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DO COGNITIVE AND EXPOSURE TREATMENTS IMPROVE VARIOUS PTSD SYMPTOMS DIFFERENTLY? A RANDOMIZED CONTROLLED TRIAL

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Abstract. This study (part of a larger one whose main outcomes were reported by Marks, Lovell, Noshirvani, Thrasher, & Livanou, 1998) investigated the impact of exposure therapy and cognitive restructuring alone and combined on the individual symptoms of PTSD and on associated features. Exposure therapy was expected to act mainly on fear and avoidance, and cognitive restructuring mainly on detachment, restricted range of affect, and associated features of PTSD. Seventy-seven PTSD outpatients were randomly allocated to one of four treatments: 1) exposure alone; 2) cognitive restructuring alone; 3) combined exposure and cognitive restructuring; or 4) relaxation (placebo control). The active treatments were superior to relaxation in improving clusters of PTSD symptoms and associated features and some but not all individual symptoms and associated features of PTSD. Exposure and cognitive restructuring improved almost all individual symptoms similarly.

Keywords: Posttraumatic stress disorder, treatment, behavioural and cognitive treatments.

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Introduction

For Post-traumatic Stress Disorder DSM-IV (APA, 1994) define the stressor criterion and three clusters of symptoms: B) re-experiencing (intrusive thoughts and images of the trauma, flashbacks, nightmares, and physiological reactivity to the remainders of the trauma); C) avoidance and numbing (avoidance of thoughts, feelings and activities connected to the trauma, amnesia, lowered interest, detachment, restricted affect, and sense of foreshortened future); and D) increased arousal (sleep disturbance, irritability, anger outbursts, poor concentration, exaggerated startle, and hypervigilance). Associated features of PTSD include guilt about omissions or commissions or surviving, hopelessness, sad and depressed, disillusioned with authority, memory impairment etc.

There is growing evidence of the value of behavioural and cognitive-behavioural treatments with PTSD (Foa, Rothbaum, Riggs, & Murdock, 1991; Marks et al., 1998; Tarrier et al., 1999). Reports focus on the broad outcome of PTSD rather than of individual symptoms or associated features of PTSD. Behaviour therapy and cognitive-behaviour therapy (CBT) are thought to improve certain symptoms more than others, e.g., that exposure especially reduces re-experiencing rather than guilt, avoidance and denial and startle, arousal, nightmares, irritability and anger rather than numbing, alienation and restricted affect (Keane, Fairbank, Caddell, & Zimmering, 1989). Other studies using exposure alone found a reduction in all three clusters of PTSD symptoms (Foa et al., 1991, Richards, Lovell, & Marks, 1994). Some hold that exposure reduces anxiety but not guilt, shame, disgust, anger, and sadness. (Solomon, Gerrity, & Muff, 1992). Many have argued that exposure plus cognitive therapy may be the most efficient treatment for PTSD as each component might target different symptoms. Plausible as this sounds, however, there is little evidence to support this. This study (part of a larger trial by Marks et al., 1998) investigated the impact of exposure therapy and cognitive restructuring alone and combined on the individual symptoms of PTSD and on associated features. Two hypotheses were examined: 1. Exposure (E) alone would act mainly on anxiety-related symptoms e.g., re-experiencing and avoidance, at post-treatment. 2. Cognitive restructuring (C) alone would act mainly on features associated with PTSD e.g., guilt, depression, disillusionment with authority, and PTSD symptoms of detachment, restricted range of affect, and diminished interest.

Method

Eighty-seven outpatients who met DSM-IIIR criteria for PTSD were randomly allocated to 1) Exposure therapy (E) or 2) cognitive restructuring (C), or 3) combined exposure plus cognitive restructuring (EC), or 4) relaxation (R). Details of the study design and treatment conditions can be found in Marks et al., 1998. An independent assessor assessed subjects at pre-, post-treatment, 1, 3 and 6-month follow-up. Clients receiving relaxation were treated with an active treatment at 3-month follow-up, thus no 6-month follow-up data are available for this group. Ten subjects (11%) dropped out but they did not differ significantly by group.

Clinical measures

Clinician-administered PTSD scale (CAPS2) (Blake et al., 1990). CAPS2 has 30 items, assessor-rated, rating frequency and intensity of the 17 DSM III (R) PTSD symptoms and

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8 associated features of PTSD (built over acts of commission or omission, survivor guilt, homicidality, disillusioned with authority, feel hopeless, memory impaired and forgetful, sad and depressed, feel overwhelmed). Each item is rated 0–4 for intensity and frequency. This study analysed the three clusters of PTSD symptoms, individual symptoms, associated features as a group, and each indvidual-associated feature. Frequency and intensity ratings were pooled for ease of analysis to have a range of 0–8.

Results

Analysis of covariance (ANOVA) was conducted with the pre-treatment score on the dependent variable as the covariate was used to make planned comparisons of: 1) E + C + EC vs. R; 2) E vs. C and, 3) E + C vs. EC on each of the three clusters and the associated features as a group at post-treatment 1- and 3-month follow-up. Further analysis was completed on each of the PTSD symptoms and associated features at post-treatment (data on individual symptoms only available up to post-treatment). One-way ANOVA with posthoc pairwise comparisons using Least Significance Difference (LSD) on change scores was applied for group comparisons not available in the planned comparisons. Within-group analysis consisted of paired or independent *t*-tests as appropriate. SPSS for windows, version 6.0 (1993) was used for all statistical analysis.

Within group analysis

Means and standard deviations of clusters of PTSD symptoms and associated symptoms appear in Table 1. Within-group analysis (paired *t*-tests) pre-post treatment showed highly significant differences in E, C and EC on re-experiencing, avoidance and numbing and arousal symptoms and associated symptoms of PTSD, but no significant changes in R on re-experiencing and associated symptoms (Table 1). No significant within group differences were found at 1, 3 or 6-month follow-up.

Between group analysis

On the planned comparisons of: 1) E+C+EC vs. R; at post-treatment significant differences were found between the three active treatments and relaxation on re-experiencing F (3, 75) = 5.08, $p < .02$, avoidance and numbing F (3, 75) = 8.13 $p < .004$), and associated symptoms F (3, 75) = 7.59, $p < .04$) but not increased arousal symptoms. No significant difference was found on re-experiencing at follow-up. On avoidance and numbing significant difference was found at 1-month follow-up, F (3, 64) = 7.45, $p < .02$ and at 3-month follow-up F (3, 52) = 4.43, $p < .01$. On arousal and associated features no significant differences were found at follow-up. 2) E + C vs. EC: no significant differences were found on any cluster or associated symptoms at 1, 3 or 6-month follow-up. 3) E vs. C: no significant differences were found on any cluster or associated symptoms at 1, 3 or 6-month follow-up.

Individual PTSD symptoms

The most frequent PTSD symptoms were distress to reminders (97%), $N = 72$), avoiding activities (92%, $n = 71$). The least frequent symptoms were flashbacks (17%, $n = 13$) and

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Table 1 Means, standard deviations and within group analysis on CAPs pre-post treatment (paired *t*-tests) of clusters and associated features of PTSD

		Exposure (E) (N = 20)				Cognitive (C) (N = 18)				Exposure & cognitive (EC) (N = 19)				Relaxation (R) (N = 20)			
		M	*SD*	*t*	*p*	*M*	*SD*	*t*	*p*	*M*	*SD*	*t*	*p*	*M*	*SD*	*t*	*p*
Re-experiencing	Pre	13.3	3.9			14.9	5.0			15.1	6.4			11.6	6.1		
	Post	6.8	7.5	3.79	.001	7.8	4.9	5.61	.000	6.8	7.2	5.33	.000	9.7	7.4	1.33	*.19
Avoidance/numbing	Pre	23.4	8.3			30.7	7.6			29.8	9.3			23.0	9.1		
	Post	11.5	13.1	6.33	.000	15.2	11.0	6.71	.000	11.9	11.9	6.80	.000	17.1	8.9	2.64	0.16
Increased arousal	Pre	25.2	8.5			29.1	8.8			28.6	7.7			23.7	7.6		
	Post	13.2	11.1	4.67	.000	16.5	10.0	7.13	.000	16.6	11.7	4.49	.000	17.0	10.5	3.16	.005
Associated features	Pre	16.7	9.0			22.6	10.2			20.8	10.8			15.2	8.0		
	Post	8.1	9.7	4.02	.001	10.3	8.8	4.07	.001	11.0	11.0	5.17	.000	12.0	11.0	1.83	*.083

* = non significant

psychogenic amnesia (29%, $n = 22$). Of the associated symptoms the most frequent was sadness and depression (90%, $n = 69$) and hopelessness (75%, $n = 58$) and least frequent were survivor guilt (4%, $n = 3$) and homicidality (18%, $n = 14$). Analysis of individual symptoms was completed on treatment groups where ≥ 8 clients. Thus symptoms of flashbacks, psychogenic amnesia, survivor guilt and homicidality were excluded. Where one treatment group had < 8 clients, analyses were only conducted on treatment groups with at least ≥ 8 clients. Treatment groups that had < 8 clients in one group occurred in – distressing dreams (R $n = 6$), foreshortened future (E $n = 3$), guilt (EC $n = 6$ and R $n = 6$), and being overwhelmed (R $n = 5$). One-way ANOVA with post-hoc pairwise comparisons with LSD were applied to detect group differences on pre-treatment scores. On PTSD symptoms: EC was more severe than R and E on intrusive thoughts $F(3, 63) = 3.15$ $p < .03$ and EC and C more severe than R on detachment $F(3), 52) = 3.51$, $p < .01$). On associated symptoms: C was more severe than E, EC and R on sadness and depression $F(3, 65) = 2.96$, $p < .04$).

Within-group analysis (paired *t*-tests) of pre-post change on PTSD symptoms showed highly significant improvement on all 14 PTSD symptoms analysed in E, C and EC, and significant improvement on 11 PTSD symptoms in R. Of the 5 analysed associated features, significant improvement was found in most features in E, C and EC, but only 1 in R.

Between-group analysis of pre-post change scores using ANCOVAs with the pre-treatment score as covariate on PTSD and associated symptoms were applied using three planned comparisons: 1) E + C + EC vs. R: E + C + EC improved significantly more than R on intrusive thoughts F (3, 66 = 2.59, $p < .01$) avoidance of thoughts/feelings $F(3, 66) = 2.94$, $p < .03$) and avoidance of activities $F(3, 61) = 2.94$, $p < .01$). On associated symptoms of sadness and depression E+C+EC improved significantly more than R, $F(3, 61) = 3.59$, $p < .04$). 2) E + C vs. EC: no significant differences were found on PTSD or associated symptoms. 3) E + C vs. EC: showed 1 significant difference – C was superior to E on detachment $F(3, 50) = 4.20$, $p > .05$.

ANOVAs with LSD post-hoc comparisons using change scores were applied to all individual comparisons. On PTSD symptoms E, C and EC improved more than R on intrusive thoughts F (3, 66) = 3.15, $p > .003$), avoidance of thoughts $F(3, 66) = 4.08$, $p < .01$). E and EC improved more than R on avoidance of activities $F(3, 66) = 4.21$ $p > .05$. EC and C improved more than R and E on detachment $F(3, 65) = 2.94$, $p < .03$). On associated symptoms there were no significant differences on individual comparisons.

Discussion

In summary, all four treatment groups improved significantly on the clusters of PTSD and associated symptoms pre-post treatment and improvement continued to 6-month follow-up. Between group analysis found that E, C, and EC were superior to R on clusters of re-experiencing, avoidance/numbing and associated features but not on increased arousal symptoms. No differences were found between the active treatments at post-treatment or at follow-up. On individual symptoms of PTSD and associated features within group analysis found significant differences pre-post treatment on most symptoms. Between-group analysis found the three active treatments were superior to R on only 3 of the 13 PTSD symptoms analysed and only 1 associated feature pre-post treatment. The only symptom that revealed a difference was that of detachment in that C and EC were superior to E. Of note, is that

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there were no significant differences between the three active treatments and relaxation on increased arousal. This was also found by Foa et al. (1991), where supportive counselling and waiting list control improved arousal but not re-experiencing or avoidance. The relative ease with which arousal seems to reduce also warrants further research. Replication is required with larger numbers to ensure representation for analysis of all symptoms. Contrary to other reports in the literature, this study found no evidence to suggest that the clinician should use either E or C preferentially to target specific PTSD symptoms or associated features.

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