

A Case for Using Biologically-Based Mental Health Intervention in Post-Earthquake China: Evaluation of Training in the Trauma Resiliency Model

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Abstract: Catastrophic events, such as the Sichuan Province earthquake in China on May 12, 2008, cause massive suffering. They put a huge strain on local response capacities because of distress of the civilian population and also death and traumatization of local responders. Mental health approaches are needed that are efficient and that help provide stabilization to both responders and civilians. The article has two goals: First, to present a rationale for the use of a biologically-based model of mental health, the Trauma Resiliency Model (TRM), in post-disaster settings and, second, to present evaluation results of TRM training, mental health training focused on the biology of threat and fear with corresponding treatment skills provided as part of the China Earthquake Relief Project (CHERP). TRM training was provided to a non-random sample of more than 350 doctors, nurses, teachers, and counselors during a 18 month period after the earthquake. TRM training was provided in six cities to expand local response capacity by providing didactic sessions and practice in TRM's trauma treatment skills. CHERP's focus on acquisition of practical treatment skills and local sustainability provided TRM skills refresher training sessions over the entire course of the project. The Training Relevance, Use, and Satisfaction Scale (TRUSS) and the Training Evaluation Form (TEF) were used throughout the months of training and supervised practice. Results indicate 97% believe that biologically-oriented TRM training will be very to moderately relevant or useful for their work with the Chinese earthquake survivors, and about 88% report they will use the skills very to moderately frequently during the two weeks following the training. Over 60% of the trainees report they will use TRM skills for their own self-care. [International Journal of Emergency Mental Health, 2009, 11(4), pp. xxx-xxx].

Key words: biologically-based, natural disaster, posttraumatic stress, mental health training, Trauma Resiliency Model (TRM), China, earthquake

On May 12, 2008, the Wenchuan earthquake occurred at 2:28 pm, registering 7.9 on the Richter Scale, striking Wenchuan, Beichuan and Quigchuan counties, located in

the northwestern part of the Sichuan Province of China. The earthquake inflicted a devastating toll on China's Sichuan Province, leaving in the aftermath vast numbers of suffering adults and children. This earthquake was the most devastating earthquake in China in the past three decades. It is estimated that there were 87,476 deaths; 374,638 people were injured; 18,176 people are still missing (Rodriguez, Vos, Below, & Guha-Sapir, 2009). It is estimated that 5 million were left homeless, 15 million were displaced, and 46 million were affected (USAID, 2008).

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The China Earthquake Relief Project (CHERP) is a 7-phase training project, co-sponsored by the World Health Organization, initiated in July 2008 and completed in January 2010 in response to the devastating effects of the earthquake in Sichuan Province. CHERP was implemented collaboratively by the Foundation for Human Enrichment (FHE) in Phases 1 & 2 and the Trauma Resource Institute (TRI; phases 1, 3-7) in the United States, and The United Foundation for Chinese Orphans in Beijing, China. The overarching goal of CHERP was to bring biologically-based trauma intervention training and treatment to local areas suffering from the earthquake in order to equip local responders with stabilization skills for treating trauma in adults and children. The first part of this article offers a rationale for the use of biologically-based training and treatment intervention following large scale disasters. Empirical support from neuroscience research is offered. When interventions developed in the West are brought to other cultures it is important to conduct thorough evaluation. The second part of the article presents the results of the CHERP training evaluation for Phases 3-7. These phases offered TRM training in Sichuan Province, China as well as TRM treatment demonstrations and supervised practice in resettlement camps, hospitals, and schools.

A Case for Biologically-based Treatment and Training

Effects of Disasters and Trauma

Disasters like the earthquake that cause massive devastation and prolonged community and economic disruption have been termed *atypically strong disasters* (Norris, 2001). Such strong disasters are frequently characterized by severe to very severe impairment of individual victims and survivors. Carr, Lewin, Webster, Kennedy, Hazell, and Carter (1997) describe two sets of psychological consequences that arise from a disaster: *threat effects* (those occurring in the immediate aftermath) and *disruption effects* (those extending weeks, months, and sometimes years beyond the disaster). Threat effects following the Sichuan Province earthquake included fear of aftershocks and another earthquake, heavy rains, collapsing roads and buildings, and mudslides. Disruption effects included constant exposure to debris, disillusionment, and anger with governmental agencies over the poor building quality in the collapsed schools, property loss, displacement, fragmentation of families, financial stress, and the array of emotional symptoms associated with each effect.

The study by Carr and colleagues highlights the fact that natural disasters are not circumscribed events with a defined endpoint. Risk factors that predicted more serious symptoms associated with posttraumatic stress disorder from the survivors of the Sichuan Earthquake included female gender, subnationality, lower educational level, lower social support, and higher initial exposure level. Not surprisingly, the more severely the area was affected by the earthquake, the more serious the symptoms (Wang et al., 2009).

Of course, some survivors' symptoms remit without treatment. In a study of flood victims in Mexico (Norris, Murphy, Baker, & Perilla, 2004), results indicated that PTSD symptoms dropped by 50% in the first 18 months after the flood without treatment. However, between 18 and 24 months post-disaster, no further decreases occurred.

When left untreated, traumatic stress reactions have been found to lead to long-term negative mental-health effects (Bower & Sivers, 1998; Brady, Killeen, Brewenton & Lucerini, 2000; Mayou, Bryant & Ehlers, 2001). Further, symptoms from a traumatic event can still be present after many years and may not spontaneously remit (Kessler, Sonnega, Bromet, Hughes and Nelson, 1995). Levels of symptoms found early in the post-disaster period have been found to be strong prognosticators of later symptomatology. Wang and colleagues (2009) investigated posttraumatic stress disorder (PTSD) and clinical and subclinical distress levels of adult survivors of Beichuan County Town (a city almost completely destroyed; 60% of the population died). Three months after the Sichuan Earthquake 37.8% were found to be suffering from PTSD, 39% suffered from partial PTSD, and 80.4% had at least one positive symptom of PTSD. The investigators further noted that the two most important predictors of PTSD severity, after controlling for all other predictors, were the survivor's personal perception of the disaster, which resulted in intense initial fear, and exposure to extreme devastation, including witnessing death of friends, family and loved ones and the destruction and loss of property (Wang et al., 2009).

There is growing evidence that traumatic stress alters the physiological balance in the nervous system. For example, results from a study by van der Kolk and Fisler (1993) found that "The loss of neuromodulation that is at the core of PTSD leads to a loss of affect regulation." A later study by Cohen and colleagues (1997) confirmed the physiologic aspects of the PTSD syndrome reported in the Van der Kolk and Fisler study (1995).

Researchers are beginning to use sophisticated measurements to determine the impact of traumatic events on the nervous system. In one study, investigators conducted “resting state” MRIs on a cohort of survivors of the Sichuan earthquake and found changes in brain function. The results revealed that individuals who experienced severe emotional trauma showed hyperactivity in areas of the brain that control emotions (Lui et al., 2009). As Porges (2004) points out: “When we are frightened, we are dependent upon the neural circuits that evolved to provide adaptive defensive behaviors for more primitive vertebrates. These neural circuits provide physiological mechanisms that reflexively organize mobilization or immobilization behaviors before we are consciously aware of what is happening.” Porges emphasizes the importance of intervening in ways that exercise the neural regulation of brain stem structures. TRM’s intervention skills, which were taught in the CHERP training, are targeted at stabilization through nervous system regulation. Early intervention with disaster survivors that targets nervous system stabilization can help reduce suffering immediately following an event as well as the likelihood of future symptoms (Leitch, 2007, 2009).

The Body and Trauma

There is substantial evidence that, in addition to psychological trauma, survivors of trauma also suffer significant and often debilitating physical or somatic symptoms resulting from their experience. Thus, traumatic stress causes both “mental health” problems and a variety of serious somatic symptoms, that can include loss of bowel and bladder control (Solomon, Laor & McFarlane, 1996); shaking, trembling, and increased heart rate (Bernat, Ronfeldt & Calhoun, 1998; Shalev et al., 1998); myofascial pain (Scaer, 2006); diabetes (Golden, Williams & Ford, 2004); heart disease (Musselman & Nemeroff, 2000), and a continuum of stress-related diseases (Green, Grace & Glessner, 1985; Scaer, 2005).

A literature review of the health impact in the aftermath of earthquakes in China between 1906 and 2007 highlighted many health-related repercussions. For example, more patients were admitted with acute-on-chronic respiratory failure and acute exacerbation of bronchial asthma following the Great Hanshin Earthquake in 1995. One study investigated students who were fetuses during and after the Tangshen earthquake of 1976 and observed lower cognitive function among those whose mothers carried them during the earthquake, especially those in utero in the second and third tri-

mesters. The survivors of the Hebei earthquake in 1996 were found to suffer significantly more depression, anxiety, and somatization (Chan, Gao, & Griffiths, 2009).

Knowledge of biological responses to fear and helplessness has been incorporated into trauma intervention strategies by such interventions as Eye Movement Desensitization and Reprocessing (EMDR), Cognitive Behavioral Therapies (CBT), and exposure therapies. However, the trauma field is now seeing the arrival of body-focused interventions such as the one used in this project, Trauma Resiliency Model (TRM), in which the *primary* emphasis is on traumatic symptoms as patterns of dysregulation in the nervous system and only secondarily on cognitions and emotions. Research using neuroimaging (Mujica-Parodi, Greenberg, & Kilpatrick, 2004) finds, even under relatively mild emotional challenge, that negative emotion impairs many components of cognitive functioning. This can make traditional talk therapies less effective, particularly after catastrophic trauma when survivors are highly distressed for weeks and even months.

Somatic models, such as TRM, put primacy on brain-stem survival responses and dysregulation in the autonomic nervous system (ANS) by careful tracking of the sensations associated with ANS functioning. Through direct observation of such elements as a client’s muscle tension patterns, breathing, small movements (as well as client reports of such self-observed sensations as changes in temperature), patterns of internal constriction and relaxation, areas of pain and less pain, a sensory dialogue is set up that shifts between internal places of neutrality or comfort in the body and places where distress, less comfort, or disorganization is noticed. Panksepp’s (1998) work in affective neuroscience contends that emotional processes arise from events at the neural level. His work reinforces the essential importance of interventions that link the body and the mind and that draw upon our biological programming as human animals.

Researchers are increasingly using physiological monitoring to examine how the autonomic nervous system responds to traumatic events (Bryant, Harvey, Guthrie, & Moulds, 2000; Griffin, Resick, & Mechanic, 1997; Orr, Metzger, Miller, & Kaloupek, 2004). The study by Griffin and colleagues found that when highly dissociative rape victims were verbally describing the rapes, there was a significant suppression of autonomic reactivity. In a study of assault victims, Bryant and colleagues found that elevated activation of the sympathetic nervous system was associated with later development of PTSD. These studies highlight the importance

of trauma-intervention approaches that attend to the cascade of physiological, not just psychological, responses that can follow traumatic events. They help bring attention to the need for trauma interventions that go beyond the dichotomy of mind and body, particularly interventions that specifically target the way posttraumatic responses have been stored or patterned in the body and that restore self-regulatory functioning. This is the focus of TRM treatment and the training in TRM skills provided in China.

Patterns of dysregulation increase the risk of physical and psychological illnesses such as immune-system disorders, depression, anxiety, and cognitive impairment (Gunnar & Vazquez, 2001; McEwen, 1998; Sapolsky, 1994). Studies such as these highlight the importance of using interventions that target regulation of the ANS. Somatic interventions specifically target the way posttraumatic responses have been stored or patterned in the body, in addition to working with cognitions and emotions (Levine, 1997; Ogden & Minton, 2000; Rothschild, 2000).

In China, as in many other parts of the world, the primary mode of mental health treatment has been talk therapy. Zhong and colleagues (2007) reported that in 2007, leading therapists within China convened the First Chinese-German Congress on Psychotherapy and shared their perspectives of psychotherapeutic approaches being implemented within Mainland China, which included presentations on behavioral therapy, systemic family therapy, mindfulness approaches, and psychoanalysis. Many workshops at the symposium discussed how Chinese therapists are combining traditional concepts with modern western psychotherapeutic approaches. For example, principles of Taoism have been combined with cognitive behavioral therapy (Zhong et al., 2007). In addition, Higgins reported that cognitive psychology and counseling psychology have become popular therapies within China (Higgins, 2002). As the field of psychology expands within China, talk therapies seem to be the most popular interventions. Biologically-based intervention was new to Mainland China.

Biological Models Are Culture-Neutral

TRM's focus on the nervous system helps to make the training and treatment culture-neutral. Every human nervous system is biologically programmed in the same way when a perceived threat is encountered. While the *reason* given for symptoms may differ across cultures, the symptoms themselves are similar. In their discussion of the need for rapid

mental health assessments after disasters in non-industrialized countries, Silove and Bryant (2006) point out that psychological trauma is a Western concept. They list a number of issues that must be considered when Westerners attempt to provide mental-health services to survivors of disasters in non-industrialized countries (p. 576). Their points also have relevance when working in cultures that are not insight-oriented. Issues highlighted include:

- Meaning ascribed to experiences and “symptoms” may differ across cultures.
- Many cultures do not have equivalent terms for PTSD symptom domains.
- Disaster-affected communities may not prioritize psychological distress.
- A PTSD diagnosis may encourage a culture of “victimhood” and passivity.
- Traumatic stress symptoms may be normative coping mechanisms and may not lead to impairment.
- Emphasis on PTSD may encourage an individual and clinical focus in cultures that are community focused.
- Evidence is limited that Western treatments for PTSD are effective across cultures.
- Imported Western techniques may undermine traditional healing mechanisms.
- Attention to social, material, economic, and human rights issues may be more critical in facilitating natural recovery at a group level.
- An emphasis on PTSD may obscure other pressing mental and physical health needs.

Unfortunately, until recently, the tendency of Western countries and practitioners to approach mental health in a way that splits the mind and the body has been firmly entrenched and makes many talk-based, Western trauma interventions inappropriate in other cultures and non-industrialized countries, particularly in the immediate aftermath of a large scale traumatic event. Traditional mental health interventions approach trauma from the “top down,” focusing on talk, insight, and emotions. These top-down approaches are likely to have limited relevance in diverse cultures in which group and community have primacy over the individual and in which insight-oriented interventions are not syntonetic with cultural or political norms. “Bottom-up” approaches are less culture-specific because of their fo-

cus on biologically programmed survival processes that are common to all humans rather than on individually-oriented insight and emotional expression.

At the onset of CHERP, TRM's biologically-based mental health intervention was a new concept in Sichuan Province; there was much curiosity about a model that focused primarily on biology rather than psychology. Both the duration and intensity of trauma symptoms can often be shortened for survivors if appropriate mental health treatment is provided after a traumatic event (Harvey, Bryant, & Tarrier, 2003) and, as stated earlier, in the months and even years after a large-scale disaster, survivors can be in high states of arousal or dysregulation. MRIs have shown parts of the neo-cortex to be shut down in states of high activation which can make more cognitively-based talk therapies less useful and make nervous system stabilization an important need.

Biological Models Are Efficient

Efficiency is an important consideration in treatment (Greenwald, 2005). Interventions that can create at least some positive change in low-dosages (1-3 sessions), such as TRM, are more cost-effective and deliver relief to survivors more quickly, and can offer help before the survivor is "lost" to treatment. There is debate as to whether mental health interventions should be provided early in a disaster's aftermath because safety and physical needs are primary and because many survivors' symptoms may remit without intervention as time goes by. It may depend on what type of treatment is offered, those with a primary focus on cognitive/emotional or those whose primary focus is biological. Biologically-focused treatment targets nervous system stabilization. It is likely that survivors who are better regulated will be better able to advocate for themselves in the post-disaster period.

Two outcome studies of TRM (Leitch, 2007; Leitch, 2009) indicate positive gains for disaster survivors in 1-2 sessions of treatment provided from 1 month (after the Thailand tsunami) to 3-8 months (after Hurricanes Katrina & Rita). It is possible that early intervention may accelerate natural recovery (Foa, Zoellner, & Feeny, 2006) and equip survivors to better advocate for themselves. TRM teaches skills that can be used independently outside of treatment making it useful after disasters when people are often displaced and moving from place to place to find housing and jobs. Teaching TRM skills to survivors also promotes independence, affect management, and hope. This is likely to decrease dependency on mental health staff.

EVALUATION OF TRM TRAINING – METHODS

TRM Training Participants

The 367 participants in the TRM training were all local inhabitants of 6 cities in Sichuan Province, China. As such, they had all been personally exposed to the earthquake and its aftermath. Trainees came to the TRM trainings as a result of a Planning Phase of CHERP in July 2008 in which meetings were held with local health departments, hospitals, school administrators, and first responder groups in the major areas of earthquake impact. These sources of collaboration and referral were: 1) oriented to the goals of CHERP (to provide TRM training and supervised treatment), 2) told about the basics of its biological focus, and 3) asked to help with such logistics as providing training space and release time for their staff, providing access to resettlement camps, and helping with local transportation. There was no cost to any trainee for attending the training.

Approximately 60% of the trainees were medical personnel; the majority of training took place in hospitals that were not damaged, in hospital tents, or medical facilities in resettlement camps. The other 40% of trainees were counselors, teachers, and first responders. The trainings for non-medical participants were held at their work site or in whatever space close by was the least damaged. There were no major differences by gender of the trainees and most were between ages 25-50.

Procedure

Format

The original intention was to offer a single format for training: a 3-day classroom experience that included skills practice followed by 1-2 days of supervised fieldwork, providing TRM treatment to survivors. However, in areas of Sichuan Province up to half of all medical providers as well as many other caregivers and responders had died. Hospitals and schools were under-staffed and it was challenging to release staff for 3 days of training. Therefore, we offered the training in several formats in an effort to meet the needs of the participating organizations.

The shorter trainings still had practice built in, and case consultation over the 18 months of the project, but only the first three (of eight) TRM skills were taught. In addition, in one case, upon arrival at a site to provide a 1-day training, it was clear that the trainees were in such high states of trauma

matic activation and distress that their capacity to learn new skills was impaired. In this case, the training agenda was suspended in behalf of providing TRM treatment.

Across the five TRM training phases from September 2009 to January 2010, 152 (41.8%) of the survey respondents participated in briefer training which lasted from a half to a full day, 127 (34.9%) participated in training that lasted from 2-3 days, had a more comprehensive skills focus, and included 1-2 days of work in the resettlement camps or hospitals with survivors. Thirty trainees (8.2%) said they attended both types of training formats, and 55 (15.1%) did not indicate which type of session they participated in.

Training Structure

TRM training uses a combination of didactic presentations and experiential learning. It is practical and skills-based; during every classroom session there are small group practices in which each trainee has an opportunity to see demonstrations of the treatment skills and to be a client as well as a practitioner. In a disaster setting, the small group practices have three goals: to help stabilize trainees who may be dysregulated from their own traumatic experience in the disaster, to make the didactic material come to life, and to gain greater competency with the skills.

Evaluations were given at the end of the training. The answers to open-ended questions were translated into English by project translators. The translators were psychology graduate students. All were Chinese; many were familiar with the Sichwanese dialect as well as Mandarin Chinese.

Use of Translators

All training and fieldwork sessions were conducted through translators, most were ages 23-25. All powerpoint slides, manuals, and written materials were in Mandarin Chinese and were reviewed by at least three Chinese project staff for consistency and accuracy. Translators were carefully trained before and throughout the project in the biological framework being used and the specialized terminology. Their interest in psychology made them eager and skillful learners. They were an invaluable help to the project quality.

Evaluation Instruments

There were two instruments used during CHERP to evaluate TRM training: the Training Relevance, Use, and Satisfac-

tion Scale (TRUSS; Leitch, 2007) and the Training Evaluation Form (TEF; Miller-Karas & Leitch, 2007). TRUSS is a 9-item instrument that examines three domains: 1) relevance of the training material to the trainee, 2) likelihood of use of the skills (including for self-care), and 3) satisfaction with the skills and training. Items 1-6 are Likert scales and items 7-9 are open-ended questions. The Training Evaluation Form (TEF) consists of 14 open-ended questions about the specifics of the training that were most and least helpful. TEF was an important way for the training teams to gain more detailed information about ways the training format and/or content could be refined and better adapted for use in China. Response to TEF questions were also useful in checking the face validity of TRUSS. Responses on TEF are in narrative form.

Both instruments were developed in-house. It is difficult to find an evaluation instrument that is brief, targeted at cultural concerns, and addresses the questions of interest. TRUSS and TEF have been used by Trauma Resource Institute (TRI) in trainings in several diverse cultures as well as used widely in the United States. They are reviewed by key individuals in each culture for suitability of language and item phrasing as well as to insure that the concepts will be comprehensible to and relevant for the intended participants. Both instruments allow for narrative responses in order to capture any information that would otherwise be lost.

Training Protocol

The Trauma Resiliency Model (TRM) is a manualized training program that provides didactic information on the biology of threat and fear as well as teaching and practicing 8 core treatment skills. TRM was inspired by the work of Peter A. Levine (1997) and Jane Ayres (2005). TRM includes Levine's skills as well as other stabilization skills and techniques from sensory integration.

TRM's specific interventions primarily are targeted at self regulation (i.e., restoring equilibrium to the nervous system) and secondarily on working with associated emotions and cognitions. TRM offers eight concrete skills to reduce dysregulation and increase the capacity for self-management. The skills help the client understand the biological elements of trauma and healing by bringing awareness to the bodily sensations associated with trauma and most importantly, sensations associated with resiliency and wellbeing.

The practitioner informs the client about the autonomic nervous system through education and by *tracking*, the first TRM skill. *Tracking* is achieved through observation, self-report by the client, and attunement between the practitioner and the client. As the nervous system is tracked, the client learns that there are not only dysregulated states (i.e. constricted muscles, rapid breathing and heart rate) within the body but also sensations of comfort (i.e. expanded breathing, slower heart rate, muscle relaxation).

The second skill, *grounding*, is introduced by inviting the client to bring awareness to how the body is physically supported in the present moment. The sensory attention to the here and now stimulates an observable and sensed parasympathetic response in the nervous system.

The third skill, *resourcing*, helps the client become more aware of nervous system regulation by identifying internal and external resources that contribute to wellbeing. As the resources are identified, the client is invited to notice the sensations associated with the resource.

As traumatic states can be difficult to override, *resource intensification*, the fourth skill, is suggested to encourage the client to give more detail to the resource so that it can be sensed more fully.

When uncomfortable sensations are noticed in the body, the skills of *pendulation* and *titration* assist the client to help rebalance the nervous system. *Pendulation* is the shifting back and forth between organization and disorganization within the nervous system. Organization refers to neutral, less distressing, or comfortable sensations within the body. Disorganization refers to traumatic activation, which can be areas of constriction within the body that include pain, muscle tension, and pressure. *Titration* refers to the graduated sensory exposure to the traumatic activation within the body. Helping the client sense smaller pieces of the traumatic activation helps reduce or even eliminate the traumatic activation without overwhelming the body and the mind.

Shift and stay is a self-help skill. During the course of daily living, uncomfortable sensations can emerge or can be triggered that can lead the client to be overwhelmed. The client learns to shift attention from the distressing sensations to more comforting sensations associated with *grounding* and *resourcing* and to stay with the comforting sensations until regulation occurs.

The final skill is *completion of defensive responses*. When a person perceives that he/she is not able to fight or get away in response to a traumatic event, the person may go into collapse and freeze; the energy meant for flight and fight becomes “stuck” within the body due to the flood of neurochemicals that were meant to aid in escape (Scaer, 2005). The freeze state is “a precarious state of abnormally dysregulated and fluctuating autonomic nervous system activity” (Scaer, R., 2005). TRM skills are designed to help the client release the blocked energy by becoming aware of movement patterns and sensations that would have occurred if the client could have fought or fled. As release sensations (trembling, temperature changes, tingling, burping) are experienced and sensed, the nervous system is reset and equilibrium returns (Levine, 1997).

The TRM treatment skills used in the CHERP training involved gradually (and in increasing gradations of intensity) eliciting awareness of body sensations that are linked to the trauma, balancing each increment of traumatic arousal with a corresponding resource sensation. The individual moves between the sympathetic (arousal) and parasympathetic (calming) functions of the autonomic nervous system in a way that minimizes the risk of flooding and re-traumatization. This mirrors and restores the normal rhythm between the sympathetic–parasympathetic branches of the autonomic nervous system. Practice sessions during the training allowed trainees to both offer and receive TRM treatment, deepening their understanding of the eight skills and also promoting stabilization in their own nervous systems.

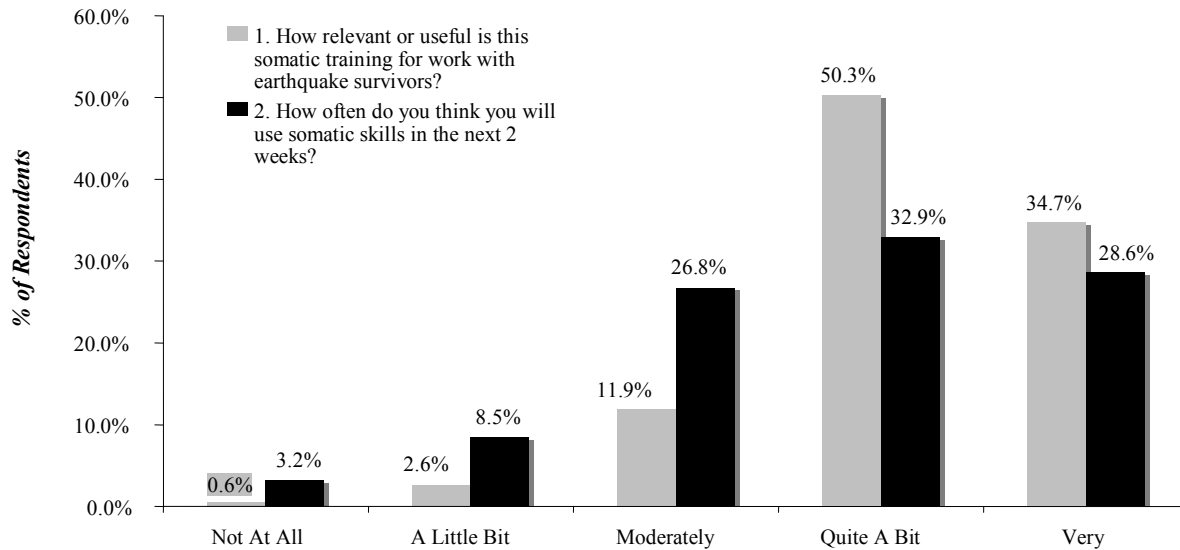
TRM TRAINING EVALUATION RESULTS - TRUSS

Over 98% of the respondents to these items reported being *moderately to very satisfied* with TRM training, as well as with TRM skills as a tool for self-care and for use with survivors. Trainees’ responses to the three domains being evaluated using TRUSS are presented in Tables 1 and 2 below. Table 1 summarizes the pattern of responses on relevance and anticipated use of the TRM skills taught and practiced.

As seen in Table 1, 85% of the respondents believed that the somatic training would be *quite a bit to very* relevant or useful for their work with earthquake survivors, and about 88.3% said they thought they would use the skills *moder-*

Table 1.
 Training Relevance, Use, and Satisfaction Scale (TRUSS) Findings
 Relevance and Use of TRM Skills.

Trainee Perceptions of Treatment Relevance and Use of Skills (n=342 ~ 352)



ately to very frequently during the two weeks following the training. Only 11 of the 342 (3.2%) respondents reported that they would not use the somatic skills in the two weeks following the training.

When asked to describe some specific ways they thought the training would help in their work with earthquake survivors, the majority of trainees (79.9%) said it would help them relieve or reduce symptoms, such as emotional issues, trauma, stress, lack of confidence, and pain/discomfort. Over half of the respondents (56.9%) said the training would help them apply specific TRM skills. Other factors mentioned by less than 6% of the respondents included discharging energy, helping clients balance their nervous systems, working with children, and helping survivors build a new home or life. In addition, all but seven of the 347 respondents reported that TRM training would be helpful in their work with others than earthquake survivors.

Use of TRM Skills for Self-care

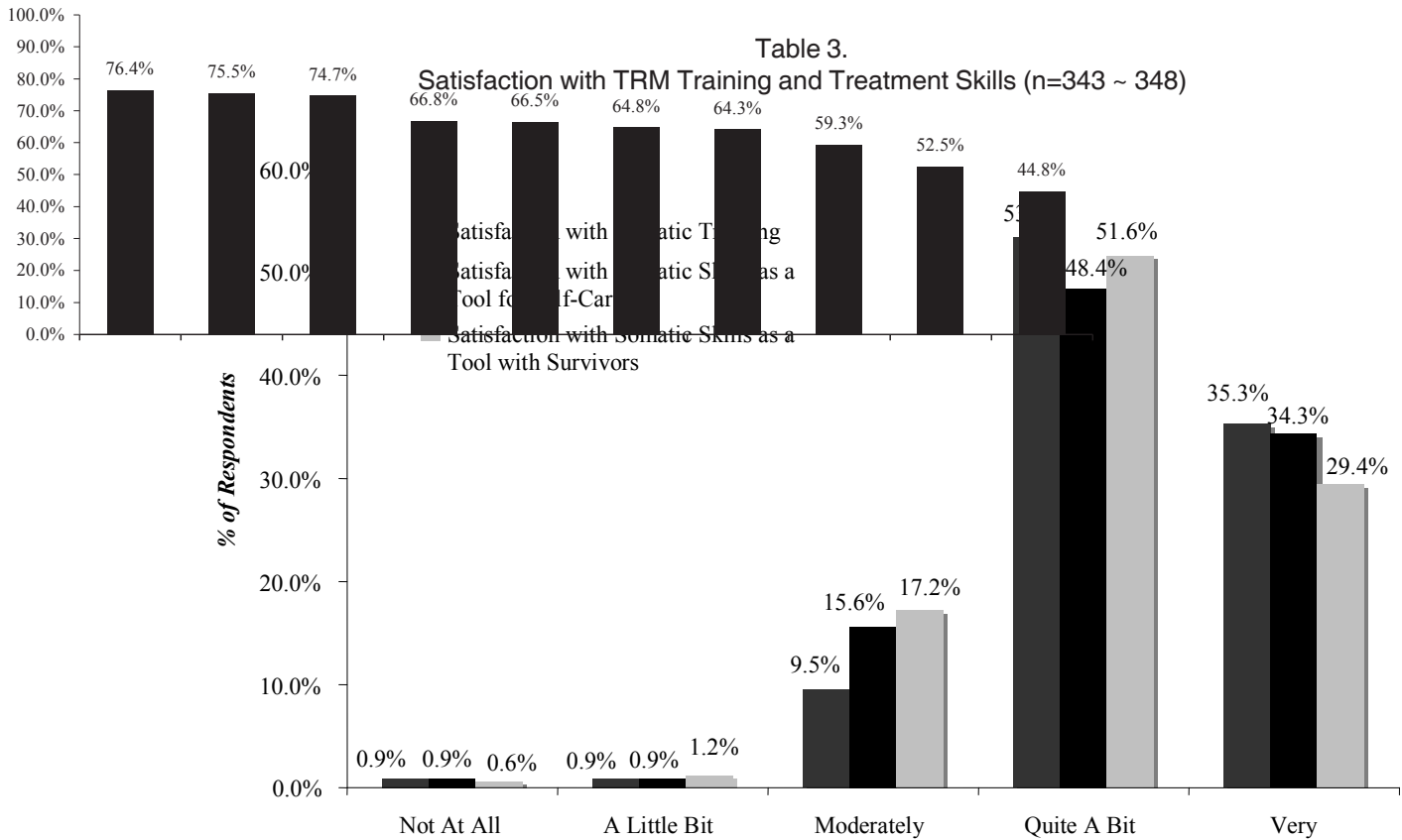
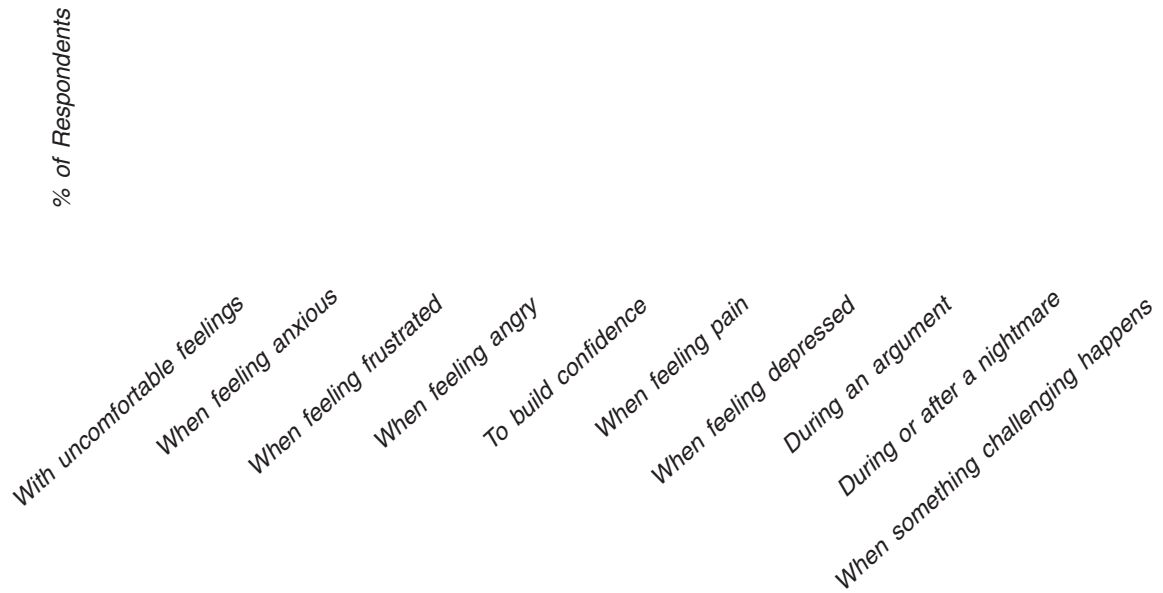
In disaster areas caregivers and first responders are at high risk of secondary traumatization and burnout, in addition to suffering from symptoms that are associated with

their own personal experience of the disaster. TRM skills are also taught to be used as tools for responder self-care. More than 60% of the respondents reported they would be able to use the skills they learned from the training for their own self-care when dealing with uncomfortable feelings, feeling anxious, feeling frustrated, feeling angry, building confidence, feeling pain, and/or when feeling depressed. Between 40 and 60% of the respondents thought they would use the skills during an argument, during or after a nightmare, and/or when something challenging happens. Additional situations listed by the respondents included: when experiencing depression; when having body discomfort; when tired; when dealing with relationship problems; when feeling unhappy; when it is difficult to fall asleep; to regulate the nervous system; and after an accident. Table 2 summarizes the situations in which trainees report they would use the skills for their own self-care.

Training Evaluation Form (TEF)

TEF asks for specific details about what worked best and what was less helpful in the training. Table 3 below summarizes TEF responses.

Table 2.
When Trainees Would Use TRM Skills for Their Own Self-Care (n=364)



When asked if the trainee's goals for the training were met, 82 % responded *yes*. The remaining 18% said their goals were not met. The main reason given by the 18% who said their goals were not met was insufficient time. Of the 18%, 90% had attended the half to full day training. Time was a big challenge in conducting the training as not all trainees could attend a 3-day training plus fieldwork. As a skills-based training, nothing is more important than practice. The decreased time often meant that fewer opportunities to practice were available. In the shorter trainings only the first three stabilization skills were taught, rather than the full eight skills. These three skills are extremely useful, but trainees in the briefer trainings were often hungry for more. It may be more realistic in future disaster trainings to offer the 3 days of training and the fieldwork across several weeks rather than in a condensed several days.

Aspects of the training that were found most helpful were, not surprisingly, the TRM skills and the opportunity to practice them. Of the 179 responses to this item, the majority (85.5%; $n = 153$) found the various skills they learned from the training most helpful. Practicing the skills, learning ways to help themselves, and theory are perceived as the most helpful by similar numbers of people (14.5%, 14.0%, and 12.3% respectively).

Trainees were asked what topics or aspects of the training needed more time spent.

Of the 146 respondents to this item, two thirds (66.4%; $n = 97$) stated they needed more time in actual practice, demonstration, case studies, games, and small group activities. When working in a disaster area where the level of suffering is so extreme, there is a keen need for practical skills. TRM training provides didactic information about the neurobiology of trauma because this information helps trainees make intervention decisions at various choice-points in the session. Finding the right balance between theory and practice can be a challenge when trainees are sometimes desperate for skills that can make a difference in alleviating suffering.

And, as mentioned earlier, the tension between what is optimal training time and what is realistic was on-going.

Extremely high ratings were given to all aspects of the training, with 100% of the respondents rating the quality of TRM instruction as *above average* to *excellent*. Quality of teaching materials, quality of course organization, and quality of teaching methods were also rated by 100% of respondents as *above average* to *excellent*. This was particularly

gratifying, given that all the teaching and treatment demonstrations were done through translators. TRI's materials have been tested and revised many times in order to be both culturally-sensitive and relevant in disaster settings in several cultures.

Implications and Conclusions

There are many lessons that CHERP's TRM training provided, as it was implemented in Sichuan Province, that can be useful for other teams providing post-disaster training. They are briefly summarized below.

Be prepared to offer training formats of different lengths. It is often not realistic for trainees to be released from work for 3 consecutive days. Many workers were killed and injured in the earthquake. Thus, each person's workplace responsibilities were expanded and some settings had difficulty releasing people even for 2 or 3 days. Offering training days spread out across 2-3 weeks rather than back-to-back might have allowed more people to attend longer trainings. Restructuring the training format so that training days are spread out can relieve work pressure on trainees. This would also permit trainees to practice between week one and week two and bring their questions to subsequent training days.

It is very difficult to control who administrators include in trainings. In later phases of CHERP, where the intent was to deepen the training of previous trainees, new participants would attend (often in large numbers). This required splitting the U.S. team so we could provide an introductory training as well as an advanced training. In addition, the number of trainees was often much higher than expected, which meant that each trainer had a supervision group larger than was optimal. Training teams need to be flexible and adaptable as expected plans for trainings may change as a result of the ever-changing needs of the trainees. Fortunately, the evaluations indicate high levels of participant satisfaction in spite of these challenges.

It can be an ethical dilemma to have new trainees work with survivors who are in great distress, even when under supervision of an experienced team member. It is important to select trainees with the strongest skills to work with highly distressed survivors. It is also important to offer trainees the option of observing rather than providing treatment. It was sometimes necessary for a member of the training team to work conjointly with the trainee and survivor or to conduct the treatment as a demonstration rather than only providing

coaching to the trainee. It is essential to develop a policy for how the team uses trainees in work with survivors in states of high arousal. The ethics of having trainees with, at most, 3 days of training treat survivors with complex trauma must be taken into careful consideration so that the learning needs of trainees do not override the well-being of survivors. Organizations requesting treatment for survivors (e.g., Displaced Persons Camps, hospitals, schools) must receive an orientation from the Project Director about the types of “clients” who are not appropriate for treatment by trainees in the field. This would include individuals with severe mental illness.

Biologically-based approaches, such as TRM, have much to offer disaster responders and survivors because they approach survivors holistically rather than in a dichotomized way that splits the mind and body. “Bottom-up” interventions are not as culture bound, working as they do with the neurobiological basis of traumatic response that is evidenced in an array of observable and reportable somatic states. Working at the biological level minimizes issues, such as the differential meaning that symptoms may have across cultures or a cultures’ lack of focus on individual psychological experiences. In addition, using the skills for responder self-care can contribute to stabilization of the responders and increase their own nervous system resiliency.

TRM skills target the patterns of nervous system dysregulation that generate significant risk for the development and chronicity of symptoms, whether psychological, cognitive, physical, or behavioral. A focus on the biology of trauma is depathologizing for many survivors, as they begin to understand that their body is simply reacting as it has been neurologically programmed to do. The biological focus recognizes that what manifests as a physical symptom (e.g., a stomachache) may be a traumatic response that can be alleviated by working with sensory stabilization skills.

A major limitation in the study was the limited funding available for research and evaluation. The project was primarily an effort to provide responders with tangible skills for treating mental health trauma. The parameters of the project’s research and evaluation component were shaped and limited by this focus. Ideally, a parallel examination of treatment effectiveness would have been done which used random selection of patients, a comparison group, and longitudinal follow-up to test for stability of treatment effects. Assessments were done immediately pre and post TRM treatment on the 114 survivors who received single-session treatment as demonstration cases or during supervised fieldwork over

the course of the project. And follow-up by telephone was conducted several months later by project translators. TRM treatment results were encouraging but, in the absence of longer-term follow-up, are only suggestive of the positive benefits of treatment.

Although research is emerging on the role of the autonomic nervous system in shaping trauma symptoms, future research is needed that tests the neuroscience foundation upon which TRM skills rest. Physiological monitoring of survivors receiving TRM treatment and at several points in time following treatment would strengthen the emerging base of evidence about nervous system response to biologically-based intervention and the stability of treatment.

Biologically-based models, such as TRM, are well-suited for promoting the stabilization of survivors of large scale disasters and providing self-care skills to responders. TRI will be providing TRM treatment and training in Haiti in the wake of the earthquake of January 12, 2010. The project design is similar to CHERP’s: to send teams in to provide training to local organizations and offer supervised fieldwork that provides TRM treatment to adults and children. Training local responders expands the capacity of local people to treat their own. Pairs of trainers and trainees in Haiti will also offer 1-2 hour workshops to large community groups to help promote understanding of the biology of trauma and teach the first three stabilization skills that can be used independently. These community presentations will, hopefully, reduce the shame that often accompanies traumatic stress symptoms. A focus on biology lessens the sense of pathology.

What is needed in disaster treatment are culturally appropriate intervention models that give efficient and effective treatment not just to the body or to the mind but to the two together, as inseparable parts of the whole survivor. This is important for those in the community who are both responders and survivors of the disaster.

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