Early Intervention for Trauma: Current Status and Future Directions

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Although psychological debriefing (PD) represents the most common form of early intervention for recently traumatized people, there is little evidence supporting its continued use with individuals who experience severe trauma. This review identifies the core issues in early intervention that need to be addressed in resolving the debate over PD. It critiques the available evidence for PD and the early provision of cognitive-behavioral therapy (CBT). Based on available evidence, we propose that psychological first aid is an appropriate initial intervention, but that it does not serve a therapeutic or preventive function. When feasible, initial screening is required so that preventive interventions can be used for those individuals who may have difficulty recovering on their own. Evidence-based CBT approaches are indicated for people who are at risk of developing posttraumatic psychopathology. Guidelines for managing acutely traumatized people are suggested and standards are proposed to direct future research that may advance our understanding of the role of early intervention in facilitating adaptation to trauma.

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Although there are cogent humanitarian reasons to provide mental health interventions to people soon after exposure to trauma (Wilson, Raphael, Meldrum, Bedosky, & Sigman, 2000), there is growing consensus that early intervention for trauma, generically called psychological debriefing (PD), does not prevent subsequent psychopathology (Bisson, McFarlane, & Rose, 2000; Gist & Woodall, 2000). Further, there is some evidence that PD may exacerbate subsequent symptoms (e.g., Bisson, Jenkins, Alexander, & Bannister, 1997). Even though there is insufficient evidence supporting its continued use, PD is routinely provided immediately after exposure to potentially traumatizing events (PTE; Mitchell & Everly, 1996; Raphael, Wilson, Meldrum, & McFarlane, 1996). This state of affairs is not surprising, considering the prevalence of trauma, the demand for efficient management of the extensive individual, corporate, and societal costs associated with chronic Posttraumatic Stress Disorder (PTSD), the financial interests of those who provide acute interventions, and the tendency for organizations and participants to perceive PD as useful (Deahl, Gillham, Thomas, Searle, & Srinivasan, 1994; Hobfoll, Spielberger, Breznitz, Figley, & van der Kolk, 1991; Raphael et al., 1996; Wilson et al., 2000).

In this context, our aim is to review the available evidence and to address a number of core questions pertaining to early intervention. Specifically, are there sufficient data from which to conclude that all early interventions are counterproductive? Is the Critical Incident Stress Debriefing (CISD) approach particularly problematic? Are some components of PD justified? Should psychological interventions only be provided to those who are at risk of developing psychopathology? Our goal is to consider if it is valid to conclude that early, brief preventive interventions for trauma are inappropriate, as recently recommended in the Cochrane Collaboration review of the randomized controlled trials (RCT) of one-session

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debriefing (Rose, Wessely, & Bisson, 1998, with a follow-up by Rose, Bisson, & Wessely, 2001; cf. Rose & Bisson, 1998), and to examine possible alternative approaches to preventing chronic PTSD. By secondary prevention we mean assisting individuals who have been exposed to trauma and have developed acute symptoms, so as to reduce their risk for chronic PTSD.

In their Cochrane review, Rose et al. (2001) concluded that there is no evidence for the efficacy of one-session PD provided soon after exposure to PTE and recommended that "[c]ompulsory debriefing of victims of trauma should cease." It should be noted, however, that the Cochrane reviews provide relatively circumscribed, brief, and global recommendations for practitioners. In contrast to the Cochrane reviews, we consider a broader conceptual approach to early intervention, provide more detailed methodological critiques of PD studies, and consider the evidence for early provision of cognitive-behavioral therapy (CBT). We also provide a more extensive set of recommendations and standards for future research on early intervention. Finally, we provide a summary of the risk factors for PTSD germane to early intervention and offer practical guidelines for managing people who are recently traumatized.

THE NEED FOR EARLY INTERVENTION

Although lifetime risk for exposure to PTE is extremely high (60%–90%, Breslau et al., 1998; Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995), the prevalence of PTSD is relatively low. For example, approximately 8% of individuals in the National Comorbidity Survey had PTSD at some point across the lifespan, indexed to an event rated as "the most traumatic" (Kessler et al., 1995). Breslau et al. also found that approximately 9% of individuals exposed to any PTE report PTSD at some point across the lifespan. The prevalence estimates for PTSD vary considerably, due to differences in samples, sampling strategies, assessment methods, and the way that PTSD caseness is defined. Moreover, the prevalence of PTSD varies across different types of PTE, with sexual assault and exposure to violence being associated with the highest risk for PTSD (e.g., Breslau et al., 1998). Nevertheless, even the most conservative estimates of risk for PTSD reflect the tremendous mental health toll associated with trauma.

Prospective studies have shown that most trauma survivors display a range of PTSD reactions in the initial weeks after a traumatic event, but that most of these people adapt effectively within approximately three months. Those that fail to recover by this time are at risk for chronic PTSD (e.g., Blanchard et al., 1996; Riggs, Rothbaum, & Foa, 1995; Rothbaum, Foa, Riggs, Murdock, & Walsh, 1992; Koren, Arnon, & Klein, 1999). Further underscoring the risk for chronicity in PTSD, Kessler et al. (1995) found that one third of people with PTSD fail to recover after many years, in many cases after years of mental health treatment. These findings have several implications. First, the majority of people will be distressed after exposure to a PTE and assistance in coping and immediate adjustment may be indicated. Second, a smaller proportion of individuals exposed to PTE will have persistent problems that require therapeutic intervention. The following review of early intervention strategies recognizes these fundamental patterns in trauma response and accepts the premise that all distressed people may require and, in theory, benefit from assistance following trauma, only a small proportion will eventually require therapy for a pathological response. Unfortunately, in the PD literature, little attention has been paid to secondary prevention specifically for individuals who are at risk for chronic PTSD.

RISK FACTORS FOR PTSD

Exposure to PTE must be evidenced for PTSD, but is not, by itself, a sufficient cause of chronic PTSD. Attention has been focused on the pre-traumatic, peritraumatic, recovery environment, and posttrauma lifespan conditions that create risk for posttraumatic difficulties (Halligan & Yehuda, 2000; King, King, Foy, Keane, & Fairbank, 1999). The premise that exposure to trauma is the exclusive risk factor for PTSD, which underlies most PD models (e.g., Mitchell & Everly, 1996), has resulted in intervention efforts typically failing to address the role other risk factors may play in adjustment after exposure to PTE. For this reason, the "one-size-fits-all" framework of PD fails to acknowledge the personal and social resources that, in most cases, promote recovery (Bisson et al., 2000; Gist & Woodall, 2000). Effective management of those who suffer more than a transient stress response to trauma would be greatly facilitated by screening those who are at risk for chronic PTSD after exposure to PTE. Furthermore, there is increasing recognition that because of the complex array of vulnerability factors that contribute to the development of posttraumatic psychopathology, single-session interventions are unlikely to make substantive differences in long-term adjustment (Shalev, 2000).

In the PTSD field, risk factor research is in an early stage, conceptually and empirically. As a result, the extent to which risk variables can be used practically in early interventions is reduced considerably. For example, there is no distinction between risk indicators (variables that have been found to correlate with chronic PTSD) and risk mechanisms (risk factors or variables that suggest specific modes of mediation that are less susceptible to third variable and directionality concerns; Rutter, Pickles, Murray, & Eaves, 2001). Rather, the global term "risk factor" is typically employed and causal mechanisms remain unspecified. Although research has revealed several noteworthy risk indicators, few risk mechanisms have been explicated. Once future research identifies risk mechanisms, these variables will likely be specific targets for secondary prevention interventions. Nevertheless, at this stage, several risk indicators could legitimately be used to screen individuals exposed to PTE who are more likely to suffer long-term problems.

In this section, we review two risk indicators (prior exposure to trauma and acute stress disorder) and two potential risk mechanisms (social support and hyperarousal) that deserve special attention. Younger age and female gender have been shown to be risk indicators for chronic PTSD (e.g., Breslau et al., 1998; Kulka et al., 1988), however, these variables alone cannot be usefully employed to identify individuals who may uniquely benefit from early intervention. Intelligence is another example of a risk indicator found in the literature (e.g., Macklin et al., 1998). However, we cannot envision a scenario in which this variable could impact decision-making about who should receive early intervention. Of course, age, gender, and intelligence are factors that need to be taken into account in modifying the content and process of early interventions. We end this section by describing how resource losses represent an important set of risk mechanisms, which, to date, have not been sufficiently examined in early intervention research.

Prior Trauma

It has become axiomatic that prior exposure to PTE is a risk indicator for chronic PTSD stemming from a subsequent PTE (King et al., 1999; Stretch, Knudson, & Durand, 1998). In particular, a history of exposure to interpersonal violence, in childhood or adulthood, substantially increases the risk for chronic PTSD following exposure to any type of PTE (Bremner, Southwick, Brett, & Fontana, 1992; Breslau et al., 1998; Green et al., 2000; Nishith, Mechanic, & Resnick, 2000). Dougall, Herberman, Delahanty, Inslicht, and Baum (2000) hypothesized that prior trauma history sensitizes victims to the new stressor, thus potentiating its impact. They argued that evaluating trauma history is essential for improving early intervention efforts. There are no empirical data, however, detailing the effects of prior trauma history on response to psychosocial interventions for PTSD in general or early interventions in particular.

Acute Stress Disorder

Prior to DSM-IV (American Psychiatric Association, 1994), severe distress occurring in the month after a traumatic event was not regarded as a diagnosable clinical problem. Although this prevented the pathologizing of transient reactions, it hampered the identification of more severely traumatized individuals who might benefit from early interventions. To address this issue, DSM-IV introduced the diagnosis of acute stress disorder (ASD) to describe those acute reactions associated with an increased likelihood of developing chronic PTSD. A diagnosis of ASD is given when an individual experiences significantly distressing symptoms of re-experiencing, avoidance, and increased arousal within 2 days to 4 weeks of the trauma. The DSM-IV diagnosis of ASD requires that the victim report at least three of the following five symptoms labeled as indicators of dissociation: numbing, reduced awareness of surroundings, derealization, depersonalization, and dissociative amnesia. These requirements are based on some evidence found in previous studies that dissociative symptoms at the time of (or shortly after) the traumatic event predict the subsequent development of chronic PTSD (Bremner et al., 1992; Marmar, Weiss, Shchlenger, & Fairbank, 1994; Koopman, Classen, & Spiegel, 1994). Thus, the fundamental differences between PTSD and ASD involve the time elapsed since the trauma and the relative emphasis on dissociative symptoms in the ASD diagnosis.

Several longitudinal investigations of motor vehicle accident (MVA) survivors have documented the predictive utility of ASD in identifying those individuals who are likely to exhibit more enduring or persistent pathology. Harvey and Bryant (1998a) evaluated MVA survivors within 1 month of their accident for the presence of ASD, and then reevaluated this sample 6 months later for PTSD. At follow-up, 78% of those who met diagnostic criteria for ASD within 1 month of their accident met diagnostic

criteria for PTSD 6 months later. These researchers noted that 60% of victims who met all but the dissociative criteria for ASD also met diagnostic criteria for PTSD at 6 months, suggesting that the ASD emphasis on dissociative symptoms may result in significantly distressed survivors being overlooked by clinicians. These findings were replicated at a 2-year follow-up evaluation (Harvey & Bryant, 1999a). The strong relationship between ASD and the subsequent development of chronic PTSD has also been observed among MVA victims suffering mild traumatic brain injuries (Bryant & Harvey, 1998; Harvey & Bryant, 2000) as well as among sexual and physical assault victims (Brewin, Andrews, Rose, & Kirk, 1999). Brewin et al. (1999) noted that the most accurate and efficient prediction of PTSD in their sample of crime victims was afforded by a cutoff of three or more symptoms of reexperiencing or hyperarousal after trauma. Their findings also suggest that dissociative symptoms, while predictive of PTSD, fail to provide incremental validity beyond the core PTSD symptoms.

Bryant and Harvey (1997) assert that there is little empirical justification for the requirement of three dissociative symptoms to occur for the ASD diagnosis to be given. Although early studies documented significant associations between peritraumatic dissociation and PTSD, much of this research was retrospective in nature. Evidence that recall of acute stress symptoms is influenced by current mood indicates that symptom status at the time of evaluation could have influenced reports of prior dissociative symptoms (Harvey & Bryant, 2001). Accordingly, Bryant and Harvey advocate for consistency between ASD and PTSD diagnostic criteria because of the many individuals that fail to meet diagnostic criteria for ASD but ultimately meet criteria for PTSD despite the fact that their symptoms remain unchanged. In addition, Marshall, Spitzer, and Liebowitz (1999) note that there are numerous pretrauma and peritrauma vulnerability factors that predict dissociation, ASD, and subsequent PTSD equally well. Cardiovascular reactivity, prior history of Axis I disorder, prior history of Axis II disorder, depressive symptomatology, use of avoidance coping strategies, trait neuroticism, and history of prior traumatization have all been found to be significant predictors of subsequent ASD or PTSD diagnoses (Barton, Blanchard, & Hickling, 1996; Bryant, Harvey, Guthrie, & Moulds, 2000; Harvey & Bryant, 1998b; Harvey & Bryant, 1999b; McFarlane, 1988). Accordingly, Marshall and colleagues assert that it makes little sense to elevate one class of vulnerability factors (i.e., dissociative symptoms) above all others to the status of core diagnostic criteria. Allowing a PTSD diagnosis anytime after trauma when criteria are met would be the most parsimonious solution. They note that there are numerous bona fide medical conditions and mental disorders that resolve spontaneously over time. Accordingly, a "waiting period" of 30 days is inconsistent with general nosological principles. Despite the controversy over the ASD diagnosis, the evidence suggests that indexing specific reactions several weeks after a trauma can be helpful in identifying those who are most at risk of developing PTSD.

Social Support

An individual's recovery from trauma is facilitated by the availability of positive social supports and the inclination to use them to share the account of the trauma (Forbes & Roger, 1999; Foy, Sipprelle, Rueger, & Carroll, 1984; Harvey, Orbuch, Chwalisz, & Garwood, 1991; Keane, Scott, Chavoya, Lamparski, & Fairbank, 1985; King, King, Fairbank, Keane, & Adams, 1998; Martin, Rosen, Durand, Knudson, & Stretch, 2000; Pennebaker & O'Heeron, 1984). To date, early interventions have not sufficiently taken into account the social factors in the recovery environment that promote or hinder recovery from trauma. In order to be maximally effective, early interventions for trauma may need to evaluate systematically the breadth and depth of social supports in the recovery environment and the victim's learning history of using social supports under stressful circumstances. Further, early intervention may need to assist the individual with anticipating problems in using their support system. This may be particularly important in light of the fact that the psychological aftermath of trauma may significantly disrupt a person's capacity to use others to cope with and manage posttraumatic symptoms and daily demands (e.g., Riggs, Byrne, Weathers, & Litz, 1998; Solomon, Mikulincer, & Avitzur, 1988). In addition, preexisting conflict in significant relationships could negatively impact recovery, particularly in those who are motivated to use others to cope with the aftermath of severe stress (Major, Zubek, Cooper, & Cozzarelli, 1997). In order to regain a sense of equilibrium and coherence, some victims may need a period of respite from posttrauma demands, and they may initially need to be allowed to avoid discussing their trauma (Charlton & Thompson, 1996; Tarrier, Pil-

grim, & Sommerfield, 1999). Conflict in significant relationships may make it difficult for those individuals who need a period of disengagement to achieve this state without exacerbating relationship difficulties.

Hyperarousal

High degrees of psychophysiological arousal in the acute aftermath of trauma are known to be associated with increased risk for chronic PTSD (Yehuda, McFarlane, & Shalev, 1998). A series of studies by Shalev and colleagues examined cardiac activity prospectively in individuals exposed to PTE (Shalev, Freedman, Peri, Brandes, & Sahar, 1997). For example, Shalev et al. (1998) found that in a mixed group of trauma survivors evaluated in the emergency room, those individuals who had severe symptoms of PTSD one week after the event had higher initial mean heart-rates (measured in the emergency room) than those who did not develop PTSD. In addition, Shalev and colleagues found that PTSD prevalence rates 4 months later were best predicted by heart rate in the emergency room, after controlling for age, gender, trauma history, and immediate psychological response to the event. This finding has been replicated by Bryant et al. (2000).

A number of risk mechanisms have been proposed to account for hyperarousal's affect on risk for PTSD. Increased cardiac output in the immediate aftermath of exposure to trauma (e.g., when assessed in emergency rooms) is likely to be part of the unconditioned response to the trauma, the intensity of which varies across individuals (e.g., Orr, Meyerhoff, Edwards, & Pitman, 1998). Generally, arousal symptoms negatively impact individuals' attempts to return to daily routines and affects rest and sleep capacity, which further exacerbates levels of stress and arousal. In addition, basal increases in cardiac activity can be caused by poor coping with daily stress and anticipatory anxiety (e.g., McFall, Murburg, Ko, & Veith, 1990; Orr et al., 1998; Prins, Kaloupek, & Keane, 1995). This suggests that early interventions for trauma should target hyperarousal by training survivors in methods of anxiety and stress management. Although speculative, it is plausible that systematic reductions in hyperarousal in the days and weeks after a trauma could accomplish a number of habilitative goals: (a) effective arousal management can engender a sense of control over emotional experience at a time when there may be considerable affective lability, (b) learning adaptive means to manage arousal serves to reduce the risk for maladaptive behaviors used to cope with negative affect (e.g., substance use), (c) daily relaxation exercises promote self-care, which may restore a sense of safety and comfort often compromised by trauma, and (d) reduced arousal in the aftermath of exposure to trauma would serve to limit generalization of conditioning and higher order conditioning, which in theory would minimize chronic conditioned emotional reactivity and lessen motivation for avoidance behavior.

Posttraumatic Resources

A variety of personal and environmental factors create risk for enduring posttraumatic difficulties. Hobfoll, Dunahoo, and Monnier (1995) contend that trauma necessarily involves a loss of resources and that loss can occur on multiple ecological levels such as family, organization, and community. The Conservation of Resources (COR) theory is based on the premise that people strive to obtain and protect resources (Hobfoll, 1989). These resources can include material goods, life conditions (e.g., marriage or occupation), or personal resources (e.g., self-esteem or perceptions of competency). According to COR theory, stress ensues when there is a threatened or actual loss of resources. Traumatic events result in inordinate stress because the losses incurred are most closely related to one's survival, and the losses tend to be numerous and profound. In the case of natural disasters, for instance, victims often lose their homes, money, and social network. Hobfoll, Dunahoo, and Monnier (1995) assert that early posttraumatic interventions employed by psychologists have not been especially helpful because they attend exclusively to psychological variables to the exclusion of other domains of resource loss. Trauma survivors may not be in a position to benefit from traditional psychological interventions that target anxiety and affective symptoms, when they have legitimate concerns about physical well-being, safety, shelter, or significant financial problems. Accordingly, resolution of these issues may be a necessary precondition to an individual's capacity to benefit from early interventions addressing psychological variables following trauma.

Given the potentially deleterious impact of trauma across multiple domains of functioning, what do victims need in the immediate aftermath of trauma? Resnick, Acierno, Holmes, Dammeyer, and Kilpatrick (2000) recommend that safety planning and emergency stabilization should precede any efforts to address psychological or emotional sequelae. In particular, crime victims may need contact information for shelters, emergency housing, rape crisis services, as well as services to address pressing medi-

cal and legal issues. The presence of suicidal and homicidal ideation and significant substance abuse should be routinely assessed following traumatic exposure, as the risk for each of these increases significantly after a trauma, complicating the course of ASD/PTSD treatment (Resnick et al., 2000). The recommendations are in accord with Hobfoll et al.'s (1995) call for psychologists to attend to victims' resource losses in multiple domains.

DEBRIEFING

The provision of PD originated in the military. In World War I and World War II, commanders debriefed soldiers immediately after a significant battle. The expectation was that sharing personal stories about combat would improve morale and better prepare soldiers for future combat. Parallel to this, battlefield psychiatrists developed strategies to address the needs of soldiers who were incapacitated by acute combat stress, a condition labeled battle fatigue or combat stress reaction (see Solomon & Benbenishty, 1986). Frontline treatment in the war zone was provided using a framework of proximity, immediacy, and expectancy. That is, soldiers were treated near the battlefield, shortly after their problems were identified, and with the expectation that they would return to duty. In theory, providing treatment close to a soldier's unit was seen as particularly important because it helped to maintain group support and cohesion, as well as reduce stigma (see Jones & Hales, 1987). Interventions applied on the frontline have varied over time, but there is considerable uniformity in the modern military (Hall, Cipriano, & Bicknell, 1997). Typically, clinicians promote rest, consider pharmacological treatment to manage hyperarousal, and provide psycho-education about the effects of trauma. In addition, group discussion is provided, designed to facilitate soldiers' sharing of horrific encounters in the war-zone and to process their emotional experience with others similarly afflicted (Shalev, 1994, 2000). In the United States military, soldiers exposed to PTE are routinely provided front-line psychological "first-aid" in the form of informal event-processing interventions, pastoral counseling, and, if need be, triage to stepped-up care (McDuff & Johnson, 1992).

Critical Incident Stress Debriefing

Although the content, process, and goals of PD vary considerably, there are many commonalities and the CISD approach is the most recognized and used method (Mitchell & Everly, 1996). The CISD approach stems from the crisis intervention tradition. It is typically applied to emergency services personnel, individuals whose work entails risk for exposure to trauma (e.g., law enforcement personnel, emergency medical technicians, fire fighters, military personnel, and disaster workers such as The Red Cross). CISD may be attractive to workers in these occupations because of its emphasis on the PD not being psychotherapy. That is, CISD is presented not as a clinical intervention, but rather an opportunity for individuals to share their common normal response to extreme circumstances with CISD team members, at least one of whom is highly familiar with the culture of the work system. These factors have facilitated the pervasive and routine application of CISD in risky occupations such as the military, even in the face of insufficient evidence for its efficacy (see Deahl et al., 2000).

The CISD framework has been revised recently so that it is now considered part of a more comprehensive Critical Incident Stress Management (CISM) program (Everly & Mitchell, 2000). The CISM program is a series of interventions with high face validity designed to comprehensively address the needs of emergency service organizations and personnel. The CISM interventions are designed to psychologically prepare or prebrief individuals prior to dangerous work, meet the support needs of individuals during critical incidents (e.g., while Red Cross personnel are working with families who lost loved ones in a disaster), provide CISD as well as delayed interventions, consult with organizations and leaders, work with the families of those directly affected by trauma, and to facilitate referrals and follow-up interventions to address lingering stress disorders. However, there has been no controlled empirical study of the various components of CISM to date.

The cornerstone of CISM is CISD, which is a semi-structured group intervention with didactic and experiential components. The goals of CISD are: (a) to educate individuals about stress reactions and ways of coping adaptively with them, (b) to instill messages about the normality of reactions to PTE, (c) to promote emotional processing and sharing of the event, and (d) to provide information about, and opportunity for, further trauma-related intervention if it is requested by the participant. Individuals exposed to a PTE are invited, within days, to participate in a 3- to 4-hour session in which the incident is reviewed. Personnel are invited to attend a CISD regardless of the degree of their acute symptoms or functional impairment (e.g., Hokanson & Wirth, 2000). The

assumption of the CISD approach is that everyone exposed to a PTE is at risk for a stress reaction or PTSD and that everyone could benefit from an opportunity to share their experience and learn about trauma and adaptive coping. The model fails to incorporate epidemiological research that has shown that not everyone is equally at risk for PTSD after exposure to PTE. In addition, the CISD framework eschews formal assessment of symptoms and outcomes in order to emphasize the nonclinical nature of the intervention and to create confidence in the confidential nature of the group. Thus, participants in a CISD could be free from acute symptoms and have very little risk for chronic PTSD, or individuals could be experiencing severe ASD.

According to Mitchell and Everly (1996), successful PD is accomplished through a series of seven phases or stages. In terms of content, many of the stages share some of the same features as the stress management aspects of standard cognitive-behavioral treatment packages for PTSD as well—in broad terms, exposure therapy (e.g., Flack, Litz, & Keane, 1998).

A debriefing begins with an *introduction stage.* At this time, the facilitator's job is to explain what is going to happen during the debriefing and clarify any questions participants might have. Special emphasis is placed on confidentiality, which may be particularly important for individuals in a common work system who are concerned about that shared information will affect their advancement in the organization. The next stage is called the *fact phase.* During this time, participants are asked to describe the stressor and what happened during the event. Next, in the *thought phase,* the primary facilitator asks participants to describe their thoughts during the incident. This phase is intended to be a vehicle to the next phase, in which emotional reactions are shared. Focusing initially on thoughts rather than feelings allows participants to begin to talk about the events with some degree of distance and reduce defensive coping reactions. The following stage is the *reaction phase.* For the reaction phase, the focus shifts to participants' emotional responses during the event as well as what they are currently experiencing and the meaning they assign to these experiences. The facilitator attempts to normalize the experience as much as possible and assist individuals in reframing and integrating the experience into their view of themselves and the world. During the *symptoms phase,* the facilitator discusses typical stress reactions and answers questions concerning personal responses to the event. In the *teaching phase,* the debriefing team members attempt to find out what the participants know about stress reactions and stress management strategies and to clarify any points of misunderstanding. Finally, in the *re-entry phase,* the team sums up the debriefing and the referral process.

As can be seen in the previous description, a great deal needs to be covered in one meeting. Psychological debriefing is apparently designed to facilitate support-seeking and to prepare individuals for the challenges of recovering over time. In the published CISD manuals, there are explicit messages about PD being a necessary, but by no means sufficient, intervention for severely traumatized individuals who have lingering disturbing symptoms and problems after a trauma (these individuals are said to require individual follow-up treatment). Yet, the CISD literature also suggests that PD alone is a secondary prevention intervention (e.g., Mitchell & Everly, 1996). That is, attending a PD is enough to prevent the formation of PTSD and other trauma-linked disorders. In this context, the necessary and sufficient conditions for effective early intervention are unclear. Perhaps attendance at a CISD functions as a screening for participants who suffer severe symptoms (e.g., acute stress disorder) or who have poor coping resources (e.g., they are isolated), conditions that trigger referral for sustained intervention. If this is the case, it raises the possibility that some individuals are unduly taxed by a CISD and the need to screen individuals earlier in the process.

Other concerns about CISD center on how the intervention may exacerbate distress. When CISD is provided in a group format, attendees have varying degrees of familiarity with each other and the group is led by a team trained in CISD. The team includes formally trained mental health professionals as well as, in most cases, a lay person who works in the same field or someone familiar with individuals affected by the PTE. Although the idea of including peer support personnel seems sensible, this feature has been criticized strongly because it can, in theory, create dual-relationships and may make some attendees feel unsafe, which may be counter-therapeutic and possibly unethical (e.g., Gist & Woodall, 2000). Formally, the goal of including peer support personnel in a CISD team is to enhance the team's credibility and legitimacy in terms of particular work cultures. It is quite possible that this feature is very important in many work contexts, although it also seems likely that it constrains the extent to

which emotionally salient or inadvertently incriminating experiences are shared for some.

Another concern about how CISD is implemented is that if individuals are mandated or subtly coerced by their employers to attend a debriefing session, it raises the possibility that choice and control are wrested from some traumatized people, which is likely to create frustration, anger, and resentment, as well intensify the experience of victimization. It should be noted that the formal CISD literature emphasizes that debriefing attendance is voluntary. However, volunteer status may be affected by work cultures unbeknownst to CISD personnel. For example, overt and strong support from supervisors and administrators may impact decisions about participation (e.g., Gist & Woodall, 2000). A related criticism of CISD is that an individual who is reluctant to disclose personal information may feel stigmatized and pressured by the group's expectations. In this context, sharing of personal experiences may have harmful, rather than helpful, consequences (Young & Gerrity, 1994).

One of the confusing issues in the execution of CISD is the process whereby an individual (or group of individuals) is found to be appropriate for CISD. Again, formally, CISD is designed only for use with emergency service workers (fire fighters, rescue personnel, emergency room personnel, police officers, etc.), although the CISD training also describes CISD as appropriate for witnesses to critical events and bystanders who suddenly become helpers by virtue of their being in a particular place in a particular time. The literature emphasizes that direct victims of critical incidents, family members of those seriously injured or killed, and those seriously injured in trying to respond to an incident require more extensive treatment and should not attend a CISD. These so-called direct victims are handled in unspecified ways within the broader treatment framework of CISM. However, it is unclear whether those who practice CISD apply the intervention only to individuals secondarily exposed to trauma (Dyregrov, 1999). For example, following the terrorist attacks on the World Trade Center, thousands of office workers and other people directly involved in the incident were apparently provided with variants of CISD.

One of the particularly attractive features of the CISD framework is the special attention paid to the unique needs of workers at risk for exposure to others' direct trauma and suffering, targeting the intense strain and stress of emergency and disaster relief activity. It also responds to the need for organizations to address the needs of their workers and to maintain cohesion and morale. A cogent example would be the Red Cross workers responding to grief-stricken and horrified family members of victims of the terrorist attacks in New York City and at the Pentagon on September 11, 2001. The psychological burden of such work is considerable and the CISD framework has provided a systematic structure to address the emotional needs of helpers in organizations such as the Red Cross. However, some have argued that proponents of debriefing fail to recognize sufficiently the natural resiliency of emergency care workers and their capacity to find adaptive individualized and personal ways of managing their reactions to the stressful demands of their duties (e.g., Gist & Woodall, 2000).

In the CISD framework, the types of events that constitute critical incidents warranting CISD is unclear, and it is uncertain how, within a given occupation or work system, direct victims of trauma are actually screened. The manner in which the formal distinction between primary, or direct, and indirect exposure also remains uncertain. The use of an individual's role in the traumatic context as the sole inclusionary criterion for CISD may constitute an arbitrary distinction. For instance, emergency workers may be exposed to severe PTE directly and secondarily by virtue of observing others suffer greatly. Whether such individuals would be considered inappropriate candidates for CISD remains unclear.

The CISD model assumes that direct or primary victims are inappropriate for CISD because some measurable physical, cognitive, or emotional quality of the "victim" experience makes the CISD process insufficient or inappropriate. If that argument is to be accepted, then operationally defining what constitutes direct exposure becomes critical. It appears that the distinction between a primary and a secondary victim within the CISD framework hinges superficially on whether there is physical injury. This is inappropriate, given the vast literature about the long-term consequences of psychological trauma. We argue that attempts to categorically distinguish direct (primary) and indirect (secondary) victims will be difficult if the intervention is intended to address psychopathological responses. If early intervention is to afford individuals who do emotionally challenging emergency work an opportunity to maintain group cohesion, as well as share and receive information about adaptive coping, then focusing on emergency workers seems an appropriate

goal. On the other hand, if the intervention is to target pathological responses to trauma, then it does not appear justified to determine eligibility for early intervention in terms of one's type of involvement in the trauma. In the recent terrorist attack on the World Trade Centers, survivors who fled the building and the emergency workers who assisted the evacuation had much in common in terms of exposure to life-threat, although their roles, training, and mental preparation were different. In any case, the appropriate type of early intervention for specific posttrauma problems, the type of individual or group who can benefit from these interventions, and the relevance of one's role in a trauma are empirical issues that have yet to be resolved.

We suggest that it is more appropriate and defensible to evaluate (when feasible logistically) anyone exposed to PTE, regardless of work role or context, for the severity or magnitude of their exposure and their peritraumatic subjective emotional experience. There are a number of good screening measures that could assist in this effort (Litz, Miller, Ruef, & McTeague, 2002). If an assessment (when feasible) indicates that individuals require intensive intervention, those individuals should be provided with multisession interventions that have empirical support. We recognize that assessment and intervention with emergency workers requires special attention to the cultural and organizational features of those groups. This recognition should not be confused, however, with assumptions that psychopathological responses are qualitatively different in these individuals.

Research on Debriefing Effectiveness

Anecdotal accounts, unpublished studies, and a few uncontrolled peer-reviewed studies of PD suggest that it is an effective intervention (see Everly, Flannery, & Mitchell, 2000, for a review). However, until recently there was a dearth of randomized controlled trials (Rose et al., 2001). It is important to note that debriefing research is challenging for several reasons. It is impossible to predict the occurrence of PTE that require debriefing and thus extremely difficult to assess individuals prior to exposure. In addition, it is difficult to conduct randomized controlled trials; randomization has historically been considered unethical because it would mean withholding a potentially useful treatment from acutely distressed individuals. The concern about withholding a useful early intervention is changing in this research domain given recent findings of equivocal or negative results. However, the organizational and societal chaos that follows a major disaster, as seen in the aftermath of the September 11, 2001, calamity in the United States, hinders desirable experimental control over outcome evaluation.

Our intention in this section is to critically appraise peer-reviewed research that, at a minimum, randomly allocated participants to an active single-session PD or a no-intervention control group, a criterion also used by the latest Cochrane review of PD (Rose et al., 2001). Everly et al. (2000) recently reviewed a number of uncontrolled studies (and in some cases non-peer reviewed studies), which led them to conclude that there was empirical support for the efficacy of PD. In our opinion, none of the studies reviewed by Everly et al. (2000) are sufficiently internally valid to warrant this conclusion. By virtue of the fundamental problem of a lack of random assignment, there is no sufficiently valid evidence from uncontrolled or quasi-experimental studies of early intervention to suggest that the intervention promoted recovery to a greater degree than would have occurred with the passage of time. In addition, when self-selection determines participation, there is a possibility that individual differences (e.g., greater distress, higher motivation) may explain inclusion in PD. This limitation is compounded by the fact that the majority of studies reviewed by Everly et al. (2000) failed to assess individuals prior to the intervention; post-PD symptom ratings could reflect enduring preexisting levels of distress. Finally, no study reviewed by Everly et al. (2000) employed independent assessment of outcome.

We critically review six peer-reviewed randomized controlled trials, all of which were included in Rose et al.'s (2001) Cochrane review of PD. In their review, Rose et al. (2001) included two studies that pre-date the advent of formalized approaches such as CISD and the formal diagnosis of PTSD, which we exclude because it is not clear what the interventions entailed, and their applicability as a test of PD is uncertain. In addition, unlike Rose et al. (2000), we elected to exclude one study that appeared not to entail putative exposure to PTE (i.e., miscarriage).

Most of the RCT have noteworthy positive features (see Table 1). All studies used standard, well-accepted, self-report outcome measures and several studies used state of the art structured clinical interviews to evaluate PTSD, which allowed for independent blind assessment of outcome (Bisson et al., 1997; Rose, Brewin, An-

Table 1. Randomized Controlled Trials of Psychological Debriefing

Study	Study Group	Conditions/*n*	Results	Limitations
Bisson, Jenkins, Alexander, & Bannister, 1997	Hospitalized burn victims	1. Individual or couples CISD (n = 57) 2. Assessment only control (n = 46)	Greater PTSD (IES and CAPS), anxiety (HADS), and depression (HADS) in CISD group at 13 months.	Limited information about intervention; CISD group reported higher initial symptoms, more severe burns, and greater PTE exposure despite random assignment.
Conlon, Fahy, & Conroy, 1999	Motor vehicle accident survivors	1. Psychological Debriefing (n = 18) 2. Assessment only control (n =22)	PTSD symptoms (IES and CAPS) decreased sharply for both groups, but there were no significant differences between groups at the 3-month follow-up assessment point.	Limited information about the nature of the debriefing; low power.
Deahl, Srinivasan, Jones, Thomas, Neblett, & Jolly, 2000	Peacekeepers serving in Bosnia	1. Debriefing (n = 54) 2. Assessment only control (n = 52)	Debriefed group had lower depression and anxiety scores (HADS), but nondebriefed had greater reductions in PTSD (IES) symptoms at 6-month follow-up. Greater alcohol problems in nondebriefed group.	Groups had very low baseline symptoms; likely floor effect.
Hobbs, Mayou, Harrison, & Warlock, 1996	Motor vehicle accident survivors	1. Psychological debriefing (n = 54) 2. Assessment only control (n = 52)	PD condition had worse outcomes on two BSI scales. No group differences on IES.	Differential attrition in groups; self-report only.
Mayou, Ehlers, & Hobbs, 2000	Motor vehicle accident survivors	3-year follow-up of the previous study	PD group had significantly worse outcomes (BSI symptoms, travel anxiety, overall functioning). No differences between groups on IES.	Significant attrition; initial differences between groups have influenced 3-year outcomes.
Rose, Brewin, Andrews, & Kirk, 1999	Physical and sexual assault victims	1. CISD (n = 54) 2. Psychoeducation only (n = 52) 3. Assessment only control (n = 51)	All groups improved, but no differences among groups on measures of PTSD (PSS and IES) or depression (BDI) at 6 or 11 months.	Very low response rate (157 out of 2,161).

Note: IES, Impact of Event Scale; CAPS, Clinician Administered PTSD Scale; PSS, Posttraumatic Stress Disorder Symptom Scale; HADS, Hospital Anxiety and Depression Scale; BSI, Brief Symptom Inventory.

drews, & Kirk, 1999). All studies had adequate follow-up evaluation of participants and one study reported results three years post-intervention (Mayou, Ehlers, & Hobbs, 2000). Finally, and most importantly, random allocation of participants allowed for a determination of whether participants who received PD improved beyond how they would have adapted on their own with the passage of time. In all instances the PD failed to promote change to a greater degree relative to no intervention.

We calculated an estimate of the direction and the magnitude of change in the severity of PTSD symptoms in five of the six studies reviewed in Table 1 (Deahl et al., 2000, failed to provide sufficient descriptive data to conduct this analysis). Change scores were expressed as mean changes in standard deviation units (*SDU*) from baseline to the last follow-up interval reported. Although the group receiving PD reported less severe symptoms at follow-up ($SDU = .45$), this was, on average, not different from any of the control groups ($SDU = .42$). Of course, these averages obscure individual trajectories of change, but these data are not surprising given the normative course of adaptation to trauma, and they underscore the need to pre-screen individuals at risk for having difficulty adapting on their own over time. We also calculated an average effect size estimate by weighting the effect sizes of the five individual studies by the sample sizes of that particular study. The mean effect size for PTSD measures was −.11 (Cohen's d). This indicates that participants receiving PD had slightly worse PTSD scores at follow-up (one-tenth a standard deviation) than those not receiv-

ing PD (90% confidence interval ranges from −.32 to +.10). Because the confidence interval includes zero, and because the effect size estimate is very small, it is premature to conclude that PD is detrimental or helpful in terms of secondary prevention of PTSD.

Taken as a whole, the set of studies revealed similar changes in PTSD symptoms at follow-up between the PD and control groups. Nevertheless, two of the more methodologically rigorous studies found that PD created a degree of PTSD symptom exacerbation over time. Bisson et al. (1997) found that 26% of the burn victims who were provided PD had PTSD at the 13-month follow-up interval according to the Clinician Administered PTSD Scale (CAPS; Blake et al., 1990), whereas only 9% of the control group endorsed sufficient symptoms to meet the diagnostic criteria for PTSD at follow-up. Also, the PD group reported significantly higher anxiety and depression symptoms on subscales of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983) and Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979) at the 13-month follow-up (3-month data were not reported). However, despite random assignment, participation in the intervention group was confounded with several risk factors. Intervention group participants had higher initial symptoms, more severe burn trauma, and were more likely to report pre-burn histories of exposure to PTE. Bisson et al. (1997) controlled for initial symptom levels in their analysis in an attempt to take into account these confounds and the results were unchanged. However, initial symptom level is not necessarily a good proxy for all three of the confounding factors or their interactions. It would have been revealing if the authors had conducted a post-hoc multivariate analysis of the predictors of change in symptom severity in order to examine the characteristics of the person (including the three potentially confounding factors), their experience of the stressor, or their experience of the intervention that might be associated with outcome.

Hobbs, Mayou, Harrison, and Warlock (1996) found that MVA victims administered PD within 2 days after their accident were no different at a 4-month follow-up interval from individuals given no intervention with respect to number of PTSD cases, PTSD symptom severity, and interview ratings of intrusive thoughts or travel anxiety. A threat to internal validity in this study was that 22% percent of the PD group could not be followed-up, in contrast to 6% of the no-treatment controls. The follow-up group may have been over-represented by those who fared worse from the PD. In their 3-year follow-up examination of the participants from Hobbs et al. (1996), Mayou, Ehlers, and Hobbs (2000) found that the group that received PD had significantly worse outcome 3 years later. Their BSI symptoms were worse, travel anxiety was worse, as were overall levels of functioning, and financial problems. Those MVA survivors with initially high intrusion and avoidance symptoms recovered without PD intervention, but those who received the intervention remained symptomatic. Unfortunately, only a little over half of the participants in the first study were assessed a second time, so it is unclear whether the follow-up sample was biased in some undetermined way. In addition, initial differences between the intervention and control groups prior to debriefing may have affected the 3-year outcome.

The Bisson et al. (1997) study is of note because it compared CISD to an information-only and no-intervention condition. This allowed for an examination of the differential impact of what could be considered the inactive, but perhaps sufficient, components of CISD (empathic contact with a professional, coupled with the provision of information about trauma and its impact, etc.). There were no differences between the three groups in rates of PTSD, severity of PTSD, or depression at follow-up, suggesting that providing PD to individuals exposed to PTE has no unique effect on outcome in victims of violent crime.

Few published studies have empirically examined the use of debriefing in the military, despite its frequent use in militaries across a diverse range of cultures (Adler & Bartone, 1999). Deahl et al. (2000) conducted the only RCT of soldiers provided PD in a group format, with mixed results. At the 6-month follow-up, Bosnia peacekeepers in the debriefed group had lower HADS scores than those in the nondebriefed group, but the nondebriefed soldiers reported a greater drop in IES scores from baseline. On the other hand, alcohol abuse problems were lessened over time in the debriefed group and not the control group. However, Deahl et al.'s (2000) findings are difficult to interpret because of a likely floor effect; at baseline, soldiers expressed very low symptoms. In addition, since commanding officers assigned soldiers to the study by virtue of availability, selection bias cannot be ruled out.

All studies employed CISD, or at least stated that they followed the basic tenets of CISD, with individuals (the

Bisson et al., 1997, study also used couples) who would be considered primary victims of trauma in the CISD scheme (e.g., burn victims, traffic accident survivors). However, no investigators explicated their rationale for intervening with individuals who would be excluded from CISD formally. It would have been preferable for investigators to contextualize their work in light of the recommendations of CISD, given that they are testing the efficacy of this specific approach. In our view, it is legitimate to evaluate whether CISD could be useful to individuals who experience severe trauma, especially given the popularity of CISD and its application to so-called primary victims. However, without sufficient background justification, these studies are at risk for being dismissed as inappropriate tests of the CISD model. Furthermore, proponents of CISD might argue that negative findings confirm the CISD principle that individual primary victims of trauma are inappropriate for PD (this is the main criticism of the Cochrane review). Clearly, controlled study of group-administered CISD to emergency services personnel exposed secondarily to trauma is needed to test the CISD model.

A number of studies suffered from participant selection that was likely biased in unspecified ways. For example, only 7% of the victims of violent crime contacted by Rose et al. (1997) consented to participate. The self-selected group of victims who agreed to participate may have been more willing to talk about their trauma and may have been less avoidant overall than the average victim. Thus, it remains an empirical question whether PD might be effective for reluctant and avoidant victims who may agree to participate in PD because organizations or hospitals recommend it as part of routine practice (Shalev, 1994). Theoretically, the PD process may facilitate change in these individuals because it reduces avoidance by suggesting experientially that approach behaviors (e.g., self-disclosing) can lead to favorable outcomes.

The timing of the interventions provided was also variable. For example, Rose et al. (1999), provided CISD, on average 21 days post-incident (range 9–31 days), which differs considerably from the standard practice of providing PD within days of a PTE (it also differs from the timing of PD in other RCT). However, it could be argued that it is more appropriate to delay PD in some contexts. For example, in the case of the Bisson et al. (1997) study where individuals were suffering from acute burn pain, it may have been more appropriate to delay the PD until acute pain is managed effectively. It is also unclear whether burn patients are appropriate for a single session of any early intervention, given the physiological and psychological burden of burns (Weinberg et al., 2000).

Although most of the participants who received PD reported that they experienced it as very helpful, perceived helpfulness was not associated with positive change in psychological status. Although this pattern could reflect the influence of demand characteristics, it is also possible that early professional contact may make people feel validated about their suffering and result in positive evaluations about PD. The nonspecific beneficial elements of respectful listening and validation may have a positive influence, but this has not been measured in studies of PD to date.

Several studies that revealed symptom exacerbation concluded that PD might be inappropriate because it involves emotional processing of a trauma prematurely and without sufficient time for follow-up therapeutic processing (e.g., Bisson et al., 1997). This conclusion appears premature, however, because there is a lack of information about the extent of negative affect produced by the PD and there is no treatment fidelity data to evaluate the specific content of PD interventions. Another flaw of these studies is their failure to index the extent to which participants perceive PD as an imposition, which could exacerbate distress. However, in one study, it was found that those who chose to receive a PD reported higher exposure to the stressor, more severe initial symptoms, and a greater willingness to talk about their experience than those who opted out of PD (Fullerton, Ursano, Vance, & Wang, 2000). Finally, some individuals may report more symptoms after PD because the experience enhances their awareness of internal experiences and symptoms, therefore sensitizing them to report more intense or frequent trauma-related symptoms, but perhaps not more functional impairment (Neria & Solomon, 1999; Rose et al., 2001). Future studies should evaluate areas of functional impairment, as well as symptomatology.

It is possible that a one-time PD is insufficient and individuals need more sustained intervention. However, the results of one recent study suggest that multiple debriefing sessions may not in fact be effective. Carlier, Voerman, and Gersons (2000) provided three debriefing sessions (at 24 hours, 1 month, and 3 months post-incident) to police officers in the Netherlands exposed to trauma and found that PD had no impact. These researchers also found that

1 week post-incident, debriefed subjects reported more PTSD symptoms than nondebriefed subjects, which is consistent with several studies (e.g., Bisson et al., 1997). Even if PD is applied over several occasions, it may fail to pay sufficient attention to assisting group members in preparing for the challenges they face in the coming weeks and months. Nevertheless, determining the optimal number of sessions and the necessity for follow-up, in order to enhance maintenance, are empirical questions for future research.

The timing of providing PD has not been systematically studied. While Mitchell and Everly (1996) argue that PD is most effective when conducted very soon after a critical incident, this empirical question has not been explicitly tested. Several authors have suggested that CISD may exacerbate symptoms because the trauma is confronted too early, which is disruptive rather than healing (Gist & Woodall, 2000; Shalev, 2000). It may be that for some people exposed to some types of traumas, a period of rest and relative withdrawal is what is needed. In this context, PD may be experienced as an imposition and may be overwhelming for some if it is provided too early.

Conclusions

Single-session PD, when applied to individuals with moderate to severe exposure to PTE who are not prescreened for risk factors or suitability for active intervention, is not useful in reducing PTSD symptoms to a greater extent than would occur with the passage of time. Although it is premature to conclude unequivocally that PD hinders recovery from trauma (and researchers have yet to explicate the cause(s) of symptom exacerbation), there is sufficient evidence that the indiscriminant use of single-session PD with individuals is inappropriate. However, much more research is needed to examine: (a) the optimal time-frame to provide early intervention, (b) the process of change, (c) the specific change agents, (d) the type of post-intervention behaviors that promote recovery and maintenance of change, and (e) the optimal mode and method of screening for various types of PTE (e.g., mass disaster, victims of violence presenting at emergency rooms). Although we recommend that interventions be devised to treat only those individuals who are not likely to recover over time on their own, more research is needed to determine which risk indicators and risk mechanisms are optimal. In addition, researchers and clinicians should be vigilant about the possibility that early identification of individuals could inadvertently produce negative iatrogenic effects (e.g., stigmatization, self-fulfilling prophecy[1]).

The application of PD to groups of emergency services personnel has yet to be examined with a RCT. However, the roles of the peacekeepers who were provided group PD in the Deahl et al. (2000) study are similar to those of emergency services personnel; peacekeepers are typically well-trained and chiefly exposed to others' suffering and the aftermath of violence (Litz, 1996). There is initial evidence that PD provided for groups of individuals with a shared background and experience and low to moderate stressor exposure does not serve to reduce stress symptoms. On the other hand, group PD appears to facilitate more adaptive coping (e.g., less use of alcohol). More research is needed to examine the efficacy of group PD for other emergency care providers, especially in the context of exposure to severe PTE.

COGNITIVE-BEHAVIORAL THERAPY AS EARLY INTERVENTION

Recent investigations of cognitive-behavioral therapy (CBT) for recently traumatized individuals have demonstrated promising results in preventing the development of chronic psychopathology following trauma. In this section, we describe in detail one pilot study and two RCTs of multisession secondary prevention of PTSD. Our intention is not only to critically evaluate the research methodology, but also to provide a detailed description of the assessment and intervention strategies employed and contrast them to the PD approach.

Foa, Hearst-Ikeda, and Perry (1995) compared the symptom course of ten female victims of rape or aggravated assault who received a four-session cognitive-behavioral intervention shortly after their assault with that of ten assessment-only control victims. All participants were matched on symptom severity, type and severity of assault, demographic characteristics, and time since the assault. This individually-administered intervention consisted of educating participants about common reactions to assault, relaxation training, imaginal and in vivo exposure, and cognitive restructuring. During the first session, victims were educated about common posttraumatic reactions and they were asked to list avoided activities and situations. The second session began by providing victims with a rationale for exposure therapy followed by relaxation training. The relaxation training was audiotaped and

victims were encouraged to use this tape to practice relaxation techniques at home. Next, imaginal exposure was conducted as victims were instructed to relive the assault by closing their eyes, vividly imagining the event and describing it aloud in present tense. This narrative was also audiotaped and victims were encouraged to use this tape to repeat imaginal exposure daily. During the narrative, the therapist attended to maladaptive beliefs that the victim mentioned regarding perceived incompetence and the dangerousness of the world. The remainder of the session was devoted to cognitive restructuring as maladaptive beliefs that emerged during the victim's trauma narrative were challenged. In addition to imaginal exposure homework, victims were encouraged to begin confronting some of their avoided situations and activities. The third session consisted of imaginal exposure and cognitive restructuring, and once again, victims were encouraged to repeat imaginal and in vivo exposure exercises daily on their own. Victims were also instructed to monitor negative thoughts, feelings and cognitive distortions using a daily diary. The fourth and final session again consisted of imaginal exposure to the assault followed by cognitive restructuring.

Two months after the assault, victims receiving CBT reported experiencing significantly fewer symptoms of PTSD than did assessment control participants. At a 5.5-month follow-up assessment, participants in the treatment condition reported significantly fewer symptoms of depression, although there were no differences between groups with respect to PTSD symptoms. Effect size analyses indicated that the difference in PTSD scores between the two groups at the 5.5-month follow-up was relatively large, but because of the small sample size, the lack of a statistically significant difference likely resulted from low statistical power. Moreover, the control group in this investigation experienced significant symptom remission that also may have contributed to the lack of a statistically significant difference in PTSD symptoms at the 5.5-month follow-up. Nevertheless, the large reductions in PTSD symptoms at post-treatment coupled with significantly reduced depressive symptomatology at the 5.5-month follow-up suggests that additional study of CBT in secondary prevention interventions for trauma is indicated.

Bryant, Harvey, Dang, Sackville, and Basten (1998) also report a successful CBT program for recently traumatized individuals. This intervention specifically targeted individuals with ASD, and accordingly their study provided a more direct test of the efficacy of brief CBT in preventing PTSD. Moreover, because control participants received supportive counseling, it was possible to evaluate the extent to which treatment promoted improvement above and beyond that resulting from nonspecific therapeutic factors. Participants were survivors of motor vehicle accidents or industrial accidents who were randomly assigned to either CBT or supportive counseling. Both interventions consisted of 5 1.5-hour weekly individual therapy sessions. Similar to the Foa et al. (1995) intervention, CBT included education about common posttraumatic reactions, relaxation training, imaginal exposure to the traumatic event, graded in vivo exposure, and cognitive restructuring. Each of the last 4 sessions included 40 minutes of imaginal exposure and participants were encouraged to engage in imaginal exposure daily between treatment sessions. By contrast, the supportive counseling condition included trauma education and more general problem-solving training in the context of an unconditionally supportive relationship.

At post-treatment, and at 6-month follow-up, significantly fewer participants in the cognitive-behavioral treatment group met diagnostic criteria for PTSD compared to supportive counseling control participants. Similarly, those in the cognitive-behavioral treatment group reported significantly fewer symptoms of PTSD at post-treatment and 6-month follow-up, and significantly fewer symptoms of depression at the 6-month follow-up than did participants in the supportive counseling condition.

In a subsequent study that dismantled the components of CBT, Bryant and colleagues randomly allocated 45 civilian trauma survivors with ASD to 5 sessions of (a) CBT (prolonged exposure, cognitive therapy, anxiety management), (b) prolonged exposure combined with cognitive therapy, or (c) supportive counseling (Bryant, Sackville, Dang, Moulds, & Guthrie, 1999). This study found that at a 6-month follow-up, PTSD was observed in approximately 20% of both active treatment groups, compared to 67% of those receiving supportive counseling.

The brief cognitive-behavioral interventions described by Foa et al. (1995) and Bryant et al. (1998) represent encouraging attempts to prevent the development of chronic posttraumatic pathology in recent trauma victims. These interventions share many features with psychological debriefing. For example, they both include an education component designed to inform trauma victims about

common posttraumatic reactions and sequelae, and both attempt to teach coping skills for managing symptoms of stress and anxiety.

Given the similarity between psychological debriefing and cognitive-behavioral interventions, what may account for the apparent differences in treatment efficacy? Perhaps the most prominent reason that CBT appears to be more efficacious is the greater emphasis on repeated imaginal reliving of the traumatic event and graded in vivo exposure of avoided trauma-reminiscent situations. In their review of the psychological debriefing literature, Bisson et al. (2000) suggest that one-session intense exposure to trauma memories that characterizes most debriefing approaches might be counter-therapeutic because it may heighten arousal and distress without allowing sufficient time for extinction or resolution of intensely negative posttraumatic affect. The results of the cognitive-behavioral interventions described previously would seem to refute the notion that early exposure per se is counter-therapeutic. Rather, the hasty and incomplete exposure to trauma memories that typifies traditional psychological debriefing approaches may be potentially harmful.

The CBT approaches of Foa et al. (1995) and Bryant et al. (1998) also included considerable attention to cognitive restructuring. There is considerable evidence that acute pathological trauma responses are characterized by catastrophic cognitive styles (Smith & Bryant, 2000; Warda & Bryant, 1998). There is increasing evidence from treatment studies of PTSD that cognitive restructuring is effective in reducing symptoms (Tarrier et al., 1999). The inclusion of cognitive restructuring over repeated sessions in the early provision of CBT is an important difference between current PD approaches and structured CBT.

Cognitive-behavioral interventions also differ from previous debriefing efforts with respect to timing and duration of the intervention. Specifically, it has generally been suggested that debriefing victims as soon as possible following the traumatic event will produce maximal benefit. Although this suggestion is intuitively appealing, we are unaware of any data supporting this possibility. It may be the case that victims are too distraught in the very early aftermath of a trauma to fully attend to or otherwise process potentially helpful interventions. Indeed, the interventions developed by Foa and colleagues (1995) and Bryant et al. (1998) were administered an average of ten or more days after the trauma occurred. Moreover, the interventions, though brief, consisted of four or five weekly sessions and both encouraged extensive daily homework as an integral feature of treatment. Given the profoundly deleterious effects that can ensue following trauma, it may be the case that single-session interventions are simply insufficient to adequately address such powerful experiences among individuals who experience chronic or severe posttraumatic pathology.

Considering the multiple differences (e.g., prolonged exposure, cognitive restructuring, delayed intervention, or multiple session treatment) between CBT and PD, it is not possible to specify which factors——alone or in combination—are responsible for CBT promoting better posttraumatic adjustment. Future research efforts should be designed to elucidate which specific components of CBT are the necessary and sufficient factors in achieving positive change following recent traumatic exposure. It will also be necessary to replicate the findings of Foa et al. (1995) and Bryant et al. (1998) with larger samples comprised of different types of trauma victims to evaluate the generality of these findings.

FUTURE RESEARCH

This review has highlighted that current research on early intervention for PTSD is flawed by a range of methodological limitations. Although a good deal of posttrauma research is complicated by factors that impede controlled experimental design, there is a need for research to adopt rigorous methodological principles in evaluating early intervention of any kind. Following recent trends in evaluating treatment outcomes in PTSD (Foa & Meadows, 1997), we suggest that the following principles should be adopted for early intervention research.

Randomized Allocation. Although random allocation to treatment groups is difficult following trauma, this is an essential step that future research must take if outcome studies are to lead to meaningful inferences.

Standardized Treatment. It is imperative that early interventions, including PD, be delivered in a standardized manner. It is important that treatment manuals be used to increase the standardization of interventions offered to all participants who are intended to receive specific interventions.

Treatment Integrity/Quality Checks. A major flaw of existing PD research is the lack of treatment fidelity checks. Inferences about existing research are difficult because there is ambiguity about the exact nature and quality of the interventions provided. Future early intervention research should record all sessions and have independent experts rate the integrity of the intervention to ensure that it is providing what it is intending to provide and the quality of the intervention provided.

Independent and Long-Term Assessments. All assessments must be conducted by qualified clinicians that are blind to the treatment condition of participants. Further, these assessments should be conducted prior to and following the intervention, as well as over a number of follow-up periods to index the long-term effects of early intervention.

Reliable Assessment Measures Across Varied Domains. It is critical that early intervention research employ standardized assessment tools that possess sound psychometric properties, are sensitive to change, and include clinician-administered interviews. Outcomes should be evaluated categorically (e.g., PTSD caseness) and continuously (e.g., PTSD severity). Although most people adapt to trauma on their own over time, it is an empirical question whether early interventions can assist people to improve more quickly than they would on their own. Consequently, interventions should also be geared toward assisting individuals in speeding the rate of recovery, as opposed to strictly leading to statistically significant reductions in the mean severity of PTSD symptoms over time and lower prevalence rates (e.g., Kenardy et al., 1996).

Future research should also employ process measures to index motivational, cognitive, affective, and coping factors that may mediate change as a result of early intervention. There is a need to index factors beyond psychopathology because it is possible that the benefits of early intervention approaches are in the domains of organizational morale and coping rather than psychological disorder.

Special attention should be paid to systematically evaluating areas of functional impairment (work, self-care, quality of life), which do not necessarily change in step with PTSD symptoms. Finally, it is important that early intervention studies evaluate systematically the outcomes that may be affected by exposure to PTE, even in the absence of significant PTSD symptomatology (e.g., marital satisfaction, alcohol use, depression, or anger problems).

Standard Timing. Considering the course of posttraumatic adaptation in the initial period after the event, early intervention research should ensure that all assessments and interventions are conducted at standardized times to ensure that comparable periods of time have elapsed since the traumatic event for all participants.

Although some have speculated that it is inappropriate and counter-therapeutic to intervene too early with trauma victims, this is an unaddressed empirical question. To address this issue, timing of interventions should be systematically manipulated in future research. For example, studies could randomly assign individuals to early (approximately 2–5 days posttrauma) and later (2–3 weeks posttrauma) groups.

Contextual Factors. It is important that future early intervention research standardizes the context across all participants in outcome studies. For example, it is important that organizational or cultural factors within the group that is being studied are carefully controlled in the design of the study. For example, in the military context, it is possible that leadership differences between military units, differences in attitudes to problem reporting or counseling, or variability in the amount of ongoing stressors that personnel will be exposed to may influence outcomes. These factors need to be identified and researchers need to take care that they do not confound inferences from outcome studies.

Evaluation of the Process of Change, Longitudinally. A focal criticism of PD is that it fosters too much emotional-processing of a trauma in a time-constrained and unsafe context. In theory, this would produce sensitization rather than extinction of conditioned negative affect and arousal, as well as prompt the survivor to conclude that avoidance may be a better option than sharing painful memories of the trauma, which would be particularly counter-therapeutic. No study to date, however, has evaluated negative affect and arousal before and after early intervention. It is also unknown whether some participants experience the treatment as an imposition, which could undermine control and exacerbate symptoms. For

example, the demand for sharing and disclosure could be more than anticipated or desired by participants. Future research studies should evaluate these important process and outcome variables over time (e.g., at least a year after the intervention).

Evaluating Individual Differences. Some trauma survivors may feel imposed upon by peers or significant others to share their trauma experiences, preferring to avoid emotional self-disclosure, not necessarily due to exposure to PTE, but as a result of predisposition or personality characteristics. In a group of individuals exposed to similar PTE, some will be so uncomfortable about self-disclosing and hearing others' experiences that they may be resentful of and inhibited by an early intervention, especially when it is held in groups. Other individuals may be so emotionally reactive to the process of sharing stories about the trauma that they feel overwhelmed, which can take up limited group resources or cause resentment. Some people may be predisposed to expect others to be a useful source of support and guidance under stressful conditions, while others may more likely prefer to work problems out on their own. These latter individuals are likely to feel imposed upon and irritated by an early intervention, particularly a group experience. Future research should measure these individual difference factors.

PRACTICE RECOMMENDATIONS

Based on the previous review of empirical research and the complex conceptual issues surrounding early intervention, the available evidence suggests the practice guidelines presented in this section. We emphasize that because there are problems in the extant research, and many unanswered empirical questions that require investigation, several of our recommendations are speculative and require empirical validation, most notably the recommendation about psychological first aid. Nevertheless, we thought it would be useful to offer a set of parsimonious clinical guidelines and heuristics, based on available evidence.

Psychological First Aid

At this point in time, there is no evidence that global intervention for all trauma survivors will serve a function in preventing subsequent psychopathology. There is consensus, however, that providing comfort, information, support, and meeting people's immediate practical and emotional needs play useful roles in one's immediate coping with a highly stressful event. Moreover, the evidence that debriefing may lead to less subsequent alcohol abuse (Deahl et al., 2000) suggests that coping styles may be enhanced by this early intervention. However, since there is no empirical support that debriefing prevents PTSD, and there is a possibility that it may increase symptoms over time for some individuals, the most appropriate early intervention should be termed psychological first aid. This intervention should be conceptualized as supportive and non-interventionist, but definitely not as a therapy or treatment. This position recognizes that most people do not suffer from PTSD in the immediate days after an event; rather the majority of people will have transient stress reactions that will remit with time. This approach has historical parallels with formal military debriefing (for a review, see Shalev, 2000). The content of this approach includes group support, the opportunity for people to discuss their experiences if they feel the need to, a review of events that transpired, and emphasis that all people involved were equal participants. Inherent in this early intervention is the mandate that advice, interpretation, or other directive interventions are not to be provided.

Handouts or flyers that describe trauma, what to expect, and where to get help, should also be made available routinely. Individuals should be given an array of intervention options, rather than the prescriptive approach often recommended by organizations (e.g., CISD only). Individuals who choose not to participate in groups should be given the opportunity to meet with individual therapists with trauma expertise and experience. Those survivors not interested in any formal intervention should be asked if they care to discuss their thoughts and feelings about the event and urged (if possible) to voice their ideas about the personal implications of the experience to significant others when they feel most comfortable doing so. The goal is not to maximize emotional-processing of horrific events, as in exposure therapy, but rather to respond to the acute need that arises in many to share their experience, while at the same time respecting those who do not wish to discuss what happened.

Initial Screening

The evidence that the minority of people who will have persistent posttraumatic difficulties are characterized by a range of vulnerability factors points to the utility of initially screening trauma survivors for the presence of these

risk factors. Very early in the aftermath of trauma (hours, days) a screen is not intended for diagnostic purposes but rather to flag those individuals who may require special attention because they are statistically more likely to develop problems as time progresses. If feasible, clinicians should inquire briefly and respectfully about prior trauma (e.g., "Has anything like this ever happened to you before?"), history of severe psychological problems, inadequate social supports and ongoing stressors, and exposure to particularly grotesque aspects of the event, including fatalities or salient harm. The approach we recommend stands in contrast to the "one-size-fits-all" nature of PD because it acknowledges there are individual differences in coping style, symptom severity, co-morbidity, past trauma, and additional life stress (see Raphael, Meldrum, & McFarlane, 1995).

However, even brief screening is sometimes difficult to conduct logistically in the immediate aftermath of trauma. In addition, some events are so enormous in their magnitude and impact that it is appropriate to infer that anyone present has sufficient exposure and initial symptoms requiring first aid and referral, if requested. In this context, formal screening would run the risk of being terribly out of place and intrusive. For example, it would be prudent to offer early intervention to anyone who was at "ground zero" at the World Trade Center on September 11, 2001, and witnessed the horrors of that day directly.

Initial Assessment

The evidence that only a minority of people will suffer long-term PTSD indicates that therapy attention should focus on those who will develop this condition and other posttraumatic psychiatric disorders. We suggest that identifying these people immediately after the traumatic event is premature because it is difficult at this point to disentangle those who have a transient stress reaction and those who will have persistent problems. The prevailing view is that identifying people through formal assessment prior to one or two weeks after the event is problematic because there seems to be much settling of stress reactions in that time. For example, research on civilians involved in the Gulf War indicates that many people who suffered immediate stress symptoms several days after the trauma, including dissociation and anxiety, displayed remission of these reactions in the subsequent weeks (Solomon, Laor, Weiler, & Muller, 1993). We suggest that identifying people at least one week after the event can be useful. It is wise to consider those survivors who display significant posttraumatic stress responses, with and without dissociation. Therefore, using the current ASD criteria is limiting because of its emphasis on dissociation. Similarly, at this stage, identifying those who are displaying signs of other anxiety problems, depression, substance abuse, and other conditions is indicated. A variety of psychometrically sound, brief self-report measures are available for these purposes (see Litz et al., 2002).

Provide Informed Consent

Individuals who conduct psychological debriefing, psychological first-aid, or more extensive multisession interventions, should obtain the informed consent of participants (Gist & Woodall, 2000). Individuals should be informed about the credentials of the therapists who provide early interventions, and the relationship between the intervention providers and employers should be clarified. Participation in early interventions should be voluntary. While we recognize that there are work systems and organizations whose culture makes mandatory participation in some form of early intervention acceptable (e.g., the military), and that this can improve morale and well-being in the work-place after exposure to trauma, it appears that the costs of mandatory attendance outweigh the benefits for the individual.

Early Intervention

It appears that there is sufficient empirical evidence to recommend that PD not be provided to individuals immediately after trauma. In our opinion, one-session one-on-one meetings between trauma survivors and professionals are appropriate if they: (a) are an occasion to assess the need for sustained treatment, (b) provide psychological first aid, and (c) provide education about trauma and information about treatment resources. At this point, there is sufficient evidence to suggest that one-session individual interventions should not be used for trauma-processing (e.g., exposure therapy). Since CISD is most often provided to groups of similarly exposed individuals in work systems and organizations, and there have been no well-controlled studies of CISD provided to groups, careful randomized controlled trials of CISD are needed in the group context before firm recommendations can be made.

Since PD is fully accepted as standard practice for emergency service personnel and well-received by group

members and organizations, it is hard to find fault in its application in a mass disaster such as the terrorist attacks on the Twin Towers in New York and the Pentagon in Washington on September 11, 2001. Formal debriefing may serve to maintain morale and cohesion in the face of devastation, rather than serve to prevent chronic PTSD, as professed in the formal literature. In general, it may be that PD provides an opportunity for individuals in a homogenous group to feel validated, empowered, and destigmatized by their organization and their peers, and that the group-based approach contributes to better functioning in the work environment after a high stress incident. It appears that the form and content of PD needs to be structured, however, in ways different from those prescribed by CISD.

In terms of secondary prevention of PTSD, based on successful treatment studies using CBT, we suggest that providing education, anxiety management, exposure, cognitive restructuring, and relapse prevention strategies appears to the most justified approach to adopt at this time. This intervention should be provided over successive weeks and should include considerable homework to ensure that anxiety management, exposure, and cognitive restructuring is practiced daily. In suggesting this approach, however, we caution against early provision of CBT as a panacea for all posttraumatic psychopathology. Bryant et al. (1999) reported that 20% of their participants dropped out of treatment, and these participants reported more severe posttraumatic stress initially. It is important to recognize that a proportion of acutely traumatized participants may not be suited for early exposure-based therapy. Bryant et al. (1999) suggest that it may not be wise to proceed with exposure for people with unresolved prior traumas, excessive anxiety, borderline or psychotic features, substance abuse, highly dissociative reactions, strong suicidal ideation, or demanding ongoing stressors. These people can be managed with other therapy techniques in the acute trauma phase and may be offered more directive therapy as time proceeds. It is important to recognize that many people prosper from receiving delayed treatment rather than early intervention.

Special Attention to Using Existing Social Supports

Early interventions for trauma should be designed to increase social support among trauma victims, as this has been found to reduce the likelihood of chronic posttraumatic psychopathology (Hobfoll et al., 1995). Given that avoidant coping strategies have been shown to be predictive of ASD and PTSD (e.g., Harvey & Bryant, 1998b; McFarlane, 1988), interventions designed to reduce victims' propensity to avoid trauma-relevant thoughts and cues through their existing intimate relationships should be particularly promising. Because severe distress is a common reaction to the uncontrollable or unpredictable nature of traumatic events, early intervention efforts should promote posttrauma interpersonal behavior that enhances victims' global perceptions of personal agency, self-efficacy in specific roles, and the experience of control. To accomplish these goals, clinicians can offer psychoeducation and specific recommendations for action and practice based on an ideographic assessment of social support. Future research is needed to devise and test specific creative interventions designed to enhance social support in trauma survivors. Early interventions should also foster accurate expectations and planning about returning to normal routines, which could provide predictable contingent rewards to instill the experience of control and predictability disrupted by the trauma. Of course, this needs to be carefully balanced by the need of some to temporarily withdraw from interpersonal demands to achieve homeostasis and regain a sense of choice and control.

SUMMARY

This review highlights the merits of early identification and early intervention for recently traumatized people. We suggest that there is a danger of "throwing the baby out with the bath water" by summarizing the PD debate solely in terms of the effectiveness of PD. Many empirical questions pertaining to PD have not been subjected to scrutiny. By applying stricter scientific standards to this issue, we suggest that evidence-based answers can be derived that identify the components that are most useful in assisting individuals and organizations with the short-term and long-term consequences of exposure to trauma.

NOTE

1. We thank an anonymous reviewer for making this point.

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REFERENCES

Adler, A. B., & Bartone, P. T. (1999). International survey of military mental health professionals. *Military Medicine, 164*(11), 788–792.

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Barton, K. A., Blanchard, E. B., & Hickling, E. J. (1996). Antecedents and consequences of acute stress disorder among motor vehicle accident victims. *Behavior Research and Therapy, 34,* 805–813.

Bisson, J. I., Jenkins, P. L., Alexander, J., & Bannister, C. (1997). Randomized controlled trial of psychological debriefing for victims of acute burn trauma. *British Journal of Psychiatry, 171,* 78–81.

Bisson, J. I., McFarlane, A. C., & Rose, S. (2000). Psychological Debriefing. In E. B. Foa, T. M. Keane, & M. J. Friedman (Eds.), *Effective treatments for PTSD.* New York: The Guilford Press.

Blake, D., Weathers, F., Nagy, L., Kaloupek, D., Klausminser, G., Charney, D., & Keane, T. (1990). A clinician rating scale for assessing current and lifetime PTSD: The CAPS-1. *Behavior Therapist, 18,* 187–188.

Blanchard, E. B., Hickling, E. J., Barton, K. A., Taylor, A. E., Loos, W. R., & Jones-Alexander, J. (1996). One-year prospective follow-up of motor vehicle accident victims. *Behaviour Research and Therapy, 34,* 775–786.

Bremner, J., Southwick, S., Brett, E., & Fontana, A. (1992). Dissociation and posttraumatic stress disorder in Vietnam combat veterans. *American Journal of Psychiatry, 149,* 328–332.

Breslau, N., Kessler, R., Chilcoat, H., Schultz, L., Davis, G., & Andreski, P. (1998). Trauma and posttraumatic stress disorder in the community: The 1996 Detroit area survey of trauma. *Archives of General Psychiatry, 55,* 626–632.

Brewin, C. R., Andrews, B., Rose, S., & Kirk, M. (1999). Acute stress disorder and posttraumatic stress disorder in victims of violent crime. *American Journal of Psychiatry, 156,* 360–365.

Bryant, R. A., & Harvey, A. G. (1997). Acute stress disorder: A critical review of diagnostic issues. *Clinical Psychology Review, 17,* 757–773.

Bryant, R. A., & Harvey, A. G. (1998). Acute stress disorder after mild traumatic brain injury. *Journal of Nervous and Mental Disorders,* 186, 333–337.

Bryant, R. A., Harvey, A. G., Dang, S., & Sackville, T. (1998). Assessing acute stress disorder: Psychometric properties of a structured clinical interview. *Psychological Assessment, 10,* 215–220.

Bryant, R. A., Harvey, A. G., Dang, S., Sackville, T., & Basten, C. (1998). Treatment of acute stress disorder: A comparison of cognitive-behavioral therapy and supportive counseling. *Journal of Consulting and Clinical Psychology, 66,* 862–866.

Bryant, R. A., Harvey, A. G., Guthrie, R., & Moulds, M. (2000). A prospective study of acute psychophysiological arousal, acute stress disorder, and posttraumatic stress disorder. *Journal of Abnormal Psychology, 109,* 341–344.

Bryant, R. A., Sackville, T., Dang, S. T., Moulds, M., & Guthrie, R. (1999). Treating acute stress disorder: An evaluation of cognitive-behavioral therapy and counseling techniques. *American Journal of Psychiatry, 156,* 1780–1786.

Carlier, I. V. E., Voerman, A. E., & Gersons, B. P. R. (2000). The influence of occupational debriefing of posttraumatic stress symptomatology in traumatized police officers. *British Journal of Medical Psychology, 73,* 87–98.

Charlton, P., & Thompson, J. (1996). Ways of coping with psychological distress after trauma. *British Journal of Clinical Psychology, 35,* 517–530.

Conlon, L., Fahy, T. J., & Conroy, R. (1999). PTSD in ambulant RTA victims: A randomized controlled trial of debriefing. *Journal of Psychosomatic Research, 46,* 37–44.

Deahl, M. P., Gillham, A. B., Thomas, J., Searle, M. M., & Srinivasan, M. (1994). Psychological sequelae following the gulf war: Factors associated with subsequent morbidity and the effectiveness of psychological debriefing. *British Journal of Psychiatry, 165,* 60–65.

Deahl, M., Srinivasan, M., Jones, N., Thomas, J., Neblett, C., & Jolly, A. (2000). Preventing psychological trauma in soldiers: The role of operational stress training and psychological debriefing. *British Journal of Medical Psychology, 73,* 77–85.

Derogatis, L. R. (1993). *Brief Symptom Inventory: Administration, scoring, and procedures manual.* Minneapolis, MN: National Computer Systems, Inc.

Dougall, A., Herberman, H., Delahanty, D., Inslicht, S., & Baum, A. (2000). Similarity of prior trauma exposure as a determinant of chronic stress responding to an airline disaster. *Journal of Consulting and Clinical Psychology, 68,* 290–295.

Dyregrov, A. (1999). Helpful and hurtful aspects of psychological debriefing groups. *International Journal of Emergency Mental Health, 3,* 175–182.

Everly, G. S., Flannery, R. B., & Mitchell, J. T. (2000). Critical incident stress management (CISM): A review of the literature. *Aggression and Violent Behavior, 5,* 23–40.

Everly, G. S., & Mitchell, J. T. (2000). The debriefing "controversy" and crisis intervention: A review of the lexical and substantive issues. *International Journal of Emergency Mental Health, 2,* 211–225.

Flack, W. F., Litz, B. T., & Keane, T. M. (1998). Cognitive-Behavioral treatment of combat-related PTSD: A flexible hierarchical approach. In V. M. Follette, F. R. Abueg, & J. I. Ruzek (Eds.), *Trauma in context: A cognitive-behavioral approach* (pp. 77–99).

Foa, E. B., Hearst-Ikeda, D., & Perry, K. J. (1995). Evaluation

of a brief cognitive-behavioral program for the prevention of chronic PTSD in recent assault victims. *Journal of Consulting and Clinical Psychology, 63,* 948–955.

Foa, E. B., & Meadows, E. A. (1997). Psychosocial treatments for posttraumatic stress disorder: A critical review. *Annual Review of Psychology, 48,* 449–480.

Forbes, A., & Roger, D. (1999). Stress, social support and fear of disclosure. *British Journal of Health Psychology, 4,* 165–179.

Foy, D. W., Sipprelle, R. C., Rueger, D. B., & Carroll, E. (1984). Etiology of Posttraumatic Stress Disorder in Vietnam veterans: Analysis of premilitary, military, and combat exposure influences. *Journal of Consulting and Clinical Psychology, 52,* 79–87.

Fullerton, C. S., Ursano, R. J., Vance, K., & Wang, L. (2000). Debriefing following trauma. *Psychiatric Quarterly, 71,* 259–276.

Gist, R., & Woodall, S. (2000). There are no simple solutions to complex problems. In J. M. Violanti & P. Douglas (Eds.). *Posttraumatic stress intervention: Challenges, issues, and perspectives* (pp. 81–95). Springfield, IL: Charles C. Thomas.

Green, B., Goodman, L., Krupnick, J., Corcoran, C., Petty, R., Stockton, P., & Stern, N. (2000). Outcomes of single versus multiple trauma exposure in a screening sample. *Journal of Traumatic Stress, 13,* 271–286.

Hall, D. P., Cipriano, E. D., & Bicknell, G. (1997). Preventive mental health interventions in peacekeeping missions to Somalia and Haiti. *Military Medicine, 162,* 41–43.

Halligan, S. L., & Yehuda, R. (2000). Risk factor for PTSD. *PTSD Research Quarterly, 11,* 1–2.

Harvey, A. G., & Bryant, R. A. (1998a). The relationship between acute stress disorder and posttraumatic stress disorder: A prospective evaluation of motor vehicle accident survivors. *Journal of Consulting and Clinical Psychology, 66,* 507–512.

Harvey, A. G., & Bryant, R. A. (1998b). Predictors of acute stress following mild traumatic brain injury. *Brain Injury, 12,* 147–154.

Harvey, A. G., & Bryant, R. A. (1999a). The relationship between acute stress disorder and posttraumatic stress disorder: A 2-year prospective evaluation. *Journal of Consulting and Clinical Psychology, 67,* 985–988.

Harvey, A. G., & Bryant, R. A. (1999b). Predictors of acute stress following motor vehicle accidents. *Journal of Traumatic Stress, 12,* 519–525.

Harvey, A. G., & Bryant, R. A. (2000). Two-year prospective evaluation of the relationship between acute stress disorder and posttraumatic stress disorder following mild traumatic brain injury. *American Journal of Psychiatry, 157,* 626–628.

Harvey, A. G., & Bryant, R. A. (2001). Reconstructing trauma memories: A prospective study of "amnesic" trauma survivors. *Journal of Traumatic Stress, 14,* 277–282.

Harvey, J. H., Orbuch, T. L., Chwalisz, K. D., & Garwood, G. (1991). Coping with sexual assault: The roles of account-making and confiding. *Journal of Traumatic Stress, 4,* 515–531.

Hobbs, M., Mayou, R., Harrison, B., & Warlock, P. (1996). A randomized trial of psychological debriefing for victims of road traffic accidents. *British Medical Journal, 313,* 1438–1439.

Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44,* 513–524.

Hobfoll, S. E., Dunahoo, C. A., & Monnier, J. (1995). Conservation of resources and traumatic stress. In J. R. Freedy & S. E. Hobfoll (Eds.), *Traumatic Stress: From Theory to Practice.* New York: Plenum Press.

Hobfoll, S. E., Spielberger, C. D., Breznitz, S., Figley, C., & van der Kolk (1991). War-related stress: Addressing the stress of war and other traumatic events. *American Psychologist, 46,* 848–855.

Hokanson, M., & Wirth, B. (2000). The critical incident stress debriefing process for the Los Angeles County Fire Department: Automatic and effective. *International Journal of Emergency, 2,* 249–257.

Horowitz, M., Wilner, N., & Alvarez, W. (1979). Impact of Events Scale: A measure of subject stress. *Psychosomatic Medicine, 41,* 209–218.

Jones, F. D., & Hales, R. E. (1987). Military combat psychiatry: A historical review. *Psychiatric Annals, 17,* 525–527.

Keane, T. M., Scott, W. O., Chavoya, G. A., Lamparski, D. M., & Fairbank, J. A. (1985). Social support in Vietnam veterans with posttraumatic stress disorder: A comparative analysis. *Journal of Consulting and Clinical Psychology, 53,* 95–102.

Kenardy, J. A., Webster, R. A., Lewin, T. J., Carr, V. J., Hazell, P. L., & Carter, G. L. (1996). Stress debriefing and patterns of recovery following a natural disaster. *Journal of Traumatic Stress, 9,* 37–49.

Kessler, R. C., Sonnega, A., Bromet, E., Hughes, M., & Nelson, C. B. (1995). Posttraumatic stress disorder in the National Comorbidity Survey. *Archives of General Psychiatry, 52,* 1048–1060.

King, L. A., King, D. W., Fairbank, J. A., Keane, T. M., & Adams, G. A. (1998). Resilience/recovery factors in posttraumatic stress disorder among female and male Vietnam veterans: Hardiness, postwar social support, and additional stressful life events. *Journal of Personality and Social Psychology, 74,* 420–434.

King, D. W., King, L. A., Foy, D. W., Keane, T. M., & Fairbank, J. A. (1999). Posttraumatic stress disorder in a national sample of female and male Vietnam veterans: Risk factors, war-zone stressors, and resilience-recovery variables. *Journal of Abnormal Psychology, 108,* 164–170.

Koopman, C., Classen, C., & Spiegel, D. (1994). Predictors of posttraumatic stress symptoms among survivors of the

Oakland/Berkeley California firestorm. *American Journal of Psychiatry, 151,* 888–894.

Koren, D., Arnon, I., & Klein, E. (1999). Acute stress response and posttraumatic stress disorder in traffic accident victims: A one-year prospective, follow-up study. *American Journal of Psychiatry, 156,* 369–373.

Kulka, R., Schlenger, W., Fairbank, J., Hough, R., Jordon, B., Marmar, C., & Weiss, D. (1988). *National Vietnam Veterans Readjustment Study (NVVRS).* Research Triangle Park, NC: Research Triangle Institute.

Litz, B. T. (1996). The Psychological Demands of Peacekeeping for Military Personnel. *PTSD Clinical Quarterly, 6,* 1–8.

Litz, B. T., Miller, M., Ruef, A., & McTeague, L. (2002). Psychological Assessment of Adults Exposed to Trauma. In M. Antony and D. Barlow (Eds.). *Handbook of Assessment and Treatment Planning for Psychological Disorders.* New York: Guilford Press.

Macklin, M. L., Metzger, L. J., Litz, B. T., McNally, R. J., Lasko, N. B., Orr, S. P., & Pitman, R. K. (1998). Lower precombat intelligence is a risk factor for posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 66,* 323–326.

Major, B., Zubek, J., Cooper, M., & Cozzarelli, C. (1997). Mixed messages: Implications of social conflict and social support within close relationships for adjustment to a stressful life event. *Journal of Personality and Social Psychology, 72,* 1349–1363.

Marmar, C., Weiss, D., Shchlenger, W., & Fairbank, J. (1994). Peritraumatic dissociation and posttraumatic stress in male Vietnam theater veterans. *American Journal of Psychiatry, 151,* 902–907.

Martin, L., Rosen, L. N., Durand, D. B., Knudson, K., & Stretch, R. H. (2000). Psychological and physical health effects of sexual assaults and nonsexual traumas among male and female United States Army soldiers. *Behavioral Medicine, 26,* 23–33.

Marshall, R. D., Spitzer, R., & Liebowitz, M. R. (1999). Review and critique of the new DSM-IV diagnosis of acute stress disorder. *American Journal of Psychiatry, 156,* 1677–1685.

Mayou, R., Ehlers, A., & Hobbs, M. (2000). Psychological debriefing for road traffic accident victims: Three-year follow-up of a randomised controlled trial. *British Journal of Psychiatry, 176,* 589–593.

McDuff, D. R., & Johnson, J. L. (1992). Classification and characterizations of Army stress casualties during Operation Desert Storm. *Hospital and Community Psychiatry, 43,* 812–815.

McFall, M. E., Murburg, M. M., Ko, G. N., & Veith, R. C. (1990). Autonomic responses to stress in Vietnam combat veterans with posttraumatic stress disorder. *Biological Psychiatry, 27,* 1165–1175.

McFarlane, A. C. (1988). The longitudinal course of posttraumatic morbidity: The range of outcomes and their predictors. *Journal of Nervous and Mental Disease, 176,* 30–39.

McFarlane, A. C. (2000). Traumatic stress in the 21st century. *Australian and New Zealand Journal of Psychiatry, 34,* 896–902.

Mitchell, J. T., & Everly, G. S., Jr. (1995). The critical incident stress debriefing (CISD) and the prevention of work related traumatic stress among high-risk occupational groups. In G. Everly & J. Lating (Eds). *Psychotraumatology: Key papers and core concepts in posttraumatic stress* (pp. 159–169). New York, NY: Plenum Press.

Mitchell, J. T., & Everly, G. S., Jr. (1996). *Critical incident stress debriefing: An operations manual for the prevention of traumatic stress among emergency services and disaster workers* (2nd ed.). Ellicott City, MD: Chevron Publishing Corporation.

Neria, Y., & Solomon, Z. (1999). Prevention of posttraumatic reactions: debriefing and frontline treatment. In P. A. Saigh, & J. D. Bremner (Eds.), *Posttraumatic stress disorder: A comprehensive text.* Boston: Allyn and Bacon.

Nishith, P., Mechanic, M., & Resnick, P. (2000). Prior interpersonal trauma: The contribution to current PTSD symptoms in female rape victims. *Journal of Abnormal Psychology, 109,* 20–25.

Orr, S. P., Meyerhoff, J. L., Edwards, J. V., & Pitman, R. K. (1998). Heart rate and blood pressure resting levels and responses to generic stressors in Vietnam veterans with posttraumatic stress disorder. *Journal of Traumatic Stress, 11,* 155–164.

Pennebaker, J., & O'Heeron, R. (1984). Confiding in others and illness rate among spouses of suicide and accidental death victims. *Journal of Abnormal Psychology, 93,* 473–476.

Prins, A., Kaloupek, D. G., & Keane, T. M. (1995). Psychophysiological evidence for autonomic arousal and startle in traumatized adult populations. In M. J. Friedman, D. S. Charney, & A. Y. Deutch (Eds.), *Neurobiological and clinical consequences of stress: From normal adaptation to PTSD.* Philadelphia, PA: Lippincott-Raven Publishers.

Raphael, B., Meldrum, L., & McFarlane, A. C. (1995). Does debriefing after psychological trauma work? *British Medical Journal, 310,* 1479–1480.

Raphael, B., Wilson, J., Meldrum, L., & McFarlane, A. C. (1996). Acute prevention interventions. In B. A. van der Kolk, A. C. McFarlane, & L. Weisaeth (Eds.), *Traumatic stress* (pp. 463–479). New York: Guilford Press.

Resnick, H., Acierno, R., Holmes, M., Dammeyer, M., & Kilpatrick, D. (2000). Emergency evaluation and intervention with female victims of rape and other violence. *Journal of Clinical Psychology, 56,* 1317–1333.

Riggs, D., Byrne, C., Weathers, F., & Litz, B. (1998). The quality of the intimate relationships of male Vietnam veterans:

Problems associated with posttraumatic stress disorder. *Journal of Traumatic Stress, 11,* 87–101.

Riggs, D. S., Rothbaum, B. O., & Foa, E. B. (1995). A prospective examination of symptoms of posttraumatic stress disorder in victims of nonsexual assault. *Journal of Interpersonal Violence, 10,* 201–213.

Rose, S., & Bisson, J. (1998). Brief early psychological interventions following trauma: A systematic review of the literature. *Journal of Traumatic Stress, 11,* 697–710.

Rose, S., Bisson, J., & Wessely, S. (2001). Psychological debriefing for preventing posttraumatic stress disorder (PTSD) (Cochrane Review). In *The Cochrane Library, 3,* Oxford: Update Software.

Rose, S., Brewin, C. R., Andrews, B., & Kirk, M. (1999). A randomized controlled trial of individual psychological debriefing for victims of violent crime. *Psychological Medicine, 29,* 793–799.

Rose, S., Wessely, S., & Bisson, J. (1998). Brief psychological Interventions ("debriefing") for trauma-related symptoms and prevention of posttraumatic stress disorder (Cochrane Review). In *The Cochrane Library, 2,* Oxford: Update Software.

Rothbaum, B., Foa, E., Riggs, D., Murdock, T., & Walsh, W. (1992). A prospective examination of posttraumatic stress disorder in rape victims. *Journal of Traumatic Stress, 5,* 455–475.

Rutter, M., Pickles, A., Murray, R., & Eaves, L. (2001). Testing hypotheses on specific environmental causal effects on behavior. *Psychological Bulletin,* 127, 291–324.

Shalev, A. Y. (1994). Debriefing following traumatic exposure. In R. J. Ursano, B. G. McCoughey, & C. S. Fullerton (eds.). *Individual and community response to trauma and disaster: The structure of human chaos* (pp. 201–219). Cambridge: Cambridge University Press.

Shalev, A. Y. (2000). Stress management and debriefing: historical concepts and present patterns. In B. Raphael & J. P. Wilson (Eds.), *Psychological debriefing* (pp. 17–31). Cambridge: Cambridge University Press.

Shalev, A. Y., Freedman, S., Peri, T., Brandes, D., & Sahar, T. (1997). Predicting PTSD in trauma survivors: Prospective evaluation of self-report and clinician-administered instruments. *British Journal of Psychiatry, 170,* 558–564.

Shalev, A. Y., Sahar, T., Freedman, S., Peri, T., Glick, N., Brandes, D., Orr, S., & Pitman, R. (1998). A prospective study of heart rate response following trauma and the subsequent development of posttraumatic stress disorder. *Archives of General Psychiatry, 55,* 553–559.

Smith, K., & Bryant, R. A. (2000). The generality of cognitive bias in acute stress disorder. *Behaviour Research and Therapy, 38,* 709–715.

Solomon, Z., & Benbenishty, R. (1986). The role of proximity, immediacy, and expectancy in frontline treatment of combat stress reaction among Israelis in the Lebanon War. *American Journal of Psychiatry, 143,* 613–617.

Solomon, Z., Laor, N., Weiler, D., & Muller, U. F. (1993). The psychological impact of the Gulf War: A study of acute stress in Israeli evacuees. *Archives of General Psychiatry, 50,* 320–321.

Solomon, Z., Mikulincer, M., & Avitzur, E. (1988). Coping, locus of control, social support, and combat-related posttraumatic stress disorder: A prospective study. *Journal of Personality and Social Psychology, 55,* 279–285.

Stretch, R. H., Knudson, K., & Durand, D. (1998). Effects of premilitary and military trauma on the development of posttraumatic stress disorder symptoms in female and male active duty soldiers. *Military Medicine, 163,* 466–470.

Tarrier, N., Pilgrim, H., & Sommerfield, C. (1999). A randomized trial of cognitive therapy and imaginal exposure in the treatment of chronic posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 67,* 13–18.

Warda, G., & Bryant, R. A. (1998). Cognitive bias in acute stress disorder. *Behaviour Research and Therapy, 36,* 1177–1183.

Weinberg, K., Birdsall, C., Vail, D., Marano, M., Petrone, S., & Mansour, E. (2000). Pain and anxiety with burn dressing changes: Patient self-report. *Journal of Burn Care Rehabilitation, 21,* 155–156.

Wilson, J. P., Raphael, B., Meldrum, L., Bedosky, C., & Sigman, M. (2000). Preventing PTSD in trauma survivors. *Bulletin of the Menninger Clinic, 64,* 181–196.

Yehuda, R., McFarlane, A., & Shalev, A. (1998). Predicting the development of posttraumatic stress disorder from the acute response to a traumatic event. *Biological Psychiatry, 44,* 1305–1313.

Young, B. H., & Gerrity, E. (1994). Critical incident stress debriefing (CISD): Value and limitations in disaster response. *National Center for Posttraumatic Stress Disorder Clinical Quarterly, 4,* 17–19.

Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale, *Acta Psychiatrica Scandinavia, 67,* 361–370.

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