effect on overall coping functioning. Another study showed that psychotherapy could significantly decrease immature defenses and significantly increase mature defenses in patients with anxiety or mood disorders (Coccaari de Fronari et al., 2011).

The present results demonstrate that CCRT psychotherapy improves alexithymia in FD patients. No previous study has reported that psychotherapy can affect alexithymia in FD patients. Some studies with findings that are consistent with those of the present study reported that psychotherapy significantly decreased alexithymia based on TAS-20 scores in patients with various psychosomatic disorders (Stingl et al., 2008; Beresnevaite, 2000). The TAS-20 total score decreased significantly, showing that there was no mean stability of alexithymic characteristics. In contrast with the present study, a previous study reported that alexithymia (assessed with TAS-20) is a stable personality trait and that TAS-20 scores do not change after psychotherapy (Rufer et al., 2004).

The results of this study showed that improvement of gastrointestinal and psychological symptoms persisted for long-term (1-year). Some research shows that the effect of psychodynamic therapy increases over time. The consistent trend toward larger effect sizes at follow-up suggests that psychodynamic therapy sets in motion psychological processes that lead to ongoing change, even after therapy has ended (Shedler, 2010).

The large effect of CCRT psychotherapy on gastrointestinal and psychological symptoms that have not been reported in previous studies with other psychotherapies (like CBT, hypnotherapy for example) is attributable to the nature of both the therapy and FD disease. Physical illness in FD, as in other psychosomatic disorders, can be conceived as an (unconscious) attempt to master a conflict, as narcissistic reparation, as adaptation effort or even as self-destruction. Selye's theory of stress describes possible links between organ pathology and the psychosocial situation (Kluszman, 1999). Although the method has not been previously applied to functional gastrointestinal disorders, it is thought that the substantial effect of CCRT psychotherapy on functional dyspepsia is related to the nature of the method. Difficulties in interpersonal relationship may play an important role in increased symptoms of patients with functional gastrointestinal disorders (Hyphantis et al., 2009). CCRT psychotherapy also focuses on the basic conflict that there is in interpersonal relationships. This coordination between method of treatment and nature of FD disease may be due to large effect of the psychotherapy. The CCRT psychotherapy is focused on emotions (especially relationships). Emotional changes,

increased awareness of unconscious processes, and improved emotional experiences are possible (perhaps probable) treatment outcomes that make CCRT psychotherapy effective. Thus, it seems that a release from interpersonal conflict improved the regulation of emotional affect and may have central healing effects in functional dyspepsia. Another key aspect of CCRT psychotherapy involves helping patients recognize how interpersonal sensitivities may exacerbate their symptoms. This linking process may be an important therapeutic mechanism.

There were a number of limitations in our study that warrant caution against generalizing from our results. First, the sample size was small, and the results need to be replicated with a larger group. A second limitation refers to the nature of the control condition – they are not really comparing medical treatment to CCRT. The CCRT group is receiving more treatment, and the positive results obtained may be due to more treatment rather than anything specific about CCRT. In future studies, it might benefit to add a third group of patients who are receiving no treatment, but are on a waiting list to see a physician. Further research can explore whether other short-term psychodynamic psychotherapies produce similar effects.

In conclusion, CCRT psychoanalytic therapy can improve gastrointestinal symptoms, mature defense, and alexithymia in patients with functional dyspepsia.

Conflicts of interest statement

All other authors declare that they have no conflicts of interest.

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