Published in final edited form as:
Cogn Behav Pract. 1998 ; 5(1): 103–122. doi:10.1016/S1077-7229(98)80023-0.

Prolonged Exposure Therapy and Irritable Bowel Syndrome: A Case Study Examining the Impact of a Trauma-Focused Treatment on a Physical Condition

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Abstract

Previous research has shown that psychological treatments, particularly those employing cognitive techniques, are particularly effective in the treatment of irritable bowel syndrome (IBS). It is presumed that these psychological interventions are effective at ameliorating the IBS by treating an underlying psychological disorder (often an anxiety disorder), which may be contributing to the autonomic reactivity. This case study examined the change in the physical symptoms of IBS for a patient seeking treatment for rape-related PTSD with comorbid conditions of major depression and panic. At posttreatment, the patient no longer met criteria for PTSD, major depression, or panic. In addition, her primary symptom of IBS, diarrhea frequency, was significantly improved. These findings were maintained at 3 and 9 months posttreatment. Implications for the assessment and treatment of IBS patients with PTSD are discussed.

The complex interplay between the psychological and physical impact of stressful life experiences has been receiving increased attention (Cohen & Williamson, 1991; Herbert & Cohen, 1993; Watson & Pennebaker, 1989). A condition particularly illustrative of this interplay is irritable bowel syndrome (IBS). IBS is a functional disorder of the lower gastrointestinal (GI) tract primarily characterized by cramping abdominal pain and bowel disruptions, which may include diarrhea or constipation, separately or alternating periods of each condition (Drossman, 1994). While the issue of a truly causal relationship between ongoing (daily) stressors and IBS symptoms has been questioned (Suls, Wan, & Blanchard, 1994), correlational research suggests that psychosocial stressors play an important role in IBS symptom initiation (Craig & Brown, 1984; Mendeloff, Monk, Siegel, & Lilienfeld, 1970) and exacerbation (Drossman et al., 1988).

Recently, researchers have found that stressful experiences of a traumatic nature have distinguished treatment-seeking patients with functional GI illness (IBS) from patients with organic GI illness, such as inflammatory bowel disease (Drossman et al., 1990; Walker, Gelfand, Gelfand, & Katon, 1995). Treatment-seeking IBS patients are also more likely to report higher rates of psychiatric diagnoses compared with patients with inflammatory bowel disease (Blanchard, 1993; Greene & Blanchard, 1994; Walker et al., 1995). Many of these diagnoses have been in the spectrum of anxiety disorders, with particularly high rates of generalized anxiety disorder (GAD) reported (Blanchard). Anxiety disorders can include symptoms of fixed perceptions of threat, anticipation of problems, and catastrophizing. These characteristic symptoms may then trigger physiological (GI) hyperarousal associated

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with IBS (Greene & Blanchard). Victimization experiences also increase the likelihood of having high levels of subsequent autonomic arousal. That is, victimization experiences frequently result in symptoms of posttraumatic stress disorder (PTSD; Resnick, Kilpatrick, Dansky, Saunders, & Best, 1993). PTSD includes symptoms of hyperarousal such as difficulties with sleep, feeling constantly "on guard" or hypervigilant, having a frequent and exaggerated startle response, and difficulties with focusing and concentration (American Psychiatric Association, 1994). Therefore, PTSD may be another anxiety disorder that contributes to the onset or maintenance of IBS. Preliminary support for this hypothesis comes from the findings from a recent community survey of treatment-seeking and nontreatment-seeking individuals with IBS (Falsetti, Lydiard, Gibbs, & Resnick, 1997). Compared with a community (non-IBS) group, this study found that both treatment-seeking and nontreatment-seeking participants with IBS were more likely to report adult physical and sexual assault victimization experiences and higher rates of current PTSD.

Taken together, psychiatric diagnoses such as GAD are not only more prevalent in patients with IBS but may be etiologically tied to this GI disturbance via symptoms of autonomic reactivity and perceived threat. It is increasingly being established that victimization experiences are also more common in treatment-seeking patients with IBS compared to patients with inflammatory bowel disease. Therefore, it is possible that a (largely unassessed) diagnosis of PTSD, which is associated with victimization and autonomic reactivity, may also be playing an important role in the etiology and/or maintenance of IBS.

Psychological treatments, particularly those employing cognitive techniques, have been found to be particularly effective in the treatment of IBS when compared with GI symptom monitoring (Greene & Blanchard, 1994; Payne & Blanchard, 1995) and self-help (IBS) support groups (Payne & Blanchard). Blanchard and colleagues have proposed that the effectiveness of the cognitive therapy in the treatment of IBS may be due to its effectiveness at ameliorating the underlying psychological disorder, which may be maintaining the GI (hyper)arousal. If this hypothesis is accurate, then IBS patients who have a diagnosis of PTSD should also experience relief in their GI symptoms via trauma-focused PTSD treatment.

The present case study explored this hypothesis by examining the change in the physical symptoms of IBS for a patient being treated for PTSD. While this patient also had a diagnosis of inflammatory bowel disease, she was predominantly symptomatic with the IBS upon presentation for treatment (see Medical History and Subsequent Traumatic Stressors for more information). The PTSD treatment used within this case study was prolonged exposure, developed by Edna Foa (Dancu & Foa, 1992; Rothbaum & Foa, 1992). Prolonged exposure requires that the patient repeatedly "relive" the traumatic event using repeated imaginal exposure and engage in in-vivo behavioral exposures, focusing on aspects of the traumatic experience that the patient may be avoiding. Utilization of prolonged exposure and examining the change in IBS extends the findings from cognitive therapy to another psychological treatment approach for IBS. Given that prolonged exposure focuses on emotional processing and habituation of autonomic reactivity, this case also offers convergent validity for the hypothesis that the amelioration of IBS was linked to the reduction in the psychological distress (PTSD), underlying the GI arousal. This case study also has implications for assessment and treatment of PTSD in IBS sufferers.

Method

Identifying Information

Jane, a 34-year-old Caucasian female, lived at home with her husband and a 4-year-old son at the time of initiating therapy. She self-referred to therapy to address symptoms of PTSD

from her rape when she was 14 years old. Jane presented for treatment to an ongoing, funded study comparing treatments (prolonged exposure, cognitive processing therapy, and a wait-list condition) for rape-related PTSD. After completing a battery of standardized assessments, she was randomly assigned to the treatment of prolonged exposure.

Traumatic Event

Jane was raped by her brother's friend, a high school "football jock" who came to their house for a sleepover when she was 14 years old. The rapist was a neighbor's son who would visit the house often and spend a lot of time at the swimming pool. In the past, he had tried to grab her on different occasions around the swimming pool, but she had always managed to evade him. On this particular sleepover, Jane woke up at about 3:00 a.m. and found the rapist on top of her. She said that he proceeded to choke her, threatened to kill her if she made any sound, and then raped her. The entire assault lasted for about 15 minutes, after which he returned to her brother's room. Jane then went to the bathroom and vomited repeatedly. She then changed her bloodstained night-clothes and went to the living room where she spent the rest of the night on the couch with her dog. The next morning was particularly difficult because the rapist acted like nothing had happened. At a later time, when Jane was outside alone, he came out and grabbed her by the neck and threatened to hurt her if she told anyone about what had happened.

On one later occasion, the rapist tried to assault her again when she had to go to his house to pick up his sister. This time she was able to evade him by threatening to scream so that her brothers across the street could hear her and come to her rescue. After the assault, her life at school became very difficult because the rapist spread rumors about her character and everyone at school started labeling her as being "easy."

Medical History and Subsequent Traumatic Stressors

Beginning at age 19, Jane began to suffer from GI medical problems and was diagnosed with Crohn's disease, a type of inflammatory bowel disease, at the age of 22 years. Her symptoms included severe stomach pain after eating, weight loss, and ultimately a complete obstruction of the lower GI tract. At this time, she had her first GI surgery to relieve the obstruction. One month after her surgery, her stomach abscessed and opened and she continued to experience weight loss (from 150 pounds to 90 pounds), low-grade fever (101 degrees), abdominal pain, and the formation of four pinky-sized fistulas, which are ulcer tracts, that burrowed through the bowel wall into the skin. Her physician took her off of solid food for 1 year, requiring nutritional maintenance on a liquid diet of Ensure and broth. She continued to experience these symptoms for 2 years, until age 24, at which time she had her second surgery, to repair the fistulas that had developed from an infection still remaining after the first surgery. During these 2 years, Jane was intermittently medicated with corticosteroid, prednisone (at increasing dosages to 40 mg), and sulfasalazine. During this time she also experienced intermittent periods in which she was hospitalized and placed on total parenteral nutrition, a procedure in which nutrition is delivered via a feeding tube placed under the collar bone. After the second surgery, from age 24 to 25, Jane did very well, had normal bowel movements once per day, and experienced little GI distress.

At the age of 25, Jane lost her mother to a brutal homicide. At that point she was put on Xanax (2.5 mg, × 2/day) for a brief duration and sought trauma counseling for 4 to 6 sessions, focusing on the loss of her mother. From the age of 25 to 30, Jane received prednisone for the treatment of intermittent GI symptoms. At the age of 31, Jane experienced her first onset of problems with diarrhea, which occurred 2 to 5 times per day. An endoscopy, a procedure involving an internal examination of the rectum and colon using a flexible tube, and an. upper GI series, which involves putting a barium solution in the

upper intestines and using an X ray to reveal inflammation, revealed a small amount of infection and a return of the Crohns. This infection was treated with asacol (400 mg, × 3/day), dipentium (250 mg, × 2/day), and glagyl (250 mg, × 3/day). After treating this condition for 3 months, subsequent endoscopy and upper GI series revealed no further infection and the Crohns was deemed to be quiescent.

In spite of this finding, the debilitating diarrhea continued and Jane was diagnosed with IBS. At this time Jane was placed on chlordiazepoxide HCl-clidinium bromide. In a single capsule formulation, this medication combines the antianxiety action of chlordiazepoxide HCl and the anticholinergic/spasmolytic effects of clidinium bromide. Jane was placed on the standard dose, 5mg/2.5 mg combination of chlordiaz/clidinium, taken 4 times per day. Adverse side effects often reported with use of this medication are those typical of anti-cholinergic agents (i.e., dryness of mouth, blurring of vision, urinary hesitancy, and constipation). However, constipation occurs most often when this therapy has been combined with other spasmolytic agents and/or a low residue diet; constipation was clearly not a side effect experienced by this patient. Jane has remained on this dosage of medication, in conjunction with diphenoxylate (as needed), which is a medication used to treat the diarrhea symptoms, consistently from the age of 31 to the time at which she presented for treatment.

Four months before starting treatment, Jane lost her brother to a heart attack that occurred in the context of a physical assault. This experience exacerbated a preexisting major depressive episode and resulted in increased symptoms of panic and rape-related PTSD.

Instruments

PTSD Symptom Scale (PSS; Foa, Riggs, Dancu, & Rothbaum, 1993)—The PTSD Symptom Scale (PSS) has interview and self-report versions, and consists of 17 items that correspond to the 17 symptoms included in the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-III-R*; American Psychiatric Association, 1987) as diagnostic criteria for PTSD, Each symptom is rated for frequency on a 4-point scale (range: 0–51). The total PTSD score is calculated as the sum of the frequency ratings separately for the 17 items. A score of less than 10 is considered “mild” or “no” PTSD; scores between 10 and 27 are indicative of “moderate” PTSD; scores greater than 28 indicate “severe” PTSD. Parallel to the *DSM-III-R*, the items of the PTSD symptom scale are clustered into three areas: (a) reexperiencing (4 items), (b) avoidance (7 items), and (c) arousal (6 items). Interrater reliability of the PSS is high (.90 kappa; Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992). The self-report version of the PSS was used at all assessment points.

Rape Aftermath Symptom Test (Kilpatrick, 1988)—The Rape Aftermath Symptom Test (RAST) is a 70-item self-report inventory of psychological symptoms and potentially fear-producing stimuli rated on 5-point Likert scales (range: 0–280). The RAST consists of items from the SCL-90-R, a measure of general psychopathology (Derogatis, 1977), and the Modified Fear Survey (Veronen & Kilpatrick, 1980). This scale differentiated rape victims from nonvictims. The reported internal consistency was .95 for rape victims and test-retest reliability was .85 for nonvictims.

Beck Depression Inventory (Beck, Ward, Mendelsohn, Mock, & Erbaugh, 1961)—The Beck Depression Inventory (BDI) is a 21-item self-report inventory that evaluates cognitive and vegetative symptoms of depression (range: 0–63). Scores less than 10 are indicative of little or no depression; scores between 10 and 18 are considered “mild to moderate” depression; scores between 19 and 29 are “moderate to severe” depression; and scores over 30 are “severe” depression. The test-retest reliability for the BDI in psychiatric

patients ranges from 0.46 to 0.86, with 0.65 reported for test-retest reliability over a 1-week period for depressed patients (Beck, Steer, & Garbin, 1988).

Pennebaker Inventory of Limbic Languidness (Pennebaker, 1982)—The Pennebaker Inventory of Limbic Languidness (PILL) is a 54-item, 5-point Likert scale measurement of the frequency of occurrence of common physical symptoms and sensations. There are two methods of scoring: summing and binary. With the summing technique, items 1 to 54 are added. To score with the binary technique, the total number of items scored C, D, or E (every month or so, or more frequently) are summed. The binary scoring technique yields a mean score of 17.9, with a standard deviation of 6.9 (N = 939). The internal consistency is high (.91 for summing and .88 for binary). Test-retest reliability was found to be .83 for summing and .79 for binary. Factor analyses yielded a large number of small and relatively unstable factors across samples. High PILL scorers are aware of more symptoms across a number of settings relative to low PILL scorers. PILL scores are positively correlated with self-reported physician visits within the past year (r = .22, N = 505), number of days that the person's activities were restricted in the last year (r = .19, N = 505), and aspirin use within the last month (r = .30, N = 231). The PILL correlates moderately with the Hopkins Symptom Checklist (r = .48, N = 213), the Autonomic Perception Questionnaire (r = .50, N = 75), and the Cornell Medical Index composite score (r =.57, N = 100).

Procedure

Assessment

Jane was evaluated at pretreatment, therapy sessions 2, 4, 6, 8, 9, posttreatment, and at 3- and 9-month follow-up. An independent evaluator, who was not familiar with the course of the client's treatment, conducted the diagnostic interviews at pretreatment, posttreatment, 3- and 9-month follow-up. These evaluations included the Clinician Administered PTSD Scale (CAPS; Blake et al., 1990; assessment of PTSD), the Structured Clinical Interview for *DSM-III-R* (SCID; Spitzer, Williams, & Gibbon, 1987; assessment of modules for depressive disorders, substance-use-disorders, and panic, only), and self-report instruments (PSS, BDI, RAST, and PILL). Assessment during therapy consisted of the PSS self-report data. In addition, Jane was asked to do behavioral monitoring of her diarrhea frequency for IBS.

Presenting Complaints and Pretreatment Assessment Findings

Jane presented to the treatment study 4 months after the loss of her brother. She complained of depressed mood, anhedonia, insomnia, psychomotor agitation, loss of energy, feelings of inappropriate guilt, and excessive indecisiveness. She also reported a history of panic attacks and complained of heart palpitations, sweating, shaking, shortness of breath, chest pain, nausea, feelings of dizziness, derealization, fear of losing control, and hot flushes. In her pretreatment diagnostic evaluation, Jane met *DSM-III-R* criteria for chronic PTSD related to the sexual assault, based on the CAPS. Diagnostic evaluation also revealed that she met criteria for major depression, which started 3 months before her brother's death, and panic disorder, which started at the age of 16, based on the SCID. At the time of evaluation she was stabilized on nortriptyline (50 mg, × 1/day), chlordiaz-clidin (5 mg, × 4/day; 2.5mg, × 4/day), and took diphenoxylate (as needed).

Treatment

Jane was seen for 9 therapy sessions within the prolonged exposure protocol. Prolonged exposure is a type of behavioral therapy that uses imaginal exposure and in vivo exposure techniques to help survivors process the emotional content of traumatic events. Imaginal exposure requires the survivor to relive the rape event in imagination. To do this; clients are instructed to imagine the rape as vividly as possible and describe the rape out loud. This

process is repeated several times over a 60-minute time period with the goal of reducing the client's anxiety and distress levels. In vivo exposure requires clients to confront anxiety-provoking situations in their lives that they have been avoiding since the rape. Focusing on situations that are realistically safe, clients are instructed to stay in the situation until anxiety levels decrease to manageable levels. The idea underlying prolonged exposure is that the avoidance behaviors associated with PTSD prevent the survivor from emotionally processing the rape and reinforce the fearful emotions experienced during the rape. Because of this, rape survivors continue to be fearful and anxious when remembering the rape or when they are in situations that remind them of the rape, even if these situations are safe. Exposure techniques prevent the survivor from avoiding the rape memory and associated situations. Since they are no longer in real danger, their anxiety and fear eventually decrease and they are able to process the emotional content of the rape and manage everyday situations that had become associated with the rape. Foa and colleagues propose that repeated reliving of the rape memories during prolonged exposure treatment (Dancu & Foa, 1992; Rothbaum & Foa, 1992) decreases the anxiety associated with these memories through habituation and enables reevaluation of the meaning representations in the memory. This repeated reliving generates a more organized memory record that can be more readily integrated with existing schema. During the imaginal or in vivo sessions, there also may be times when clients make spontaneous cognitive shifts in their thinking about the rape. For example, while doing imaginal exposure and contextualizing the circumstances surrounding the rape, it is not uncommon for the client to stop blaming herself for the rape as she becomes more in touch with specific ways in which the assault unfolded. This phenomenon will be illustrated using some verbatim material from Jane's imaginal exposure sessions.

The first session was 60 minutes long and focused on educating Jane about PTSD, giving her the rationale for therapy, and instructing her on a breathing retraining technique. In session 2, Jane was taught about the common reactions to assault, and information was gathered in order to generate a hierarchy for in vivo exposures. Following this, sessions 3 through 9 were 90 minutes long and included prolonged imaginal exposure accompanied by in vivo exposures to feared situations and objects. During the imaginal exposure, Jane was instructed to imagine the assault scene as vividly as possible, "as if it were happening now," and to describe it out loud, using the present tense. Jane was able to recount her story an average of three times during the imaginal exposure portion of the sessions, which lasted between 45 to 60 minutes. The verbal descriptions and the reliving of her trauma were recorded on audiotapes. Jane listened to these tapes daily for homework.

During the debriefing after the initial imaginal exposure in session 3, Jane focused on the question, "Why didn't I scream?" Unable to resolve this question, she was plagued with self-blame, for if she had screamed she could have awakened her family who were sleeping in the next room. An excerpt from this initial exposure session follows.

> He gets on top … is trying to kiss me. … I am asking him, What are you doing? … He stops and says, It's ok, be quiet. … I am telling him stop. … He's covering my mouth; I am trying to get away from him and he punches me. He's covering my mouth; I can't breathe.

In spite of remembering that the rapist covered her mouth and physically punched her, Jane did not connect these behaviors to her inability to scream. In contrast, before beginning the fourth imaginal exposure, Jane shared a realization with the therapist that she remembered that the rapist also choked her during the rape. She said, "I'd forgotten that I was trying to push him off me and he's strangling me and that's another reason why I couldn't scream." After remembering this aspect of the rape, Jane was able to stop blaming herself for not screaming and she also was able to incorporate a more elaborate version of the rape into her

exposure and to face her core fear, which was that she thought that she was going to die. Following is an excerpt from her fourth exposure.

> I am sleeping in the room. … The first thing that I am aware of … I feel my blanket being pulled off. … I see him there. … [He] is trying to pull my gown off … I am telling him to stop and he covers my mouth. … [I am] trying to push him off. … He's kissing me; kissing my neck. His hands are so strong. Why are you doing this to me? I start trying to fight back, punching with my hands, trying to push with my knees. His hands are so big. … His hands are so big. He's putting his hands around my throat. He's squeezing. I'm afraid I'm gonna die right then and there. I'm afraid he's going to choke and suffocate me.

After remembering the choking during the rape, Jane's subsequent exposures continued to focus on the pain resulting from the strangulation, his physical assault, and her fear for her life. She also began to incorporate her inability to scream into the imaginal exposure by saying, "I can't scream *because* he is choking me. I'm trying [to scream] but nothing's coming out. He's really hurting me."

For in vivo exposures Jane was given instructions to gradually confront safe situations that evoked moderate levels of anxiety. These confrontations were scheduled using a hierarchy of increasingly feared situations. For example, Jane experienced significant anxiety when she was confronted with sports-related cues (since her rapist was a football player). Therefore, one of her in vivo exposures focused on having Jane go to a sports store inside a large mall. Her first step on the hierarchy required that she stand outside the store, her second step required that she go inside the store, and her third step required that she go inside the store and handle football paraphernalia; Jane would only progress to the next step on the hierarchy after her anxiety had decreased by 50%. On average, Jane spent 13 hours between sessions doing homework. Her preexposure and postexposure SUDS ratings, along with the maximum in exposure SUDS ratings, are listed in Table 1 for both imaginal and in vivo exposures. In addition, the behavioral recordings of average diarrhea frequency arc also included in Table 1.

Results

Visual Inspection of Raw Data

Inspection of the SUDS ratings and the behavioral recording of the diarrhea frequency revealed that the frequency of reported episodes of diarrhea dropped substantially in the 6th session and remained roughly stable through the remainder of the assessment points (see Table 1). The pattern of within-session SUDS ratings began to drop at session 8 with preexposure ratings and maximum exposure ratings nearly half the magnitude of the ratings in session 3. Postexposure SUDS ratings were markedly reduced in session 8. A pattern of decreasing preexposure and maximum in-session SUDS ratings was reflective of the process of fear habituation that occurred between and within sessions.

The raw data for the outcome measures at each assessment point are presented in Table 2. All PTSD measures evidenced improvement by session 8. The RAST evidenced decreases at posttreatment and further reductions at 3- and 9-month follow-up points. The BDI evidenced decreases at the posttreatment and 3-month follow-up points; this decrease was maintained at the 9-month follow-up point. The PILL appeared to be unchanged until the 9-month follow-up point, at which time it dropped by 11 points. This interpretation of the data should be tempered by the results of the statistical analyses that follow.

Statistically Significant Change

A statistical method for analyzing single-case subject designs (Mueser, Yarnold, & Foy, 1991; Nishith, Hearst, Mueser, & Foa, 1995; Yarnold, 1988) based on classical test theory (Magnusson, 1967) was used to examine the efficacy of prolonged exposure treatment. Using statistically significant change as the guide to evaluating change across sessions is superior to visual inspection, given that this approach is systematic and not subject to biases such as serial dependency of the data. This method also goes beyond subjective analysis of "significant," corrects for the "error" in the client's score, and evaluates the change in the client's score above and beyond chance variation (Nishith et al., 1995).

Calculation of the statistically significant change is described in detail in Nishith et al. (1995). Briefly, each of the raw scores on the various scales (PSS, RAST, PILL, and BDI) were converted to standard ipsative *z* scores, using the mean and standard deviation of each variable. Since standard scores have been converted to the same metric, they can easily be compared with one another. In order to determine whether these scores were now significantly different (i.e., greater than that which would occur by chance alone), a critical difference (CD) score was calculated for each score, based on its reliability. [1] The reliability of the measure is considered to be the most important measure used to determine a statistically significant change. Instruments with lower reliabilities will result in larger critical difference scores (i.e., one needs a greater change in score for the change to be statistically significant) while instruments with higher reliabilities will result in smaller critical difference scores (i.e., one needs a smaller change in score for the change to be statistically significant).

Table 3 presents descriptive statistics (means and standard deviations), reliabilities (REL), and CD scores for each outcome measure. Table 4 summarizes the results of the statistical tests, comparing the pretreatment assessment of each variable with each of the seven subsequent assessments for the PSS, and each of the three subsequent assessments for the rest of the measures.

Interpretation of Statistical Analyses

For the following discussion of the statistical analyses, refer to Table 4. Statistical analyses revealed that Jane's overall PTSD scores were essentially unchanged until session 8. At session 8, Jane's overall PTSD scores were significantly decreased, and these reductions were maintained at the posttreatment and at 3- and 9-month follow-up assessment points. While Jane did experience reductions in her overall PTSD, her cluster scores of reexperiencing and avoidance were not significantly different at any assessment point. The arousal cluster score was significantly decreased at the 3- and 9-month follow-up point. Jane's decrease on the RAST was not significantly different at the immediate posttreatment but was significantly decreased at the 3- and 9-month follow-up assessment. Jane's score on the PILL was not significantly different at posttreatment or at the 3-month follow-up, but was significantly diminished at the 9-month follow-up point. Jane's score on the BDI was markedly reduced at post- and follow-up assessment points and was statistically nonsignificant.

Clinical Functioning at Follow-up

At the 3-month follow-up, conducted by an independent assessor, Jane no longer met criteria for major depression, PTSD, or panic. In terms of her PTSD assessment, Jane did not endorse any of the symptoms related to avoidance, in spite of her report that she had

[1] $CD = 1.64\ ([J(l - r)]^{1/2})$, where J is the total number of test points and r is the reliability of the instrument (1.64 is the value chosen for a one-tailed test at overall $p < .05$)

experienced one flashback, had some distressing dreams, and had some distress upon exposure to cues. She also reported experiencing some sleep problems, concentration problems, some hyper-vigilance, and some physiological reactivity. At the 9-month follow-up, Jane continued to no longer meet criteria for major depression, PTSD, or panic. Her constellation of PTSD symptoms included some distress upon exposure to cues, feelings of detachment, and very infrequent occurrence of each of the arousal symptoms. Of note, all of these symptoms were related to a series of incidents in which she was receiving mildly threatening prank telephone calls.

Discussion

PTSD and IBS

By visual inspection and statistical analyses, Jane experienced marked improvement in her overall PTSD scores beginning at session 8, with continued improvement at posttreatment, 3- and 9-month follow-up. While the diagnostic interview at the 3-month follow-up revealed that Jane was still experiencing some symptoms of PTSD, including reexperiencing symptoms of intrusive imagery, dreams, and one flashback, she reported that she was not avoiding these images, and her self-report assessment revealed that she was experiencing significantly less PTSD-related arousal. Further support for the hypothesis that she was less reactive to rape-related stimuli was found in Jane's overall RAST score, which is a measure of general symptomatology and rape-related fear. Jane's RAST evidenced significant improvement at the 3- and 9-month follow-up assessment points. Taken together, Jane's overall PTSD score, her self-reported PTSD arousal symptoms, and her RAST score suggested that Jane was significantly less reactive to rape-related stimuli at 3 months after treatment. Furthermore, these changes were maintained and strengthened at the 9-month assessment point, suggesting that Jane may be experiencing cumulative benefit from the treatment. While not evidenced in her self-report, her responses on the diagnostic interview (CAPS) suggested that this decrease in reactivity was due in part to her diminished avoidance of the rape-related stimuli. Coping by not avoiding was a critical change in Jane's responding. Confronting the painful reminders not only suggested that Jane was continuing to employ the rationale for prolonged exposure but also that she was providing the context for maximal opportunity to habituate to the painful memories, affect, and (possibly) the physiological responses.

General Physical Health Functioning, Panic, Depression, and IBS

While Jane's overall report of her physical functioning (PILL) was unchanged at posttreatment and 3-month follow-up, she did report significant improvement in her overall health functioning at the 9-month assessment point. It has been documented that the act of inhibiting traumatic experiences, particularly those of a stigmatizing nature (such as rape or incest), leads to short-term increases in overall autonomic activity (Pennebaker, Hughes, & O'Heeron, 1987). Similarly, long-term inhibition of such experiences may lead to higher overall autonomic levels and higher incidence of stress-related disorders. Repeated experiences of writing or talking about traumatic experiences breaks this cycle of inhibition and has been associated with health benefits, including biochemical and behavioral changes (Pennebaker et al., 1987; Pennebaker, Kiecolt-Glaser, & Glaser, 1988). Consistent with the hypothesis that changes in health functioning may be associated with decreases in autonomic arousal, Jane's reported improvement in her overall health functioning followed significant decreases in her self-reported arousal symptoms (i.e., significant decreases on her arousal symptoms on the PSS at 3- and 9-month follow-up assessments). Similarly, her overall frequency of diarrhea at posttreatment, 3-, and 9-month follow-up (2 episodes per day) was 50% less than the frequency at session 1 (4 episodes per day) and was nearly 1

standard deviation below the mean diarrhea frequency across all assessment points (*M* = 3.09, *SD* = 1.14).

The structured diagnostic assessment of Jane's symptoms of panic revealed that she was no longer meeting criteria for panic disorder at the 3- or 9-month follow-up assessment. The role of the prolonged exposure treatment in the remediation of the panic disorder is an interesting finding. Increased body vigilance and the misinterpretation of bodily symptoms has been hypothesized to play an important role in the development and maintenance of panic disorder (Clark et al., 1997; Schmidt, Lerew, & Trakowski, 1997). Exposure, albeit interoceptive exposure, has been used in the treatment of panic disorder (Barlow & Craske, 1989). Interoceptive exposure, unlike prolonged exposure, focuses exclusively on the production of panic-related physical sensations, with the goal of having the individual habituate to these bodily sensations. Our findings extend previous treatment strategies for panic disorder from using interoceptive exposure (exposure to physical sensations only) to using prolonged exposure (exposure to physical sensations within the context of the exposure to the traumatic stimuli). It is unclear what the role of increased body scanning and misinterpretation of bodily sensations may play in the maintenance of IBS. Nevertheless, given that increased stress and reactivity exacerbates this GI condition, it is likely that diminished focus on and overinterpretation of gastrointestinal sensations may also facilitate recovery from IBS. As previously stated, it is also possible that Jane was experiencing fewer physical sensations, given her decrease in reported arousal.

It is also noteworthy that Jane's panic remediated without the use of systematic cognitive restructuring techniques, which are frequently used in existing treatments for panic disorder (Barlow & Craske, 1989). These cognitive restructuring techniques focus on faulty thinking patterns of overestimation and catastrophizing, particularly related to the physical sensations associated with panic. However, it is possible that the client spontaneously engaged in these restructuring processes in the context of the prolonged imaginal or in vivo exposures.

Jane no longer met criteria for major depression at the 3- or 9- month follow-up. Her self-reported depressive symptomatology was also markedly reduced, and the change was statistically significant. Existing evidence suggests that in patients with comorbid anxiety and depressive disorders, traumatic life histories are associated with more chronic and protracted depressive episodes than with a comparison group without traumatic life histories (Zlotnick, Warshaw, Shea, & Keller, 1997). Therefore, it is particularly impressive that a treatment targeting PTSD-related anxiety was also effective in remitting the depressive symptomatology.

IBS and Prolonged Exposure: Expanding Upon Cognitive Therapy as a Psychological Intervention

The findings within this case study expand on the findings regarding the effectiveness of cognitive therapy to the effectiveness of another psychological treatment, a behavioral therapy, for the treatment of IBS (Greene & Blanchard, 1994; Payne & Blanchard, 1995), Moreover, this case study represents the first documentation of a treatment strategy that targets the treatment of the (underlying) psychological condition (PTSD) and measures the remission of the physical symptomatology (IBS). That is, the cognitive therapy utilized by Blanchard and colleagues focused on restructuring cognitions related to the symptoms of IBS, utilizing the rationale that aversive cognitive labeling of the antecedent conditions and the arousal were the factors responsible for maintaining the IBS (Greene &Blanchard). Finding that the behavioral treatment (prolonged exposure) also appears to significantly impact upon the diarrhea symptoms of IBS does not negate the theory regarding the role of cognitions in maintaining the IBS. Rather, if IBS is an autonomic, nervous-system-mediated reaction to stress, with reactions including cognitive, behavioral, and physiological

components (Greene & Blanchard), then prolonged exposure, by directly targeting the physiological and behavioral responses, offers another modality for intervening and disrupting the system. In addition, it is important to remember that clients frequently make spontaneous cognitive shifts during the imaginal or in vivo exposures. Therefore, while prolonged exposure is considered to be a form of behavior therapy, it does not mean that cognitive changes are not an important part of the change process (Reitman, 1997).

Limitations

The greatest limitation of the case study lies in the fact that the symptoms of IBS were monitored by a single symptom of diarrhea. It would have been optimal to have had Jane monitor her symptoms using multiple measures of IBS, including symptoms of abdominal pain, abdominal tenderness, constipation, diarrhea, flatulence, belching, and bloating, and to measure these symptoms using a frequency and an intensity rating, as does Blanchard (e.g. Greene & Blanchard, 1994). It would have also been optimal to have the multiple baseline measures to monitor Jane's pretreatment IBS symptoms. In terms of the diarrhea, Jane did retrospectively report that she experienced five episodes of diarrhea per day during the week prior to the start of treatment. Lastly, the fact that Jane had a codiagnosis of Crohn's disease does present a complicating factor. However, this limitation is mitigated by the fact that Jane did have an exam by a gastroenterologist prior to beginning treatment, which documented an autonomous condition of IBS and a condition of Crohn's that was in remission. In addition, during Jane's bout with Crohn's disease, she never experienced diarrhea as one of her Crohn's symptoms. Her difficulties with diarrhea only emerged after she was diagnosed with IBS.

Diagnostic, Assessment, and Treatment Decision Tree and Summary of Findings

Given the findings in this case study, the following recommendations are suggested for the assessment/treatment of individuals presenting with PTSD:

1. Develop a brief, systematic assessment for IBS in patients presenting with PTSD. An assessment is very important given that patients may not initially feel comfortable spontaneously talking about difficulties with their bowel habits. This could initially be done within the context of a general health assessment, utilizing screening questions related to the frequency of abdominal pain or tenderness, bloating or feeling of abdominal distension, diarrhea, or constipation.
2. If patients positively endorse one or more of these questions, they should be further assessed for IBS using the "Rome" criteria (Falsetti, Lydiard, Gibbs, & Resnick, 1997; Thompson, 1992):
    a. abdominal pain or discomfort, relieved with defecation, or associated with a change in the frequency or consistency of stool; and
    b. an irregular (varying) pattern of defecation at least 25% of the time (two or more of):
        - altered stool frequency (3 or more bowel movements each day or less than 3 bowel movements each week)
        - altered stool form (hard or loose/watery stool)
        - altered stool passage (straining or urgency, feeling of incomplete evacuation)
        - passage of mucus
        - bloating or feeling of abdominal distension

3. If patients endorse these questions, they should also be assessed by a gastroenterologist to rule out other possible diseases, such as inflammatory bowel disease, lactose intolerance, or parasites.
4. If patients receive a medical clearance (i.e., there is no other competing pathology that requires the use of surgery or medication), treatment could proceed using prolonged exposure. Frequently, patients, similar to the case of Jane, present with more than one trauma experience. In these situations, patients should be encouraged to begin their imaginal and in vivo exposure to the most upsetting trauma experience and/or to the trauma experienced in their PTSD intrusive symptoms. After habituation begins to the most upsetting trauma experience, it frequently generalizes to the other experiences. However, if this is not the case, other imaginal exposures can be incorporated to the other (traumatic) experience after the patient begins to experience relief from the first experience.
5. Therapists should prepare patients for an initial exacerbation in their physical and psychological symptoms as they begin the treatment of prolonged exposure. This experience can then be normalized as part of the process of emotional processing.
6. Last, assessment should incorporate ongoing monitoring of the PTSD and multiple IBS symptoms during treatment.

If the patient presents with primary symptoms of IBS, assessment should include a systematic, behaviorally specific assessment of lifetime experiences of trauma. Again, it is important to conduct a systematic assessment given that patients may be overfocused on their physical symptoms and/or may not feel comfortable spontaneously reporting their trauma history. If the patient endorses a trauma history, the therapist should conduct a diagnostic assessment of PTSD and other Axis I disorders. If the patient meets criteria for PTSD, steps 3 to 6 (see above) could be followed.

In summary, the case study provides the first preliminary data supporting the use of a behavioral therapy in the treatment of an underlying psychological condition (PTSD) that may be related to the onset and/or maintenance of IBS. These findings suggest the need for subsequent studies to: (a) examine the impact of directly treating the underlying anxiety condition, such as GAD or panic, associated with IBS; (b) examine the impact of using prolonged exposure upon broader health realms; and (c) replicate the findings of reduced diarrhea frequency in patients presenting with PTSD and IBS following treatment with prolonged exposure.

Acknowledgments

This research was partially supported by National Institutes of Mental Health Grant NIH-1-R01-MH51509-03, Patricia A. Resick, Ph.D., principal investigator. Points of view or opinions expressed within this manuscript are those of the authors and do not necessarily represent the official position or policies of the National Institutes of Mental Health.

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TABLE 1

Behavioral Recording of Diarrhea Frequency and Suds Ratings Across Therapy Sessions

		SUDS ratings		
Session #	**Diarrhea Frequency/Day**	**Preexposure**	**Exposure (Maximum)**	**Postexposure**
1	4	–	–	–
2	4	–	–	–
3	5	45	100	30
4	4	30	100	60
5	4	30	100	70
6	2	50	100	85
7	3	40	95	60
8	2	20	50	35
9	2	25	45	40
Post tx2		–	–	–
3-mo FU	2	–	–	–
9-mo FU	2	–	–	–

Note. Post tx = posttreatment; FU = follow-up.

TABLE 2

Raw Scores of Psychopathology Measures

	Assessment Points							
Measure	**n1 (Pre)**	**n2 (S2)**	**n3 (S4)**	**n4 (S6)**	**n5 (S8)**	**n6 (Post)**	**n7 (3 mo)**	**n8 (9 mo)**
PTSD measure								
PSS-Total	50	37	35	31	10	9	7	8
(a) Reexperiencing	9	7	9	8	2	1	4	3
(b) Avoidance	19	14	12	10	1	1	0	1
(c) Arousal	22	16	14	13	7	7	3	4
RAST	277	–	–	–	–	155	47	24
General psychopathology								
PILL	42	–	–	–	–	43	42	31
BDI	33	–	–	–	–	9	2	5

Note. PSS = PTSD Symptom Scale; RAST = Rape Aftermath Symptom Test; PILL = Penne-baker Inventory of Limbic Languidness; BDI = Beck Depression Inventory.

TABLE 3

Descriptive Statistics, Ipsative *Z* Scores, Test-Retest Reliabilities (Rel), and Critical Difference (CD) Scores for Outcome Measures

			Ipsative *Z* Scores									
Measure	***M***	**SD**	**Z1**	**Z2**	**Z3**	**Z4**	**Z5**	**Z6**	**Z7**	**Z8**	**Rel**	**CD**
PTSD measures												
PSS-Total	23.4	16.8	1.58	.81	.69	.45	−.80	−.86	−.98	−.92	0.74	2.37
(a) Reexp.	5.4	3.2	1.13	.50	1.13	.81	−1.06	−1.38	−.44	−.75	0.66	2.70
(b) Avoid.	7.3	7.4	1.58	.91	.64	.36	−.85	−.85	−.99	−.85	0.56	3.08
(c) Arousal	10.8	6.6	1.70	.79	.48	.33	−.58	−.58	−1.18	−1.03	0.71	2.50
RAST	113.3	94.9	.72	–	–	–	–	.44	−.70	−.94	0.85	1.27
General psychopathology												
PILL	17.9	6.9	3.49	–	–	–	–	3.64	3.49	1.90	0.79	1.50
BDI	12.3	14.1	1.47	–	–	–	–	−.23	−.73	−.52	0.65	1.94

Note. Reexp. = Reexperiencing; Avoid. = avoidance; PSS = PTSD symptom scale; RAST = Rape Aftermath Symptom Test; PILL = Pennebaker Inventory of Limbic Languidness; BDI = Beck Depression Inventory. Mean and standard deviation for the PILL are based on the population sample.

TABLE 4

Statistically Significant Changes in Psychopathology From Pretreatment Assessment

Measure	S2	S4	S6	S8	Post	3-mo	9-mo
PTSD measures							
PSS-Total	0	0	0	+	+	+	+
(a) Reexp.	0	0	0	0	0	0	0
(b) Avoid	0	0	0	0	0	0	0
(c) Arous.	0	0	0	0	0	+	+
RAST	–	–	–	–	0	+	+
General psychopathology							
PILL	–	–	–	–	0	0	+
BDI	–	–	–	–	0	+	+

Note. Reexp. = Reexperiencing; Avoid. = avoidance; PSS = PTSD symptom scale; RAST = Rape Aftermath Symptom Test; PILL = Pennebaker Inventory of Limbic Languidness; BDI = Beck Depression Inventory; S2 = Session 2; S4 = Session 4; S6 = Session 6; S8 = Session 8; Post = posttreatment; 3-mo = 3-month follow-up; 9-mo = 9-month follow-up; 0 = Not Significant; + = Significant at overall $p < .05$.