A Randomized Controlled Trial of an Adapted Form of Individual Critical Incident Stress Debriefing for Victims of an Armed Robbery

André Marchand, PhD
Stéphane Guay, PhD
Richard Boyer, PhD
Soledad Iucci, PhD
Annick Martin, PhD
Marie-Hélène St-Hilaire, PhD

Victims of an armed robbery are at great risk of psychological distress. This research is a prospective randomized controlled clinical trial of an adapted form of Critical Incident Stress Debriefing (CISD-A) with victims of an armed robbery. The specific goals are to examine whether the CISD-A is superior to the control group in both preventing the development of a posttraumatic stress disorder (PTSD) and attenuating the frequency and severity of posttraumatic stress symptoms. Following pretest, 75 participants were randomly assigned to individual debriefing or to a control group. Results revealed no differences between the CISD-A and the control group in preventing PTSD or attenuating posttraumatic symptoms 1 and 3 months later. [Brief Treatment and Crisis Intervention 6:122–129 (2006)]

KEY WORDS: armed robbery, psychological debriefing, PTSD.

Traumatic events at work can be defined as any event perpetrated in the workplace that can potentially cause severe physical or psychological harm or that threaten life or physical integrity of the victimized employees or of those who witnessed directly or indirectly the event (Manton & Talbot, 1990). In the Canadian province of Quebec, major posttraumatic stress reactions are observed in 30% of women and 15% of men who are victims of a violent assault at work (Hébert and Massicotte 2003). Posttraumatic stress reactions following an armed robbery can include fear, anger, intrusive thoughts, guilt, depressive symptoms, anxiety, nightmares and generalized hyperarousal (Bisson & Shepherd, 1995). For most individuals, these reactions will decrease naturally over time. However, for some individuals they may potentially develop into a posttraumatic stress disorder (PTSD; American Psychiatric Association [APA], 1994, Diagnostic and Statistical
Manual of Mental Disorders, 4th ed.) and thus, a preventive intervention may be helpful to decrease the odds of this negative outcome.

The intervention strategy most frequently used to prevent the development of PTSD is the Critical Incident Stress Debriefing (CISD; Mitchell, 1983). The CISD is a single-session intervention administered soon after a potentially traumatic event (typically within a month) and composed of six steps: (a) introductory phase, (b) fact phase, (c) feeling phase, (d) symptom phase, (e) teaching phase, and (f) reentry phase. Despite the widespread utilization of the CISD and the fact that most participants (78–86%) report that it helped them overcome their trauma (Iucci, Marchand, & Brillon, 2003), empirical support is lacking. Numerous reviews about its efficacy based on the results of existing randomized controlled trials conclude that single-session individual debriefing does not reduce the odds of developing PTSD and stress the need for further well-controlled research (Bisson, 2003; Bisson, McFarlane, & Rose, 2000; Canterbury & Yule, 1999; Carlier, 2000; Iucci et al., 2003; Rose, Bisson, & Wessely, 2003). A recent meta-analysis that evaluated the efficacy of eight randomized controlled trials (Van Emmerik et al., 2002) reported that the mean weighted effect size (effect sizes are based on the difference between results of preintervention and postintervention assessments) of CISD was small (values of 0.20, 0.50, and 0.80 correspond to small, medium, and large effect sizes, respectively; Cohen, 1988) [0.13 [95% CI −0.29 to 0.55]] and inferior to both the medium–large effect size of non-CISD interventions [0.65 [95% CI 0.14 to 1.16]] and the medium effect size of no-intervention control [0.47 [95% CI 0.28 to 0.66]] in reducing PTSD symptoms. Among the studies included in this meta-analysis, only one assessed the efficacy of CISD with victims of various crimes (Rose, Brewin, Andrews, & Kirk, 1999) and found a medium–large effect size for both CISD and no-intervention control [aggregate effect size across measures of 0.61 [95% CI −0.49 to 1.71] and 0.66 [95% CI −0.53 to 1.85], respectively]. However, this study included all types of physical assaults, rather than solely victims of an armed robbery.

Apart from the studies included in the Van Emmerik et al. (2002) meta-analysis, only two other trials investigated the effect of CISD specifically with victims of armed robberies (Campfield & Hills, 2001; Richards, 2001). Campfield and Hills (2001) assessed the effect of timing of CISD with 77 employees subsequent to falling victim of a robbery at their place of employment. They found that a single session of debriefing delivered less than 10 hr after the robbery decreased the symptoms of PTSD more effectively than the same debriefing delivered 48 hr after the robbery. Richards (2001) compared the CISD to the Critical Incident Stress Management (CISM) intervention, an integrated system of preincident training, initial postincident defusing, group debriefing, and further counseling that incorporates CISD (Mitchell & Everly, 1997). Either interventions were delivered to a group of individuals who were victims of robbery while working at a financial services company. Assessment of PTSD symptoms 3–12 months after the intervention revealed a greater reduction of symptoms among participants administered the CISM condition (Richards, 2001). Taken together, the results of these two studies suggest that the timing of the debriefing is important and that a more intensive and integrated preventive intervention is better than a single session of debriefing. However, neither study included a control condition nor did the research design in Richards’ (2001) allow for the randomization of participants. These methodological shortcomings limit the breadth of the results of the aforementioned studies by not confirming whether the impact of a brief intervention is
superior to the passage of time at reducing PTSD symptoms and preventing the development of the full disorder.

Overall, the literature suggests that the CISD, in its original form, is not effective at preventing PTSD. More intensive forms of early interventions using Cognitive-Behavioral Therapy (CBT) over multiple sessions such as one developed for victims of assaults by Foa, Hearst-Ikeda, and Perry (1995) or the one specific for motor vehicle accident survivors by Bryant, Harvey, Dang, Sackville, and Basten (1998) hold promise at preventing the development of PTSD. These studies found that CBT was superior to repeated assessment (Foa et al., 1995) or supportive counseling (Bryant et al., 1998) in reducing PTSD symptoms. Based on the results of these two studies, we hypothesize that CISD with CBT over two sessions will be more effective in reducing the severity of PTSD than no intervention.

The main objective of the present study is to compare the efficacy of an adapted form of CISD (CISD-A) that incorporates two sessions of individual debriefing and CBT techniques to a control condition with no-intervention in preventing psychological distress among a group of victims of an armed robbery. The specific goals are to examine whether the CISD-A is superior to the control condition in both preventing the development of PTSD and attenuating the frequency and intensity of posttraumatic stress symptoms. The research protocol is a prospective randomized controlled clinical trial. The integrity of delivery of the CISD-A is evaluated and participants are assessed with regard to PTSD diagnostic and symptoms.

**Methodology**

**Participants**

Seventy-five participants (39 women and 36 men) were recruited during a 4-year period (1998–2002), with the collaboration of a major convenience store chain in the metropolitan area of Montreal. Criteria to be included consisted of the following: participant required to have been a victim of an armed robbery that included acts of violence ranging from threat of death or injury to physical assault and threat with a weapon. Moreover, a worker had to have reported to the screening interviewer that he experienced intense fear, helplessness, or horror during or after the robbery such as described in Criterion A2 of the DSM-IV PTSD diagnosis (APA, 1994). All physical assaults resulted in minor injuries but no participant required hospitalization. The age of the participants ranged from 16 to 53 years. The women’s average age was 22.4 years ($SD = 7.3$) and the men’s average age was 21.2 years ($SD = 6.1$). The majority of the participants (88%) had completed their 12th grade, 46% were living in a couple relationship, and 32% went on sick leave after the robbery. They reported to have experienced a mean number of 2.49 potentially traumatic events ($SD = 1.51$) prior to the robbery.

**Measures**

**Presence Versus Absence of PTSD.** The PTSD module of the Structured Clinical Interview for DSM (First, Spitzer, Gibbon, & Williams, 1996) was used by a qualified interviewer to evaluate the presence of PTSD among participants, according to the DSM-IV criteria (APA, 1994). Thirty percent of all assessment tapes were reevaluated by an independent rater to assess reliability. Mean kappa of 0.92 was obtained, which indicates a high level of agreement.

**PTSD Symptoms.** The Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979) is a 15-item scale measuring both symptoms of intrusion and avoidance following a traumatic
event. Respondents were asked to rate the frequency of each item on a four-level scale (0 = not at all; 1 = rarely; 3 = sometimes; 5 = often). The IES correlates strongly with the Clinician-Administered Posttraumatic Stress Disorder scale (CAPS-I) and a PTSD diagnosis cutoff score of 35 has been established (Neal et al., 1994). The French–Canadian version of the IES has both excellent internal consistency (Brunet, 1997) and good convergent validity with the modified PTSD symptom scale (Guay, Marchand, Iucci, & Martin, 2002).

**Procedure**

The participants were assessed as soon as possible after the hold-up (pretest; T1; $M = 7.93$ days, $SD = 3.42$) and randomly assigned to individual debriefing ($n = 33$) or to the control condition (no intervention; $n = 42$). They were subsequently reassessed twice, 30–40 days (posttest; T2; $M = 36.28$, $SD = 8.21$) and 90–110 days (follow-up; T3; $M = 96.11$, $SD = 6.24$) after the event. Assessments were conducted by graduate students who were blind to group assignment. The participants received $30.00$ (CAN) at each assessment. This research project was approved by the Université du Québec à Montréal research and ethics committee.

Participants in the control conditions received no interventions and participated only to the assessments. In the CISD-A condition (adapted from Mitchell & Everly, 1995), debriefings were conducted individually and consisted of two 1-hr sessions at a 1-week interval and were conducted by an experienced psychologist. The first debriefing session took place 2–22 days ($M = 11.21$, $SD = 6.75$) after the robbery and covered the following themes: (a) the goals of the session, (b) a present tense detailed description of the traumatic event, (c) the thoughts and emotions experienced by the participant during and after the event, (d) the information about normal stress reactions and the challenge of the participant’s irrational beliefs, (e) the stress management techniques, and if necessary, (f) reference to further follow-up. The second session of debriefing followed the same structure and included a review of reactions, thoughts, and emotions experienced during the week following the first session ($M = 18.22$ days after the robbery, $SD = 8.56$).

The content of both sessions was recorded to evaluate the quality of delivery of the intervention. An independent evaluator used a 5-point Likert scale to assess the presence of each theme of the debriefing protocol that the psychologist had to discuss with the participants ($0 = $theme not discussed at all$, 4 = theme fully discussed$) in the debriefing sessions. Results showed that all themes were faithfully discussed in each of the two sessions. Mean ratings were 4 for the first session and 3.65 for the second session.

**Results**

**Preliminary Analysis**

Out of the 75 participants that entered the study, 61 completed the 1-month follow-up (T2) and 57 completed the 3-month follow-up (T3). Thus, from the beginning of the study to T3, 24% ($n = 18$) of the participants dropped out of the study. The percentage of dropouts was equal in each condition (i.e., 24%). Planned comparisons between completers and dropouts indicated that those who had dropped out of the study at T3 were less likely to be in a couple relationship ($\chi^2 = 3.97, p < .05$) and more likely to be on sick leave ($\chi^2 = 3.71, p < .05$). At T1, there was no significant difference between the control condition ($M = 22.60$, $SD = 16.09$) and the debriefing condition on the IES total score, age, gender, education, or number of prior traumatic events (all $p > .05$). Because T2 and T3 data of the IES were positively skewed, square root transformations were performed.
Main Analyses: CISD-A and Control Group Effects

Results of the chi-square analysis comparing PTSD presence versus absence at 1- and 3-month time points after the robbery indicate no significant difference between conditions in the number of participants diagnosed with PTSD both in the study completers and intent-to-treat samples (See Table 1).

Table 2 presents the mean IES total scores and effect sizes for study completers and intent-to-treat samples. (See Table 1).

Table 2 presents the mean IES total scores and effect sizes for study completers and intent-to-treat samples. Effect sizes were calculated using Cohen’s $d$ statistic (Cohen, 1988). The CISD-A and the control group were compared on IES scores at T2 and T3 with repeated measures analysis of covariance controlling for the T1 scores. Among study completers, results showed a main effect of Time ($F = 12.70$, $p < .001$). However, no significant Group or Time $\times$ Group effects were found at T2 or T3 largest ($F(1, 54) = 0.99$, $p > .32$). For the analysis with the intent-to-treat sample, we substituted the missing IES scores by the latest available score (i.e., by T1 if T2 and T3 were missing and by T2 if T3 was missing). The results for the intent-to-treat sample were similar to those of study completers with a main effect of Time ($F = 12.45$, $p < .001$) and no significant Group or Time $\times$ Group effects at T2 or T3 (largest $F(1, 54) = 2.10$, $p > .15$).

Secondary Analyses

To determine whether the efficacy of CISD-A to decrease PTSD symptoms was related to the timing of the first debriefing session, we correlated the number of days elapsed between the hold-up with both the initial assessment and the first session of debriefing, as well as the T2 and T3 IES scores of the study completers in the CISD-A condition ($n = 25$). Correlations obtained between the timing of the first CISD-A session and IES scores were found to be not statistically significant ($r = -.32$ and $-.19$ at T2 and T3, respectively).

Discussion

The objective of the present randomized controlled trial was to examine whether the
CISD-A, a two-session individual intervention integrating CISD procedures and CBTs, is superior to a control condition at both preventing the development of PTSD and attenuating the frequency and intensity of posttraumatic stress symptoms. The present findings suggest that the CISD-A is not superior to a no-intervention condition, that is, no significant difference between conditions was found at any time regarding either the number of PTSD cases or the severity of posttraumatic stress symptoms.

This randomized controlled trial is one of the very few that investigated the clinical outcomes of psychological debriefing by comparing its effect to a no-intervention control condition. Our results are in agreement with previous randomized controlled trials that assessed the impact of single-session CISD, which overall, were also found to have no benefit for a brief preventive intervention delivered individually soon after the occurrence of a potentially traumatic event (for a review, see Rose et al., 2003). Interestingly, medium-to-large effect sizes were found for both the CISD-A and the control group in the current study. These effect sizes, which for the most part, are greater than the effect sizes of the CISD reported in the Van Emmerik et al. (2002) meta-analysis, may be attributable to a relatively low level of initial distress among our participants. In fact, IES scores following the armed robbery (i.e., T1) were well under the cutoff score of 35 associated with a PTSD diagnosis. This interpretation implies that the great number of spontaneous remission in the control condition is likely to have accounted for the null results within this trial. In addition, the tendency for the magnitudes of change to be lower in the CISD-A condition than in the control group suggests that this intervention may have impeded the natural recovering process of the victims of an armed robbery.

Another explanation for the lack of group difference between the CISD-A and controls is that the duration and intensity of treatment may have been insufficient. To prevent PTSD and increase speed of recovery, a preventive intervention greater than two 1-hr sessions and involving more CBT components may be required. Previous studies suggest that interventions that included four to five sessions of CBT were found to be more effective than control condition to reduce symptoms of PTSD (Bisson, Shepherd, Joy, & Newcombe, 2004; Bryant et al., 1998; Foa et al., 1995). These interventions included many CBT techniques such as psychoeducation, imaginal and in vivo exposure, and cognitive restructuring. In addition, only victims requiring psychological help, such as those with an acute stress disorder, should be targeted as it has been the case in two of the studies mentioned earlier (i.e., Bisson et al., 2004; Bryant et al., 1998). In sum, a more extensive intervention delivered to more at-risk individuals may prove to be more effective than our two-session psychological debriefing combined with minimal CBT offered to all victims soon after the traumatic event.

Our findings are not in line with the results of Campfield and Hills (2001) and Richards (2001), who concluded that early interventions such as CISD or CISM are appropriate to decrease posttraumatic symptoms following an armed robbery. Moreover, unlike Campfield and Hills, we did not find that an earlier timing of the first debriefing session was related to a better outcome. The experimental design of our study has allowed us to truly compare the effect of a brief intervention with the sole passage of time and thus brought clarification about the lack of positive clinical impact of a debriefing on the recovery process of victims of an armed robbery.

The design and methods of this study have several strengths and increase confidence in our findings. Firstly, we used a prospective design with two follow-up assessments that included evaluation of PTSD diagnosis made by an independent assessor. Secondly, participants
were assigned to either the CISD-A or the no-intervention group randomly, which limits the risk of a self-selection bias and enables to control for the passage of time. Thirdly, the integrity of the delivery of the CISD-A was assessed by an independent evaluator and found to be of high quality. Nevertheless, we recognize that our conclusions are limited by the fact that only victims of an armed robbery were selected and that only individual debriefings were conducted. Consequently, our results cannot be generalized to other traumatized populations or to group debriefings. Nevertheless, according to a recent meta-analysis (Roberts & Everly, 2006), both individual and group debriefings tend to be generally ineffective with low effect sizes, whereas intensive home-based crisis intervention and multicomponent CISM had very high effect sizes. Research in this area should be pursued to identify other potentially effective interventions aimed at preventing the development of PTSD.

Acknowledgment

The study was supported by a research grant from the Institut de Recherche en Santé et Sécurité du Travail du Québec awarded to André Marchand. Conflict of Interest: None declared.

References


Guay, S., Marchand, A., Iucci, S., & Martin, A. (2002). Validation de la version québécoise de...
Debriefing Following an Armed Robbery


