

Stress Debriefing and Patterns of Recovery Following a Natural Disaster

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Stress debriefing has been used extensively following traumatic events; however, there is little evidence of its effectiveness. This paper reports the effects of stress debriefing on the rate of recovery of 195 helpers (e.g., emergency service personnel and disaster workers) following an earthquake in Newcastle, Australia (62 debriefed helpers and 133 who were not debriefed). Post-trauma stress reactions (Impact of Event Scale) and general psychological morbidity (General Health Questionnaire: GHQ-12) were assessed on four occasions over the first 2 years postearthquake. There was no evidence of an improved rate of recovery among those helpers who were debriefed, even when level of exposure and helping-related stress were taken into account. More rigorous investigation of the effectiveness of stress debriefing and its role in posttrauma recovery is urgently required.

KEY WORDS: helpers; stress debriefing; natural disaster; earthquake; CISD.

Stress debriefing has been promoted as a means of preventing or reducing the psychological distress experienced by emergency service personnel and disaster workers following a severe trauma. It has gained in popularity as a desirable intervention following trauma, probably due largely to increased recognition of the psychological effects of trauma.

Critical Incident Stress Debriefing (CISD) is one example of a debriefing model designed for emergency service personnel following a trauma.

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matic event (Mitchell, 1983; Mitchell & Dyregrov, 1993). It proposes four types of debriefings: on or near the scene debriefing; initial defusing; formal CISD; and follow-up CISD. Formal debriefing incorporates seven phases, takes three to five hours and should be provided by a qualified mental health professional 24-48 hours after the incident. The seven phases are: introductory phase (rules and process explained); fact phase (what they saw, heard, smelled, touched and did); thoughts phase (first thoughts); feelings phase (emotional reactions); assessment phase (physical or psychological symptoms); education phase (stress response syndrome); and re-entry phase (referral information).

Despite the growing use of psychological debriefing (Raphael, 1986) and general acceptance that it is a necessary intervention for posttrauma responses, there have been no systematic evaluations of its effectiveness (Silove, 1992). However, there are two naturalistic studies, in which allocation to debriefing or nondebriefing groups was not random, that have examined the effects of debriefing on long-term levels of stress following trauma. McFarlane's (1988) study of Ash Wednesday bushfire fighters ($N = 315$) found that debriefing was not predictive of posttrauma stress generally. More specifically, he found that debriefing was associated with reduced *acute* posttrauma stress, but also with increased *delayed* posttrauma stress. However, the relationship between debriefing and delayed posttrauma stress was much weaker than that found between debriefing and acute posttrauma stress.

Griffiths and Watts (1992) examined relationships between stress debriefing and stress symptoms in 288 emergency personnel involved in bus crashes. They found that those who attended debriefing had significantly higher levels of symptoms at 12 months, as measured by the Impact of Event Scale (IES), than those who did not attend debriefing. Furthermore, there was no relationship between the perceived helpfulness of debriefing and symptoms. However, those who experienced greater distress at the time of the crash were likely to have attended more debriefing sessions and to have perceived those sessions as more helpful. No data were presented on changes in symptoms over time or relationships between levels of distress at the time of the event and ongoing response to debriefing.

Robinson and Mitchell (1993) recently conducted an exploratory, descriptive study of 172 emergency service, welfare and hospital personnel who took part in 31 debriefings. An evaluation questionnaire was completed by participants two weeks post-debriefing. Emergency service workers rated the debriefing as having considerable personal value (3.8 average on a 1-5 scale). Most participants who experienced stress at the time of the incident attributed a reduction in stress symptoms, at least in part, to the debriefing.

While not employing stress debriefing, Brom, Kleber, and Hofman (1993) reported the results of a randomized treatment control study aimed at prevention of posttrauma stress. In their study the effect of three sessions of counselling (commenced 1 month after severe road accidents) on psychological distress six months post-trauma was examined. The authors found no difference at follow-up on the IES between treatment ($n = 68$) and control ($n = 83$) groups.

Following the 1989 Newcastle earthquake, the "Quake Impact Study" (QIS) was conducted to investigate the psychosocial impact of a major disaster on the general community (see Carr, Lewin, Carter, & Webster, 1992; Carr et al., 1995). The methodology for this study allowed for an examination of the relationship between debriefing and psychological distress during the first 2 years postearthquake. This was also a naturalistic study and, therefore, we were not able to influence the availability or nature of the debriefing or to randomly allocate helpers to debriefed and nondebriefed groups.

The principal aim of the present paper was to compare the pattern of psychological morbidity over time between helpers (e.g., emergency service personnel and disaster workers) who were debriefed and those who were not debriefed. A subsidiary aim was to examine the contributions of several other factors to psychological morbidity, including level of exposure to threat or disruption situations, level of stress associated with helping and the perceived helpfulness of debriefing. It was hypothesized that those who were debriefed would experience a more rapid rate of recovery compared to those who were not debriefed, and that this difference would remain when level of exposure and helping-related stress were taken into account.

Method

Event — Newcastle Earthquake

On December 28, 1989, an earthquake measuring 5.6 on the Richter scale struck Newcastle, a major industrial city in Australia, causing loss of life (13 deaths; Waller, 1990) and significant property damage (over \$US660 million). The damage to the city was made worse since areas of Newcastle were built over alluvial deposits. Since it was an intraplate (continental) earthquake, the total felt area and damage area were much more extensive than those caused by the more commonly occurring interplate earthquakes (Rynn, 1990). A more detailed description of the earthquake and patterns of postdisaster service utilization is presented in Carr et al. (1992).

Quake Impact Study (QIS)

The QIS study was initiated in mid-1990 to document the Newcastle community's initial earthquake experiences and reactions, to assess the short- to medium-term psychosocial impact of the earthquake on that community and to monitor disaster-related morbidity in specific groups, such as helpers working on a professional (e.g., ambulance officers, counsellors) or voluntary basis (e.g., state emergency services). Helpers were contacted through direct approaches to professional and volunteer emergency/rescue and welfare services, the armed services and public utilities. Some of these helpers were in predominantly threat situations (e.g., emergency service personnel, ambulance officers), while others were in predominantly nonthreat situations (e.g., counsellors and the full range of welfare workers). Three other groups of special interest were also included in the study: those who were injured; people displaced from their homes; and owners of small businesses. The phase 1 survey, which was distributed six months after the earthquake, was completed by 2,997 adults drawn randomly from the electoral rolls (63% of those selected), 464 members of the four special interest groups (50% of those selected) and 23 volunteers (e.g., nonselected adults who completed a survey that had been sent to another member of that household or business).

A stratified sample ($n = 1,089$) of the 3,484 respondents to the phase 1 survey was selected for the longitudinal component of the study (i.e., phases 2 to 4), with over-representation from members of the groups of special interest and those reporting high levels of earthquake exposure. Three-quarters of those chosen for the ongoing study (78%, $n = 845$) completed at least one of the follow-up surveys. The phase 1 to 4 surveys were completed on average 27, 50, 86 and 114 weeks postearthquake.

Subjects

One hundred and ninety-five subjects who completed at least three phases of the QIS and who *reported that they had acted in the role of helper* were selected for the analyses reported in this paper. There were 62 helpers who received debriefing (26 females and 36 males) and 133 helpers who were not debriefed (37 females and 96 males). Half of the subjects (48%) were from the specifically targeted helper group ($n = 94$), with the remainder from the community sample (43%, $n = 83$) or the other special interest groups (9%, $n = 18$). Over two-thirds of the debriefed group (68%, $n = 42$) were from the special interest helper group.

Twenty six helpers whose debriefing status was known were excluded because they did not complete at least three phases of the study. There were no significant differences between helpers who completed at least three phases of the study ($n = 195$) and those who did not ($n = 26$) with respect to gender, age, occupational prestige, earthquake exposure, psychological morbidity and whether or not they were debriefed.

Measures and Procedure

The phase 1 questionnaire of the QIS included detailed questions about initial and ongoing exposure to the effects of the earthquake, responses to which were used to form two overall exposure scores, *exposure to threat* (e.g., injury or the possibility of injury) and *exposure to disruption* (e.g., damage to house or business, other losses, displacement or other disruptions). In the phase 1 questionnaire subjects also indicated whether they were helping in threat situations (e.g., getting people out of buildings or making buildings safe) or nonthreat situations (e.g., assisting with housing/food/clothing, coordinating services, counselling). They were also asked to rate how stressful they found their experience of helping: "How STRESSFUL would you rate your experience of HELPING people affected by the earthquake?" (4-point scale "Not at all stressful" to "Extremely stressful"). In the phase 2 questionnaire the following questions were asked about debriefing: "Did you attend any group stress DEBRIEFING sessions after the earthquake?" (Yes/No); "How many sessions did you attend?"; "How helpful were the group stress debriefing sessions?" (4-point scale "Not at all helpful" to "Extremely helpful").

The effects of debriefing on psychological morbidity were assessed in relation to overall exposure to threat (low or high exposure), overall exposure to disruption (low or high exposure) and self-reported helping-related stress (low or high stress). The measures of psychological morbidity used were the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979) and the General Health Questionnaire (GHQ-12; Goldberg, 1972), which were completed at all four phases of the study.

The Likert method of scoring the GHQ-12 was used throughout (i.e., weights of 0-1-2-3 for the four response alternatives per question), as was the total score on the IES, since there was a high correlation between the intrusive and avoidance subscales of this instrument ($r = .79$).

The following steps were undertaken to estimate missing morbidity scores. First, three regression analyses were conducted for each morbidity measure using data from subjects in our longitudinal database who had completed all four phases ($N = 535$). Morbidity scores at phase 2, phase

3, and phase 4 were the outcome variables in these analyses, each of which was regressed onto morbidity scores from the remaining three phases. Regression equations generated by these analyses were then used to estimate missing morbidity values for subjects who had completed three of the four phases of the study. Twenty-two (11%) of the 195 subjects who were the focus of the present paper had missing morbidity scores estimated in this manner.

Results

Sample Characteristics

A comparison between those who were debriefed ($n = 62$) and those who were not ($n = 133$) revealed no significant differences on the basis of age, marital status, exposure to threat, exposure to disruption experiences or the proportions helping in threat situations. However, subjects in the debriefed group had higher educational levels (Means: 8.71 v 7.52; $t = 3.28$, $p < .005$), were more likely to be helping in nonthreat situations (89% v 76%; $\chi^2 = 4.31$, $p < .05$), had higher occupational prestige (Means: 3.63 v 4.11; $t = 1.98$, $p < .05$) and were more likely to be female (42% v 28%; $\chi^2 = 3.85$, $p < .05$). Analyses by type of help provided revealed that those who were debriefed were more likely to be counsellors (36% v 21%; $\chi^2 = 4.62$, $p < .05$) or coordinators of services (45% v 21%; $\chi^2 = 12.00$, $p < .001$) than those who were not debriefed. There were no differences between the groups in the likelihood of being involved in rescue operations, making buildings safe, helping with food and accommodation, keeping order or providing medical help. There was also no difference between the groups in reported levels of helping-related stress.

Debriefing Helpfulness

For the debriefed group, the mean number of sessions attended was 1.49 (range 1-5). Debriefing was reported as "Very" or "Extremely" helpful by 34%, as "Somewhat" helpful by 46% and as "Not at all" helpful by 20%. There was no significant correlation between the number of sessions attended and perceived helpfulness ($r = .11$). A repeated measures analysis of covariance was conducted, comparing those who reported that debriefing was "Not at all" or "Somewhat" helpful ($n = 40$) and those who found it "Very" or "Extremely" helpful ($n = 22$); overall exposure to threat and

disruption experiences were used as covariates. There were no significant findings in relation to debriefing helpfulness for the IES or the GHQ-12.

Changes over Time

Repeated measures analysis of covariance was used to determine differences in morbidity over time between the debriefed and nondebriefed helpers according to exposure to threat (with disruption as a covariate) and exposure to disruption situations (with threat as a covariate); see Table 1 for IES results and Table 2 for GHQ-12 results.

No significant interactions involving debriefing status were found for either the IES or the GHQ-12. The only main effect for debriefing status was for the GHQ-12 where subjects who were debriefed reported significantly higher overall scores (Table 2). For the IES and the GHQ-12, main effects for exposure level (threat and disruption) reflected the association of higher distress with greater exposure. Main effects on IES for time (linear and cubic trend) indicated an overall reduction in trauma-related distress over the course of the study (Table 1).

To facilitate comparisons between subgroups, Tables 1 and 2 also report simple change indices, which express differences in morbidity between the final and initial phases of the study in standardized (effect size) units. Overall, subjects in the debriefed group showed less improvement in symptoms than those who were not debriefed and this was true for both the IES (Mean standardized change index: $-.31$ v $-.56$) and the GHQ-12 (Mean standardized change index: $.10$ v $-.28$).

Helper Stress

Repeated measures analysis of covariance was also used to determine differences in morbidity over time between the debriefed and nondebriefed helpers according to level of self-reported helping-related stress; exposure to threat and exposure to disruption were used as covariates.

Level of helper stress was unrelated to debriefing either overall or in relation to change over time; that is, there were no debriefing main effects or debriefing by time interactions. As can be seen in Figure 1, a similar pattern of change over time was observed to that reported in the earlier analyses (Tables 1 and 2). However, the change over time in the IES was related to helper stress (helper stress by linear trend interaction: $F_{(1,190)} = 7.55, p < .01$), such that there was an overall convergence of trauma-related distress over time (see Figure 1a). There were significant main effects for helper stress on both the IES ($F_{(1,190)} = 6.78, p < .01$) and the GHQ-12

Table 1. IES Total Scores across Phases by Earthquake Exposure and Debriefing Status: Means and (Standard Deviations),
N = 195

Earthquake Exposure	Stress Debriefing	Survey Phase				Average Phase	Standardized Change Index ^a	Significant <i>F</i> -ratios from three-way ANCOVAs ^b
		Phase 1	Phase 2	Phase 3	Phase 4			
Low threat	No	10.33 (14.23)	7.71 (11.62)	5.45 (12.13)	5.02 (10.64)	7.13 (10.18)	-0.52	T: <i>F</i> = 10.18** L: <i>F</i> = 35.39***
	Yes	8.00 (7.23)	7.05 (7.54)	4.05 (6.26)	4.71 (6.67)	5.95 (5.77)	-0.32	C: <i>F</i> = 5.81*
High threat	No	11.81 (11.94)	12.29 (13.55)	7.34 (10.43)	5.85 (7.68)	9.32 (9.47)	-0.59	
	Yes	14.15 (12.29)	15.71 (11.86)	10.90 (13.92)	11.10 (13.22)	12.96 (11.05)	-0.30	
Low disruption	No	9.13 (11.86)	8.49 (12.51)	4.94 (9.53)	3.88 (7.00)	6.61 (9.14)	-0.52	D: <i>F</i> = 11.86*** L: <i>F</i> = 41.66***
	Yes	10.35 (10.71)	10.57 (10.51)	6.46 (10.99)	8.65 (12.29)	9.01 (9.70)	-0.17	C: <i>F</i> = 7.40**
High disruption	No	13.96 (13.96)	12.77 (13.14)	8.66 (12.93)	7.70 (10.99)	10.77 (10.27)	-0.62	
	Yes	14.60 (11.57)	16.04 (11.87)	11.72 (13.59)	9.36 (11.18)	12.93 (10.44)	-0.52	

^aDifference between phase 4 and phase 1 means, divided by the grand standard deviation of phase 4 minus phase 1 difference scores.

^bFrom 2 × 2 × (4) analysis of covariance (ANCOVA): Threat Exposure [T] or Disruption Exposure [D] × Stress Debriefing [S] × Time [L: Linear, Q: Quadratic and C: Cubic components of trend across phases]; Bonferroni-adjusted error rates were used to control for the *k* = 2 dependent variables: **p* < .05; ***p* < .01; ****p* < .001.

Table 2. GHQ-12 Likert Scores across Phases by Earthquake Exposure and Debriefing Status: Means and (Standard Deviations), $N = 195$

Earthquake Exposure	Stress Debriefing	Survey Phase				Average Phase	Standardized Change Index ^a	Significant F-ratios from three-way ANCOVAs ^b
		Phase 1	Phase 2	Phase 3	Phase 4			
Low threat	No	10.58 (4.26)	10.61 (4.87)	10.04 (3.86)	9.93 (4.50)	10.29 (3.29)	-0.10	T: $F = 11.04^{**}$ [S: $F = 3.68$ ($p = .12$)]
	Yes	10.71 (5.80)	11.43 (5.25)	10.05 (3.94)	10.95 (3.75)	10.79 (3.78)	0.04	
High threat	No	12.85 (6.07)	11.97 (5.62)	11.01 (4.77)	10.27 (4.52)	11.53 (4.16)	-0.42	D: $F = 8.03^{**}$ S: $F = 5.95^*$ D x L: $F = 10.20^{**}$
	Yes	13.49 (6.80)	13.71 (6.95)	13.39 (6.44)	14.27 (7.20)	13.71 (5.49)	0.13	
Low disruption	No	10.42 (4.78)	10.65 (4.74)	10.30 (4.00)	10.05 (4.25)	10.35 (3.47)	-0.06	D: $F = 8.03^{**}$ S: $F = 5.95^*$ D x L: $F = 10.20^{**}$
	Yes	11.32 (6.25)	12.14 (6.75)	12.11 (5.70)	13.03 (7.10)	12.15 (5.49)	0.27	
High disruption	No	13.91 (5.75)	12.42 (5.96)	11.00 (4.93)	10.22 (4.86)	11.89 (4.17)	-0.59	D: $F = 8.03^{**}$ S: $F = 5.95^*$ D x L: $F = 10.20^{**}$
	Yes	14.36 (6.72)	14.12 (5.98)	12.48 (6.31)	13.32 (5.38)	13.57 (4.54)	-0.17	

^aDifference between phase 4 and phase 1 means, divided by the grand standard deviation of phase 4 minus phase 1 difference scores.
^bFrom $2 \times 2 \times (4)$ analysis of covariance (ANCOVA): Threat Exposure [T] or Disruption Exposure [D] x Stress Debriefing [S] x Time [L]; Linear, Q: Quadratic and C: Cubic components of trend across phases; Bonferroni-adjusted error rates were used to control for the $k = 2$ dependent variables: * $p < .05$; ** $p < .01$; *** $p < .001$.

($F_{(1,190)} = 8.69, p < .01$), confirming the fact that those reporting greater helper stress had higher levels of measured psychopathology.

Discussion

The results overall do not provide any evidence of a more rapid rate of recovery for those who were debriefed compared to those who were not debriefed. While the study was able to measure change in morbidity over time, there was no detectable relationship between this change and de-

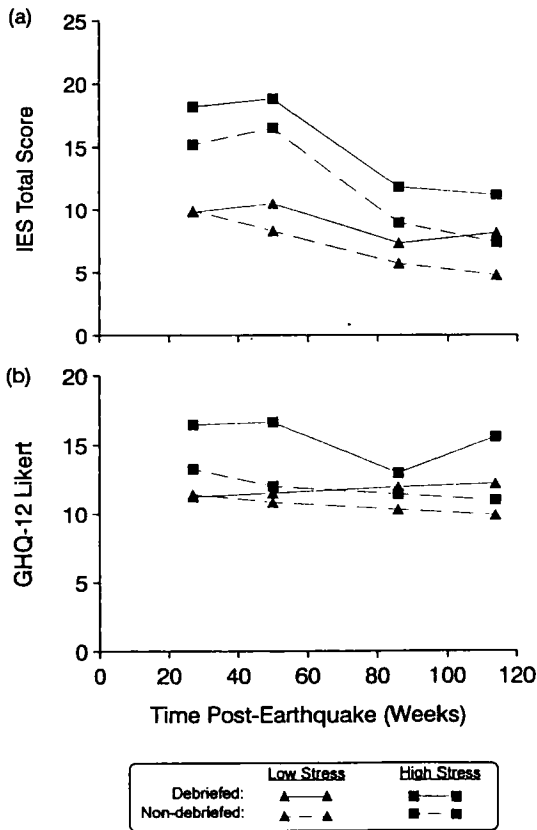


Figure 1. Changes in (a) IES total scores and (b) GHQ-12 Likert scores for debriefed and nondebriefed helpers according to self-reported helping-related stress.

briefing. One possible interpretation of the findings is that stress debriefing may be working and preventing those who were debriefed from getting worse. If this were correct, however, one would expect that those experiencing high exposure who were not debriefed would report higher levels of distress. This was not found to be the case in the present study.

Since this was a naturalistic study, random assignment of subjects to groups was not possible and there was no control over the debriefing procedures. It may be that those who were debriefed in some way self-selected for debriefing because they were at risk. However, the present data only related to morbidity from six months postdisaster and, therefore, cannot provide adequate evidence of any bias toward greater morbidity at time of debriefing.

It was assumed that all subjects in this study who reported having been debriefed did in fact receive posttrauma debriefing. However, there was no standardization of debriefing services and procedures following the earthquake. Professional organizations involved in helping may have had debriefing as an integral component of their standard procedures, whereas other individuals (e.g., volunteers and those not generally involved in rescue work) may have received debriefing that was organized on an *ad hoc* basis. In the present study, we were not able to determine objectively the quality of the debriefing provided to each subject. Thus, we do not know to what extent the stress debriefing matched the model of Mitchell (1983) in practice. Furthermore, we were not able to assess whether the debriefing provided was appropriate to the trauma and disruption experienced.

It is possible that the type of debriefing provided following a single threat experience may not be suitable following natural disasters, which involve a series of stressors in the aftermath. For example, in the present study the helpers may have personally experienced further threat and recurrent disruptions in addition to the stresses associated with their earlier helping role. Recently, Armstrong, O'Callaghan, and Marmar (1991) proposed the Multiple Stressor Debriefing Model (MSDM), which was derived from Mitchell's (1983) CISD model. MSDM incorporates an additional coping strategies component that is specifically designed for disaster relief personnel who face multiple stressors over an extended period of relief operations. This model may be more suitable for relief workers than other models.

One of the problems with stress debriefing is the difficulty in establishing trust. Participants may fear that information revealed could be used against them or that attendance at stress debriefing will stigmatize them and that they will be perceived as weak by their colleagues (Griffiths & Watts, 1992). There is also a need to ensure that debriefers are highly trained in the specific procedures of debriefing and are capable of identi-

ying participants who are at risk for psychological morbidity (Mitchell & Dyregrov, 1993). Furthermore, it is important to ensure that if debriefing is to be provided that it be made available at the optimal time for the persons concerned.

It may be that the widespread application of stress debriefing is partly a response to a perceived need to do something that is seen by the public and receivers of intervention as caring, and which is experienced by those receiving the intervention as helpful (Robinson & Mitchell, 1993). In spite of the face validity of stress debriefing, the results in this study do not provide objective evidence for the efficacy of debriefing. While this is the first published paper that prospectively examines the effects of debriefing on postdisaster psychological morbidity, other recent research following traffic accidents has also found little support for the effectiveness of debriefing (Griffiths & Watts, 1993).

Future research should include controlled evaluations of stress debriefing, using standardized intervention procedures, with assessments commencing shortly after the debriefing. We need to determine why some individuals experiencing threat and high levels of distress do not attend debriefing sessions and whether debriefing may be counterproductive for some people. Effective alternatives to a 'scattergun' approach to post-trauma intervention also need to be explored. The impact of premorbid risk factors on response to trauma is not fully understood and there is considerable scope to examine ways in which interventions could target those most at risk. Research is also required to explore the coping strategies that emergency service personnel and disaster workers use following severe trauma (Janik, 1992; McCammon, Durham, Allison, & Williamson, 1988) and their relationship to the acceptance and outcome of posttrauma interventions.

Acknowledgments

This research was undertaken with the generous support of the New South Wales Department of Health, the National Health and Medical Research Council and The University of Newcastle. The authors gratefully acknowledge the assistance of: the New South Wales State Electoral Office; Newcastle City Council; Hunter Area Health Service; New South Wales Disaster Welfare Service; State Emergency Service; Police, Ambulance and Fire Services; Air Force and Army; Shortland Electricity; the Salvation Army, Red Cross, Seventh Day Adventists, Lions and St Vincent de Paul.

References

- Armstrong, K., O'Callahan, W., & Marmar, C. R. (1991). Debriefing Red Cross disaster personnel: The Multiple Stressor Debriefing Model. *Journal of Traumatic Stress, 4*, 581-593.
- Brom, D., Kleber, R. J., & Hofman, M. C. (1993). Victims of traffic accidents: Incidence and prevention of post-traumatic stress disorder. *Journal of Clinical Psychology, 49*, 131-140.
- Carr, V. J., Lewin, T. J., Carter, G. L., & Webster, R. A. (1992). Patterns of service utilisation following the 1989 Newcastle earthquake: Findings from Phase 1 of the Quake Impact Study. *Australian Journal of Public Health, 16*, 360-369.
- Carr, V. J., Lewin, T. J., Webster, R. A., Hazell, P. L., Kenardy, J. A., & Carter, G. L. (1995). Psychosocial sequelae of the 1989 Newcastle earthquake: I. Community disaster experiences and psychological morbidity 6 months post-disaster. *Psychological Medicine, 25*, 539-556.
- Goldberg, D. P. (1972). *The detection of psychiatric illness by questionnaire*. London: Oxford University Press.
- Griffiths, J. A., & Watts, R. (1992). *The Kempsey and Grafton Bus Crashes: The aftermath*. East Lismore: Instructional Design Solutions.
- Horowitz, M. J., Wilner, N., & Alvarez, W. (1979). The Impact of Event Scale: A measure of subjective stress. *Psychosomatic Medicine, 41*, 209-218.
- Janik, J. (1992). Addressing cognitive defenses in critical incident stress. *Journal of Traumatic Stress, 5*, 497-503.
- McCammon, S., Durham, T. W., Allison, E. J., & Williamson, J. E. (1988). Emergency workers' cognitive appraisal and coping with traumatic events. *Journal of Traumatic Stress, 1*, 353-372.
- 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.
- Mitchell, J. (1983). When disaster strikes—The Critical Incident Stress Debriefing process. *Journal of Emergency and Medical Services, 8*, 36-39.
- Mitchell, J. T., & Dyregrov, A. (1993). Traumatic stress in disaster workers and emergency personnel. In J. P. Wilson & B. Raphael (Eds.), *International handbook of traumatic stress syndromes* (pp. 905-914). New York: Plenum Press.
- Raphael, B. (1986). *When disaster strikes: How individuals and communities cope with catastrophe*. New York: Basic Books.
- Robinson, R. C., & Mitchell, J. T. (1993). Evaluation of psychological debriefings. *Journal of Traumatic Stress, 6*, 367-382.
- Rynn, J. M. W. (1990). The 'passive' continental margin of eastern Australia—the myth shattered by the 1989 Newcastle earthquake: The need for more realistic earthquake risk estimates. In *Proceedings of the Australasian Institute of Mining and Metallurgy's Pacific Rim 90 Congress*.
- Silove, D. (1992). Psychotherapy and trauma. *Current Opinion in Psychiatry, 5*, 370-374.
- Waller, K. M. (Coroner). (1990). *Newcastle Earthquake Inquest Findings*, Newcastle Coroners' Court (124L/90 W1246 CM-C1), Newcastle.