Early Psychological Interventions for Adult Survivors of Trauma: A Review

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Psychological interventions after traumatic events have only recently been evaluated in randomized, controlled trials. Recent systematic reviews concluded that single sessions of individual psychological debriefing are not effective in reducing distress or subsequent posttraumatic stress disorder (PTSD) symptoms. The present article reviews trials of early cognitive behavior therapy (CBT) after trauma. Cognitive behavioral therapy was more effective than supportive counseling in preventing chronicity of PTSD symptoms; however, in most available studies it remained unclear whether supportive counseling facilitated or retarded recovery, compared with no intervention. A brief CBT program given in the first month of trauma was not superior to repeated assessment; however, a course of CBT of up to 16 sessions given at 1–4 months after trauma was superior to self-help, repeated assessment, and no intervention. Possible reasons for the difference in efficacy between CBT and debriefing or self-help are discussed. These include the way of working through traumatic memories and the impact of the interventions on patients' interpretations of their PTSD symptoms. Possible ways of identifying people who are in need of specialist psychological intervention after trauma and who are unlikely to recover on their own are discussed. Some ideas for alternative ways of offering help to trauma survivors are presented, and methodologic suggestions for future research are given. Biol Psychiatry 2003;53: 817–826 © *2003 Society of Biological Psychiatry*

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Introduction

Epidemiologic and prospective longitudinal studies of trauma survivors (e.g., Breslau et al 1991; Kessler et al 1995) have shown that 1) many people develop symptoms of posttraumatic stress disorder (PTSD) after traumatic events, such as physical or sexual assault, severe accidents, natural disaster, or war zone experiences; 2) a substantial proportion of these individuals recover without treatment in the following years, with a steep decline in PTSD rates occurring in the first year; 3) at least a third of the individuals who initially develop PTSD stay symptomatic for 3 years or longer; and 4) symptom levels from around 2–4 weeks after the trauma onwards are a strong predictor of later symptoms, although symptom severity in the initial posttrauma days is not a good predictor (e.g., Harvey and Bryant 1998; Murray et al 2002; Shalev et al 1997).

These observations raise the question of when and how traumatized people should be treated. It appears that an optimal early intervention would need to deliver an effective treatment to people who are unlikely to recover on their own, early enough that secondary problems (e.g., job loss, separation, alcohol abuse) can be prevented.

This article focuses on individual psychological intervention, as this is the only area for which randomized, controlled trials (RCTs) are currently available. There is a lack of empirical studies on what psychological interventions delivered to groups or communities are effective (see Litz et al 2002 for a review).

What Psychological Treatments for Trauma Survivors are Effective?

Two different strategies of early psychological intervention have been studied. First, psychological debriefing, a brief intervention designed to normalize reactions to the trauma and to promote the expression of feelings and thoughts connected with the trauma, was given to trauma survivors in the first few days after the event, regardless of the level of their initial distress or symptoms. Debriefing was originally developed as a group intervention (e.g., Mitchell and Everly 1996) but is also used as an early intervention for individual trauma survivors. Its goals are to educate trauma survivors about stress reactions and about ways of coping with them, to normalize posttrauma symptoms, to promote the expression of thoughts and feelings about the event, and to provide information about possible further interventions.

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The only form of debriefing that has been systematically evaluated in RCTs consists of a single session of individual debriefing. A recent systematic Cochrane review (Rose et al 2002) identified 11 RCTs that tested the effects of a single session of individual debriefing occurring within the first month after the trauma (Bisson et al 1997; Bordrow and Porritt 1979; Bunn and Clarke 1979; Conlon et al 1999; Hobbs et al 1996 with the long-term follow-up by Mayou et al 2000; Hobbs and Adshead 1997; Lavender et al 1998; Lee et al 1996; Rose et al 1999; Small et al 2000; and Dolan et al, unpublished data). The Cochrane review concluded that a single session of individual debriefing does not reduce distress and is not effective in preventing PTSD. A meta-analysis by Van Emmerik et al (2002) of single-session debriefing came to similar conclusions. This meta-analysis included seven studies (not only RCTs) of single-session debriefing within the first month after trauma that reported symptom measures before and after the intervention (Bisson et al 1997; Carlier et al 2000; Conlon et al 1999; Lee et al 1996; Mayou et al 2000; Rose et al 1999), including one study of group debriefing (Shalev et al 1998b).

Two debriefing studies with long-term follow-ups even indicated negative effects of the intervention (Bisson et al 1997; Mayou et al 2000), in that debriefed patients improved less in the long-term than untreated control subjects. Bisson et al (1997) gave a session of debriefing to 133 hospitalized burns survivors at approximately 6 days after the injury and found that 13 months later more debriefed patients (26%) met criteria for PTSD than patients who had not received an intervention (9%). In the Mayou et al (2000) study, motor vehicle accident survivors with high initial PTSD symptom levels showed significantly worse outcome at 3 years after debriefing than comparable patients who had received no intervention. Although these findings have to be interpreted with caution, as each study had limitations, they raise an important methodologic consideration. Whether or not an observed improvement in a treated group indicates a beneficial or harmful intervention depends on the course of natural recovery (i.e., recovery rates in the absence of intervention) for the population studied.

Figure 1 illustrates that this consideration even applies to the comparison of two interventions. As both treated groups 1 and 2 improved over time, one may be inclined to state that both treatments were helpful. This interpretation would only be correct if recovery in untreated survivors followed pattern A; however, if natural recovery followed pattern B, Treatment 2 would actually impede recovery, whereas Treatment 1 would be helpful; and if natural recovery followed pattern C, both treatments would impede rather than promote recovery.

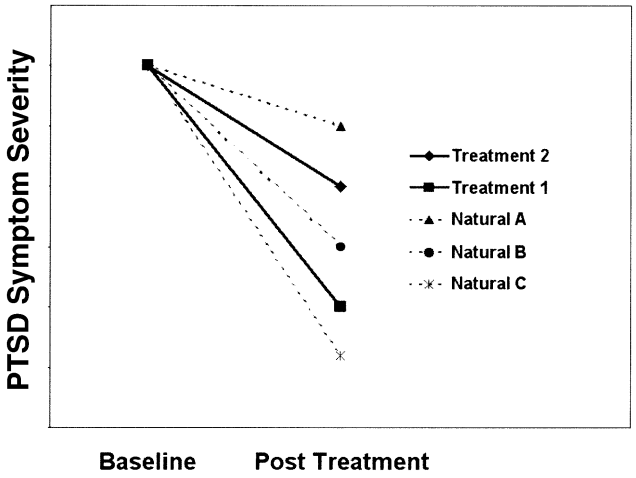

Figure 1. Possible patterns of outcome in early intervention studies after trauma. Whether or not Treatments 1 and 2 can be considered effective depends on the course of natural recovery.

The second approach to early psychological intervention after trauma has yielded somewhat more promising results, although the methodologic considerations above also apply to some of these studies. In contrast to debriefing, interventions were only offered to a subgroup of trauma survivors. Patients at risk for persistent PTSD received several sessions of individual cognitive behavioral therapy (CBT). The identification of patients in need of intervention was based on the severity of initial symptoms, either defined by early symptoms of PTSD or by the diagnosis of acute stress disorder (ASD). In all studies, the treatment included education about psychological effects of trauma, imaginal reliving of the event, cognitive restructuring, and reversal of avoidance behaviors. Some studies also included training in anxiety management skills. Table 1 gives an overview over these studies. Most studies were RCTs comparing CBT with other conditions. Some studies compared the results for the treatment conditions to those of previous prospective longitudinal studies, to estimate the relative benefits of CBT. The table presents the percentage of patients who were still suffering from PTSD at the end of treatment and at follow-up. Because some of the studies had moderately high drop-out rates, completer and intent-to-treat figures are presented.

Foa et al (1995) treated 10 patients who reported the symptoms of PTSD soon after an assault with four weekly 2-hour sessions of CBT (education, imaginal exposure, in vivo exposure, cognitive restructuring, and training in relaxation and breathing skills) and compared their outcome with that of 10 matched assault survivors from a prospective longitudinal study by the same research group. Eighty percent of the treatment group was recruited within the first 2 weeks after the traumatic event. At the post-

Table 1. Outcome of Studies of Early Cognitive Behavior Therapy after Trauma: Percent Treated Cases with PTSD after Treatment and at Follow-Up

	Cognitive Behavior Therapy			Randomized Control Group				Other Randomized Group				Naturalistic Follow-up			
Study/Assessment Point	PTSD Completer	PTSD Intent-to-Treat	Drop-outs	Intervention	PTSD Completer	PTSD Intent-to-Treat	Drop-outs	Intervention	PTSD Completer	PTSD Intent-to-Treat	Drop-outs	*n*	PTSD Completer	PTSD Intent-to-Treat	Drop-outs
Foa et al (1995)															
Posttreatment	10	10	0									10	70	70	0
6-month follow-up	11	22	10										22	33	10
Foa et al (unpublished)															
Posttreatment	45	61	29	RA	55	70	33	SC	52	62	17				
Last follow-up (mean 9.5 months)	32	52	29		30	53	33		29	41	17				
Bryant et al (1998)															
Posttreatment	8	8	0	SC	83	83	0								
6-month follow-up	17	17	0		67	67	0					12[a]	78	83	25
Bryant et al (1999)															
Posttreatment	20	37	21	SC	56	63	16	EXP	14	33	22				
6-month follow-up	23	47	32		67	74	21		15	39	28	12[a]	78	83	25
Bryant et al (in press a)															
Posttreatment	13	36	27	SC	46	50	8	CBT + HY	9	30	23				
6 month follow-up	21	42			59	58			22	40		12[a]	78	83	25
Ehlers et al (in press)															
Posttreatment	14[b]	14	0	RA	74	76	7	SLF	76	79	11				
6-month follow-up	14	14	0		58	59	10		72	75	11	117[c]	71	78	22
Öst et al (unpublished)															
Posttreatment	5	13	8.7	Wait	65	65	0								

Table presents percent patients with PTSD, as this measure is comparable across studies. Some studies did not report intent-to-treat analyses; for these, intent-to-treat results are calculated assuming that dropouts would still meet PTSD criteria. These results may be overly conservative. PTSD, posttraumatic stress disorder; RA, repeated assessment; SC, supportive counseling; CBT, cognitive behavior therapy; EXP, exposure only; HY, hypnosis; SLF, self-hlep booklet; Wait, wait list.

[a] These are patients meeting criteria for acute stress disorder in the prospective longitudinal study of Harvey and Bryant (1998).

[b] For comparability with the naturalistic study, these numbers are based on self-report. The results for clinician-rated PTSD symptoms are very similar.

[c] These are comparable patients from the same population meeting criteria for PTSD with a minimum severity of 20 on the PDS in prospective, longitudinal study of Ehlers et al (1998b).

treatment assessment, the CBT group had significantly better outcomes. Because the assessment-only control group continued to improve over the follow-up period, differences between the groups were less pronounced at follow-up. In the long term, the CBT group only differed from the assessment group in that they were less depressed and had somewhat less severe reexperiencing symptoms. Thus, it appeared that CBT speeded up recovery in assault victims with PTSD symptoms. This warranted the investigation of early CBT after trauma in RCTs.

Foa et al (unpublished data) recruited assault survivors who met symptom criteria for PTSD in the initial weeks after the event (range 2–46 days, mean 21 days). Patients were randomly allocated to four weekly 2-hour sessions of either CBT ($n = 31$), assessment by a clinician ($n = 30$), or supportive counseling ($n = 29$). Contrary to the results of the previous, nonrandomized study, and in line with an early study by Kilpatrick and Veronen (1984), patients who received repeated assessments improved as much as the CBT group. The positive outcome of the clinical assessment group is noteworthy, although the reasons for the differences in the pattern of results between the Foa et al (1995) and the Foa et al (unpublished) studies are not clear.

Cognitive behavioral therapy was not different from supportive counseling in the percentage of patients with PTSD (as shown in Table 1), but tended to be superior to it on some other measures (self-reported PTSD and general anxiety symptoms) at posttreatment and 3-month assessments. Thus, this study provided some support for a faster recovery in patients who received CBT compared with supportive counseling. These results are based on a completer analysis and may be less favorable in an intent-to-treat analysis, as there were (nonsignificantly) more drop-outs (29% vs. 17%) in the CBT group. Interestingly, in the light of the methodologic considerations above, the rank order of improvement in this study was CBT, repeated assessment, and supportive counseling.

A series of studies by Bryant et al (1998, 1999, in press a) demonstrated more clear-cut differences between a 5–6 session CBT program and supportive counseling. The selection criterion for inclusion in the studies was a diagnosis of ASD. Thus, patients needed to show significant dissociative symptoms in addition to the PTSD symptoms to be included. Patients who had experienced physical assault or motor vehicle accidents were recruited within the first 2 weeks following trauma. The content of treatment was very similar to that used by Foa's group, with somewhat more emphasis on exposure homework and self-talk exercises to manage anxiety-producing symptoms. The first study compared the outcomes for 12 patients treated with CBT with those of 12 patients treated with supportive counseling (Bryant et al 1998). The second study (Bryant et al 1999) compared two versions of CBT ($n = 19$ for CBT including cognitive restructuring and anxiety management, $n = 18$ for exposure therapy) with supportive counseling ($n = 19$). The third study (Bryant et al, in press a) investigated whether CBT ($n = 27$) and the combination of CBT and hypnosis ($n = 30$) are more effective than supportive counseling.

The studies produced very consistent results. In completer analyses, all versions of CBT were significantly superior to supportive counseling on measures of posttraumatic symptoms, anxiety, and depression both at posttreatment and follow-up. These differences were maintained at 4-year, long-term follow-up (Bryant et al, in press c). Parallel results were obtained for ASD patients with mild brain injuries (Bryant et al, in press b). Bryant et al (in press a) also report intent-to-treat analyses. Patients who had received CBT had a greater reduction in intrusive memories at posttreatment than those who had received supportive counseling. For patients who had received a combination of CBT and hypnosis, these differences held up at follow-up. In line with Bryant et al's results, a recent small-scale RCT by Gidron et al (2001) not included in the table (because it did not report percentage of patients with PTSD) also found that an early CBT intervention designed to promote memory reconstruction ($n = 8$) led to greater reductions in PTSD symptoms at 3–4 months than supportive listening ($n = 9$).

The pattern of results for supportive counseling in the studies by Bryant et al (1998, 1999, in press a) differs from that in the Foa et al study (unpublished data). Patients in the Bryant et al studies who had received supportive counseling still showed significant psychopathology and high PTSD rates at follow-up, whereas those in Foa et al's study were largely recovered. One possible explanation for this discrepancy is that Bryant et al's samples were at greater risk of chronic PTSD symptoms because they suffered from ASD; however, Foa et al did not find differential outcome for patients with and without ASD.

The studies by Bryant's group did not include an untreated control group. Thus, one cannot yet rule out that supportive counseling may have retarded recovery compared with what would be expected with no intervention. Bryant et al (1998, 1999, in press a) have argued that outcomes for supportive counseling in their treatment outcome studies (PTSD rates at follow-up of approximately 60%–70%) were superior to those observed in naturalistic follow-up studies. The PTSD rate of 78% at follow-up in a study of accident survivors by Harvey and Bryant (1998) is most directly comparable with the treatment studies by Bryant's group, as similar methodologies were used; however, the 78% figure is only based on nine patients with ASD after a motor vehicle accident. Some studies of ASD have found similarly high PTSD rates in patients with ASD (e.g., Brewin et al 1999; Murray et al

2002), but others have reported PTSD rates as low as 30% following ASD (O'Donnell et al 2001; Schnyder et al 2001). As the results of Foa et al's studies (Foa et al 1995 and unpublished data) show, comparisons across samples are difficult, and it would thus be preferable to calibrate for the effects of assessments and natural recovery within each treatment study.

Thus, although the initial trials of early CBT after trauma are promising, several questions are open. First, it needs to be demonstrated that CBT starting within the first month after trauma leads to better outcome than repeated assessments. Second, it would be interesting to know whether frequent assessments by a clinician within the first month after trauma lead to better outcome than no intervention, and if they do, what the mechanisms of change are. Third, it would be interesting to know whether supportive counseling within the first month after trauma potentially leads to worse outcome than no intervention, parallel to the potentially adverse long-term effects of single-session individual debriefing (Bisson et al 1997; Mayou et al 2000).

Response to Assessment as a Strategy for Identifying People at Risk of Chronic PTSD

Tarrier et al (1999b) reported that 11% of patients with chronic PTSD improve with clinical assessment and self-monitoring to the extent that they no longer suffer from PTSD, and the authors recommend that such patients be excluded from treatment trials (Tarrier et al 1999a). A recent RCT of early CBT after motor vehicle accidents by Ehlers et al (in press) used this strategy to identify patients at high risk of chronic PTSD symptoms. A two-fold strategy was used. First, patients had to meet PTSD criteria and report at least moderately severe symptom severity. Second, before random allocation, patients completed a clinical assessment and a 3-week self-monitoring phase, and those who improved to the extent that they no longer met PTSD criteria were excluded. Random allocation then occurred approximately 3 months after the event.

The study compared the effects of up to 12 weekly sessions of CBT ($n = 28$), a self-help condition (one session with a clinician and a self-help booklet) ($n = 28$), and repeated, but infrequent, assessments of PTSD symptoms ($n = 29$). Cognitive behavioral therapy was superior to the self-help condition and repeated assessment on all measures at posttreatment and at follow-up, for the completer and intent-to-treat analysis. The 14% PTSD rate (based on self-report, 11% for independent assessors) found at 6 months after the end of CBT (that is, approximately 1 year after the trauma) compares favorably with the 71% PTSD expected at 1 year after the accident on the basis of a prospective, longitudinal study drawn from the same population (Ehlers et al 1998b) and with the 58% for patients receiving repeated assessments. The self-help condition did not differ from the repeated assessment condition on most measures with the exception of a lower rate of high end-state functioning and a greater rate of requests for treatment at follow-up. The latter results again highlight the possibility that some interventions may impede rather than promote recovery.

The Ehlers et al study (in press) differed from those of Foa et al (1995, unpublished data) and Bryant et al (1998, 1999, in press a) in several ways. First, treatment was given later, and responders to self-monitoring were excluded. Second, more treatment sessions were allowed (up to 12 sessions, range 2–12). Third, the repeated assessments were less frequent than in the Foa et al (unpublished) study and took less time. Fourth, CBT treatment was based on the cognitive model of PTSD by Ehlers and Clark (2000) rather than on an exposure rationale and accordingly put more emphasis on cognitive therapy as opposed to exposure techniques. This may in part explain the excellent acceptability of the treatment. There were no drop-outs. Other early intervention studies reported drop-out rates of up to 29%; however, comparisons of drop-out rates between different samples are problematic.

A further RCT of early CBT after trauma by Öst et al (unpublished data) recruited crime victims with at least moderately severe PTSD at 4–12 weeks after the event. As in the Ehlers et al study (in press), treatment duration was flexible with a maximum of 16 sessions, and treatment procedures included imaginal and in vivo exposure and cognitive restructuring techniques in an individualized way. The CBT group was clearly superior at posttreatment to a wait list condition on measures of PTSD symptoms, anxiety, depression, quality of life, and social adjustment. Follow-up data are not yet available.

Together, the Ehlers et al (in press) and Öst et al (unpublished data) studies suggest that a full course of CBT is an effective intervention for trauma survivors with moderate to high PTSD symptom severity in the initial months after trauma. The change obtained with CBT is greater than the significant improvement observed in untreated trauma survivors or trauma survivors who are offered minimal interventions, such as repeated assessments or self-help instructions. Whether or not these results generalize to interventions starting within the first month after trauma remains unclear, as the existing trials (Foa et al, unpublished data; Bryant et al 1998, 1999, in press a; Kilpatrick and Veronen 1984) have used abbreviated CBT programs with fewer sessions.

How Can We Explain the Differences in Outcome for Debriefing/Self-Help Instructions and CBT?

Single-session psychological debriefing and a self-help condition consisting of a single session with a clinician

and a self-help booklet do not seem to be effective in the prevention of chronic PTSD and may possibly even impede long-term recovery. On the other hand, there is evidence from controlled trials that several sessions of CBT are effective and that this is not simply due to therapist attention, as an equal number of sessions of supportive counseling led to worse outcome. This raises the question of what differences in the treatment approaches are responsible for the differences in outcome.

One possible explanation relates to the patients' interpretation of their PTSD symptoms. In a series of prospective longitudinal studies, we have found that negative interpretations of initial PTSD symptoms (e.g., "I am going crazy," "I will never recover," "If I think about the event, I will have a break-down") are among the best predictors of chronic PTSD (e.g., Dunmore et al 2001; Ehlers et al 1998b; Halligan et al, in press) and predict chronic PTSD symptoms over and above what can be predicted from initial symptom severity. Very early information about these symptoms and the emphasis on the expected decline over time may potentially have the paradoxical effect of increasing negative interpretations of these symptoms in some patients (e.g.,"I have been told what to do, but I still have the symptoms, this must mean that there is something is wrong with me").

Both in debriefing and self-help programs, traumatized individuals are encouraged to talk about their experience and to expose themselves to the traumatic aspects of the memory. It is conceivable that such very early exposure to the traumatic material may interfere with natural recovery processes. The fading of sensory components of a memory for an autobiographical event is an automatic process that is caused by the integration of the experience into an autobiographical memory base (Conway and Pleydell-Pearce 2000). Going over the event repeatedly in its immediate aftermath may interfere with this process. An unpublished analog experiment by Ehlers and Steil (1995) provides some preliminary support for this idea. Student volunteers saw a distressing videotape of road traffic accident scenes with severely injured or dead people. They were instructed to either 1) do daily imaginal reliving of the tape for a week and talk about it to other people; or 2) avoid talking about the tape and avoid any reminders of it, such as TV programs. On the basis of the therapeutic effects of imaginal reliving (e.g., Foa et al 1991), we had expected that the exposure group would have fewer intrusions and be less distressed by reminders of the tape. In contrast to the hypothesis, the exposure group showed larger increases in skin conductance responses to reminders a week later than the avoidance group. When asked to give a description of the tape, the exposure group also appeared to have more vivid memories with more sensory details than the avoidance group. Limited conclusions can be drawn from such analogue experiments; however, the study highlights the possibility that intervention methods that are effective in treating persistent symptoms in the aftermath of trauma may be not appropriate in helping people adjust to a traumatic event in its immediate aftermath.

Horowitz (1997) observed that after traumatic events or bereavement, people show a pattern of intermittent processing, oscillating between phases of withdrawal/numbness/avoidance and intrusion/processing of the event. It is possible that this intermittent processing in small doses facilitates natural recovery and that very early exposure instructions pushing people to talk and think about the trauma in its aftermath may not be beneficial.

Ehlers and Clark (2000) propose that a central element of treatment is for the patient to discriminate better between the "then" (i.e., the trauma and the stimuli that accompanied it) and the "now" (i.e., the present situation and the triggers of memories that have similarities and differences to those present at the time of the event) (see also Foa and Rothbaum 1998). One of the functions of imaginal reliving is to put a time code into the memory, so that it is experienced as a memory rather than as something that is happening (again) in the present. For this therapeutic change to occur, the patient needs to stay aware of the fact that they are in the therapy setting some time after the event when doing the imaginal reliving, rather than back at the scene of the event. This may be difficult soon after the event for two reasons. First, not much time has passed, so that it may be difficult for the patient to see that the trauma is over. Second, recently traumatized individuals may easily become overwhelmed by the memories, so that the discrimination between the "then" and the "now" breaks down. In contrast, during CBT, therapists carefully gauge treatment procedures so that patients go through an optimal level of reliving, without losing awareness of the therapy setting (see also Jaycox and Foa 1996).

A further problem with debriefing and self-help approaches is that the content of self-exposure to traumatic memories is not clearly defined. What patients actually do may be quite different from what was intended. First, patients may start ruminating about the event, thinking about unproductive questions such as why the event happened to them, how their life has been ruined by the event, how the event could have been prevented, or how they can punish the person who caused the event. Several prospective longitudinal studies have found that such rumination about a traumatic event is among the best predictors of chronic PTSD, explaining variance over and above what can be predicted from initial symptom levels (e.g., Ehlers et al 1998b; Murray et al 2002). Thus, self-exposure instructions run the risk of increasing rather than decreasing one of the maintaining mechanisms in persistent PTSD.

Second, patients may need active help in overcoming avoidance and may not do self-exposure intensively and systematically enough. Patients who just received exposure instructions are unlikely to go through the event in the same way as in CBT, where patients go through the event in chronological order. On their own, patients may instead go over isolated moments of the event. This will have the disadvantage that the patient will not make progress in linking these moments in memory with the final outcome of the situation or other moments during the event that disconfirmed the patient's expectations at the time (e.g., "I though he would kill me" linked to "He let me go in the end"; "I thought I was paralyzed" linked to "I could walk").

Third, patients may find it very difficult to reappraise problematic meanings without help (such as feeling responsible for an accident although it was not their fault, thinking that they actually died during the event, thinking that the scars from an assault make them look disfigured, or thinking that no one cared about them when they waited for treatment in the hospital). Fourth, exposure to some aspects of traumatic events may be retraumatizing if it is not accompanied by direct cognitive restructuring. For example, mental defeat (perceived loss of all psychological autonomy) is related to poor response to exposure therapy (Ehlers et al 1998a).

Questions Arising from Treatment Studies

The disappointing results for single-session psychological debriefing (Rose et al 2002; Van Emmerick et al 2002) are alarming if one considers for how long debriefing has been used in practice without empirical validation. Clinicians and researchers may make assumptions about early intervention that seem very plausible and are thus accepted without empirical tests. One of these ideas has been that going over trauma memories is always helpful. The finding that single-session debriefing may potentially impede long-term recovery (Bisson et al 1997; Mayou et al 2000) and the somewhat worse outcome of self-help compared with repeated assessments (Ehlers et al, in press) challenge this assumption, and further studies are needed that systematically compare the effects of short interventions in the immediate aftermath of the trauma that include or exclude exposure to trauma memories with no intervention.

Another assumption in early intervention work appears to be that the earlier one intervenes, the better the outcome should be. Again, the empirical data to date do not support this assumption. The clearest advantages of CBT after trauma to date in intent-to-treat analyses were found in the Ehlers et al (in press) and Öst et al (unpublished data) studies that only started treatment from the second month after the trauma onwards. Empirical studies will need to clarify the optimal time point for intervention.

Another implicit assumption in the field appears to be that PTSD symptoms soon after a traumatic event should be easier to treat (i.e., in a shorter period of time) than more chronic PTSD. Most CBT studies of early intervention have used interventions of 4–6 sessions, which are shorter than the standard 9–12 sessions used in CBT of chronic PTSD (Foa et al 1995; Bryant et al 1998, 1999, in press a). Additional treatment sessions may improve the efficacy of CBT commencing within the first month after trauma. In our PTSD treatment studies, there has not been any relationship between time since trauma and number of sessions needed to treat the condition (Ehlers et al, in press; Gillespie et al 2002). As a substantial subgroup of patients with PTSD decline offers of treatment in the first few months after trauma (e.g., Öst et al, unpublished data), it is encouraging to find that they can be treated later without compromising outcome.

Who Needs Specialist Psychological Interventions after Trauma?

Because a subgroup of people who develop PTSD after a traumatic event will recover on their own, early interventions run the risk of treating people who do not need treatment. Strategies for identifying people who are unlikely to recover on their own will therefore be of great interest. So far, two selection strategies have shown advantages of early CBT compared with control conditions: a diagnosis of ASD (Bryant et al 1998, 1999, in press a), and moderately high PTSD symptom levels, possibly combined with the exclusion of responders to initial assessment procedures (Ehlers et al, in press; Öst et al, unpublished data).

Theoretical considerations and results from prospective, longitudinal studies suggest that there are psychological factors that also predict chronicity of PTSD and *predict over and above* what can be predicted from initial PTSD severity. These could become useful in helping identify people who are unlikely to recover on their own and in determining targets of treatment. Examples are listed below:

- *Mental defeat* refers to the perceived loss of autonomy during the trauma (Dunmore et al 1999, 2001; Ehlers et al 2000);
- *Excessively negative appraisals of trauma sequelae.* These include negative appraisals of the symptoms of PTSD, responses of other people, or other consequences of the trauma, such as changes in physical function or appearance (Dunmore et al 2001; Ehlers et al 1998b; Halligan et al in press);

- *Characteristics of intrusive memories.* The *presence* of intrusive memories soon after trauma is not a good predictor of chronic PTSD (Shalev 1992); however, certain *characteristics* of these memories predict chronicity. Michael (2000) found that intrusions that were described as highly distressing, that were experienced as happening "in the here and now" rather than as something from the past, and that were experienced as fragments that were unconnected to what happened immediately before and after, predicted chronic PTSD. Change in the "here and now" quality was also correlated with change in PTSD severity from initial assessment to follow-up. Interestingly, patients who responded to assessment and self-monitoring in the Ehlers et al (in press) study were less likely to report flashbacks in the diagnostic assessment than those who continued to be symptomatic. Thus, people whose intrusive memories have flashback-like qualities may less likely to recover without help;
- *Maintaining behaviors and cognitive strategies.* These include rumination about the trauma, safety-seeking behaviors, and avoidance (Bryant and Harvey 1998; Dunmore et al 2001; Ehlers et al 1998b; Ehlers et al 2003; Murray et al 2002);
- *Physical consequences of the trauma,* such as chronic pain or health problems (Blanchard et al 1997; Ehlers et al 1998b);
- *Further traumatic or very stressful life events* in the aftermath of trauma (e.g., Blanchard et al 1997, see Brewin et al 2000 for a review);
- *Negative responses by other people* in the aftermath of trauma (lack of social support) (see Brewin et al 2000 for a review);
- *Comorbid depression* (Shalev et al 1998a).

In addition, there may also be biological indicators of risk for chronicity, such as low cortisol levels and high heart rate (Yehuda et al 1998). A range of pretrauma characteristics (e.g., psychiatric history, childhood abuse, gender, intelligence) and trauma characteristics (e.g., type of trauma, injury severity, perceived threat to life) have been shown to influence PTSD rates after trauma (see Brewin et al 2000 for a review). Some of them may also be useful in assessing risk of chronicity of PTSD, and it remains to be tested whether or not they predict persistent PTSD over and above initial symptom levels.

Some Fresh Ideas for Early Psychological Intervention

It may be also worthwhile to consider new intervention strategies or models of treatment delivery for the first weeks after trauma. One may consider indirect methods of promoting recovery, for example, by focusing on the common sleep problems in the days after trauma. The effects of clinical assessments may possibly be enhanced by providing information that counteracts negative appraisals of trauma sequelae (e.g., hospital and police procedures, medication). Secondary effects of the trauma, such as job loss or problems in the patients' relationships, may be prevented by informing the relevant people about the psychological consequences of trauma and the possibility of treatment.

If clinical assessments prove to have an advantage over no intervention (as Foa et al, unpublished data, and Ehlers et al, in press, studies may suggest), a sensible strategy may be to offer assessments in the first instance and to then offer a course of intensive 1-week treatment at approximately 2–3 months after the event if the patient is still symptomatic at that time. Such an approach would offer the advantage that those patients who will get better without treatment would not have to spend the time and energy of attending sessions, and those who require treatment would take the same time to recover as those receiving weekly sessions starting earlier. We have successfully piloted a 1-week treatment program that would be applicable.

Although the self-help condition in the Ehlers et al study (in press) did not have therapeutic effects, other forms of self-help advice may be helpful. The advice could be modified to take into account the conditions under which self-exposure to traumatic material is helpful, and to give more concrete advice regarding how to go through the traumatic memories. More focus could be placed on addressing problematic appraisals and on how to change them.

Conclusions

The data available to date suggest that single sessions of individual psychological debriefing after trauma are not effective in preventing posttrauma symptoms. The widely used group debriefing may or may not be more effective, and RCTs to test this are urgently needed. The data available to date suggest that not all trauma survivors need intervention. The majority of survivors will adjust to the trauma without professional help.

For those trauma survivors who develop moderately severe or severe PTSD, a full course of CBT (up to 12–16 sessions) delivered from the second month after trauma onwards is an effective treatment that is superior to no intervention, repeated assessment, or self-help. Shorter courses of 4–6 sessions of CBT starting in the first month after trauma lead to significant improvement and are superior to supportive counseling. It remains as yet to be demonstrated that they are superior to repeated assessment. The only RCT that included this comparison failed to detect advantages of CBT over equally frequent assessments by a clinician. It will

need to be investigated whether extending the duration of treatment or a stricter selection of patients will increase the differences in outcome between CBT starting in the first month after trauma and repeated assessments.

The present research suggests several methodologic conclusions. First, RCTs of early intervention need to include a no-intervention control condition, because a substantial subgroup of trauma survivors can be expected to recover on their own and because the recovery rate in a given study will depend on the selection criteria (see the different natural recovery slopes A to C in Figure 1). Second, RCTs need to include follow-ups to detect possible adverse long-term consequences, such as those found in some studies of single-session debriefing and self-help. Third, more attention to drop-outs is needed. Drop-out rates in early intervention studies were sometimes worryingly high. Measures to increase compliance may include addressing beliefs that affect compliance, flexibility about when and how work on the trauma memory is conducted, measures to remind patients with disorganized lives of their appointments, or to increase the rigor with which clinicians contact patients who fail to attend appointments and offer alternatives. Fourth, attention will need to be given to those patients who are likely to need treatment for PTSD but are not interested. Future research will need to address ways of motivating these patients for treatment.

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