Colorado Office of Emergency Preparedness and Response: Resilience Report

Michael Wm. Marks, Ph.D., ABPP
Executive Director
One Tree Learning Institute
docm@onetreelearning.org

Introduction

In January 2013, a collaborative effort between the Colorado Department of Public Health Office of Emergency Preparedness and Response, Centura Health (Colo.) Prehospital Emergency Services, and Philip Callahan, PhD, and Michael Marks, PhD, led to the development and delivery of two consecutive one-day classes at an Aurora, Colo., presentation room. These classes were called First Response Resiliency.

This Colorado First Response Resiliency program emerged from a program originating from the Southern Arizona VA Health Care System and the University of Arizona to address the reintegration of veterans into an academic setting and as a short-encounter program for first responders. The dominant theme in the veteran's curriculum is application of resilience strategies and social support. Resilience and the development of an adequate support system can be protective factors in preventing PTSD and suicide.[2] Resilience can be taught effectively in a classroom setting and the development of resilience focused attitudes can further lead to an increase in retention of participants. Providing a cohort-based social framework provides an integrative support system that reduces hyperarousal (a chronic state of fight or flight) and makes use of "veteranism," or comradery, and trust.[3,4,] This approach does not pathologize readjustment, but instead focuses on resilience and education to practice positive adaptation in a nonclinical setting.[5]

The semester-based veterans programs were redesigned as a short-encounter training for first responders in conjunction with the University of Arizona Police Department (UAPD). A twelve skill resilience program, again emphasizing social support, emerged as a one or two-day training or as a modular twelve-session training using a largely problem-based learning (PBL) delivery.

An outgrowth of the success of these programs was to research and eventually develop a "train-the-trainer" program in conjunction with the Colorado Public Health Office of Emergency Preparedness and Response (OEPR). As with the earlier resilience programs, the focus was to apply resilience practices that effectively manage stress and foster personal and professional development through intentionally practicing a resilience skill set while establishing a social framework to foster resiliency. Specific focus was on research-based resilience methods, assessment, and the physical, psychological, and social systems of resilience. The eventual goal of the program was to provide short encounter training to educate peer support personnel who could then disseminate to staff within the departments.

Hence three questions emerged. First, was it possible to provide one and two-day resilience trainings and observe resilience score gains in a diverse first responder population. Second,

would participants pursue resilience activities following the one and two-day awareness sessions. Three, would participants coalesce into trainer groups to provide subsequent resilience trainings to other responders.

Methods:

The design mandated delivery of twelve resilience skills as a one or two-day workshop or as single resilience skill modules delivered over some period of time. This OEPR design stipulation was intended to provide the highest degree of flexibility for integrating the resilience skills into a variety of settings. Each resilience skill is therefore modular so that it can be presented by itself or in conjunction with other skills as time permits. A module can be introduced and explored in the context of personal awareness in well under one hour and therefore adaptable to limited times such as regularly scheduled meetings. The resilience skills begin with simple behaviors and transition to more complex cognitive and social constructs. The resilience skills are identified as goal setting, fitness, relaxation, perspective, belief building, thriving, and social support. Each skill is delivered in the following eight-step format.

1. Review Prior Skills (0-5 minutes) encourages participants to identify the previously discussed skills and provide a very brief definition of each skill. The process of verbalizing key points of the prior skills improves retention, identifies functionally useful information, and situates a skill within the overall context of the skill-set. [6.7]
2. Introduction of the Skill (10-12minutes) is the content component of the skill presented as relevancy or "Why" the skill is important to resilience. The skill is then processed as a procedure or algorithm describing "How" the skill can be implemented. A case study is used to situate the skill and provide an example of how the case is translated into the skill algorithm. The method promotes relevant experiential learning.[8] The 10-12minutes is intended to limit lecture time.
3. Recollecting a Prior Use of the Skill (5-10 minutes) recognizes that when knowledge is too tightly bound to context, transfer to different contexts is reduced. [9,10,11] Therefore, to make the skills more useful, they are explored in multiple contexts. This includes first recollecting or reflecting upon a past personal experience where the skill, or something close to it, was used with some degree of success. The intent is to build upon prior learning and success.
Following this recollection exercise, the skill is applied to another person through a group problem-solving exercise. Finally, the skill is applied to a current personal situation and to a community of individuals. Focusing on a past success using the skill, current applications, as well as the vicarious experience of seeing others' experiences using the skill, enhances the possibilities of improving upon one's self-efficacy. [12,13] Writing information related to the skill is encouraged. Expressive writing, particularly when written in third person, has demonstrated psychological and physical health benefits. [14,15]
4. Applying the Skill as a Group (5-10 minutes) explores the application of the skill to another person using group problem-based learning (PBL). Up to this point, participants have examined the resilience skill individually, but are now asked to work with one or more people. PBL as a group exercise recognizes the role of the individual and the support that is provided by others in the group. [16] Consequentially, an individual learns how to function in a group attempting to solve relevant life issues.
5. Review the Skill (5 minutes) encourages multiple group reviews of results of the prior exercises, clarification, while also promoting self-efficacy. The review provides opportunity to

reflect upon the process of personal and group development and recognize the importance of mindful and credible communication and feedback to diminish stressful situations. [12,13]
6. Practice the Skill recognizes the need for practicing the skill outside of the "classroom," that is, consider giving oneself some separation time between the prior skill exercises and this exercise. Whereas recollecting a past application of the skill is intended to be backward-looking or reflective of a past successful experience, this exercise explores the skill in the context of a current personal situation. If desired, a participant could explore this skill in a problem-based learning (PBL) setting benefitting from the support and insight provided by others in the group.[16]
7. Apply the Skill to a Community also recognizes the need for practicing the skill outside of the "classroom." The intent of this exercise is to begin to consider the application of the skill to others in the sense of a community. Community is considered variable in that the participant decides what constitutes community, e.g., someone in family, peer group, work group. Again, support is potentially provided by others in the study group to ensure success in completing the skill. This exercise is intended to stimulate further thought on the usefulness of the skill to others. The more "freeform" nature of this exercise contrasts to the more defined approach of some of the other exercises so as to foster self-control, self-efficacy and problem-based learning. [12,16]
8. Summarize the Skill (5 minutes) is intended to provide review of the skill and associate some key words or phrases that help to succinctly define the skill using one's own words. Additionally, thoughtful application is placed on mentoring and describing the skill to others to build one's sense of self-efficacy.

While the process of introducing a skill as outlined can be typically accomplished well within one hour, this period of time might be best expressed as skill awareness with some application to prior learning and to group problem-solving. Awareness is exposure. Personal development through practice, persistence and self-efficacy comes through the Practice the Skill and Apply the Skill to a Community exercises. The in-class awareness plus the practice outside of the classroom is considered a critical aspect to the success of the delivery model.

These skills are presented in an environment that encourages social interaction. Because social support is arguably one of the more effective protections from the debilitating effects of stress, social interaction through skill learning is considered the appropriate method to facilitate this process.

The First Responder Resiliency program in Colorado began with 25 participants who had either direct or indirect involvement in the Aurora Theatre incident that occurred in July 2012, including police, fire, EMS and agency intervention personnel.

The room arrangement allowed participants to form groups of three to four people to facilitate discussion. Two identically formatted sessions occurred over two days in the same room. Twenty-five participants were provided an overview of the program at the outset of the presentation and self-selected to be involved in the research. Participants were tested at the onset of the presentation and at the end of the class. Fifteen of these participants were tested with the researchers approximately six weeks following the class. This venue served as a template for the training sessions that followed. And, subsequent participant audiences typically reflected this broad and diverse first responder population to include both the first responder and spouse/significant other.

These initial classes were taught by Callahan and Marks in a team approach. Each class occurred in one day for about seven hours. A curriculum-specific text and workbook was used for the program as both a personal journal for the learners and as a basis for presenting instruction. Subsequent trainings were provided by teams of two or three by Marks, Callahan, Gunderson, and Lo Giudice.

Eventually, the resilience program evolved to where the skills where presented to the participants by the instructors during the first day. And, as homework, each small cohort of participants chose a skill that they wanted to present to the class the following day. Consistent with the dual instructor facilitation, participants, presenting as a team, were evaluated using a rubric that they had used the prior day to evaluate the instructors.

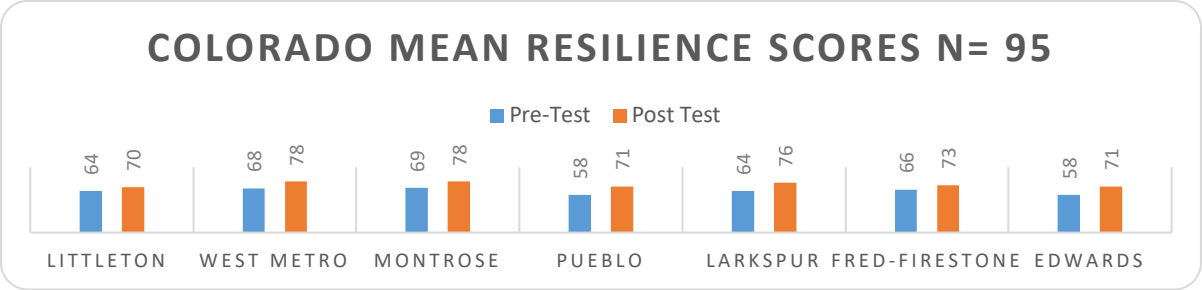
Subsequent trainings were completed through the state in seven different locations including: Fredrick, Larkspur, West Metro, Montrose, Pueblo, Edwards and Alamosa. The curriculum consistently used the twelve-skill venue with the exception of the last training in Alamosa where the skill set had been compressed from twelve resilience into nine skills to increase face-time with the facilitators for the coverage of all skills. This reworking of the curriculum also reflected updates to the body of research supporting resilience and paralleled recommendations from the World Health Organization (WHO) for dealing with stress and suicide.

Participants, who elected to participate in the research did so anonymously, and were tested prior to exposure to the resilience skill training, immediately following the training, and approximately six to twelve weeks later using The Response to Stressful Experiences Scale (RSES). VA National Center for PTSD, Rev. 001, 11-24-08. The resilience test measured broad tendencies rather than as a summative measurement specifically addressing skill objectives. Participants were randomly surveyed for completion of session follow-up activities including the aforementioned elements: 6, Practicing the skill, and 7, Applying the skill to a community, as well as suggestions for improving the program and whether participants were involved with subsequent resilience trainings.

Results:

With consideration to the initial Aurora group training, the combined group pretest (mean [M] = 70.5, standard deviation [SD] = 10.4) and post-test (M = 77.2, SD = 8) resiliency scores demonstrated significant improvement, t-value [t] (23) = 2.07, p-value [p] < 0.05 using the RSES test. The six week follow-up to the group training using a convenience sample—a sample chosen because of its ease of attainability—showed pretest (M = 74.9, SD = 4.0) and six-week follow-up test (M = 81.3, SD = 13.1) resiliency scores showing significant improvement, $t(13) = 2.16$, $p < 0.05$ using the RSES test.

The results of testing all groups pre and post training showed statistically significant gains in resilience scores pretest (M = 65.4, SD = 11.1) and post test (M = 74.6, SD = 9.4); $t(87) = 10.58$, $p < 0.05$. The effect expressed as Cohen's $d = 0.89$.



For those groups tested after six to twelve weeks, the scores still showed significant gains from the pretest. Follow-up surveys showed that few of the participants completed the Practice the Skill and Apply the Skill to a Community exercises designed for personal development beyond the one and two-day awareness sessions with the facilitators.

Conclusions:

The first question asked if it was possible to provide one and two-day resilience trainings and observe resilience score gains in a diverse first responder population. Based on the test results pre, post session, and longitudinal six to twelve weeks out, the curriculum met expectations both quantitatively and qualitatively as one and two-day resilience awareness training.

Second, would participants pursue resilience activities following the one and two-day awareness sessions. While the face-to-face awareness sessions reflected the anticipated results, the rigor provided by Practice the Skill and Apply the Skill to a Community exercises following the awareness sessions showed poor completion. These two elements were considered an essential aspect to the training as they are considered instrumental n developing and sustaining a social support system. There was, however, nether “stick” nor “carrot” to encourage completion of these elements. Offering CEUs only after completion of these elements and integrating the resilience training into the academy experience would likely improve involvement and completion. Despite recruitment efforts by OEPR, it was also extremely difficult to involve the spouse/significant other in the trainings. As the family is typically the core of the social support system, involving these participants may have made the relevancy and subsequent completion more likely.

Three, would participants coalesce into trainer groups to provide subsequent resilience trainings to other responders. Not unexpectedly, those individuals who completed the full curriculum were also the most likely to go on to further involvement as trainers. Additionally, when teams of two or more showed from a particular agency the likelihood of completion and subsequent trainer involvement increased. But, a one or two-day encounter is not sufficient to maintain the momentum needed to support a grassroots effort for “train-the-trainers” in resilience.

The notion of one or two-day trainings and the expectation that the torch will be carried by the participants is unrealistic given the brief encounter. Certainly, a long term mentorship ceasing when the participant feels capable of serving as a trainer is necessary. Further, a tiered approach to the curriculum would provide a broader avenue from which to appeal to the family and a more

diverse first responder population. This approach could allow the participant to ramp to the level of involvement needed to meet and sustain the needs of constituents and social support system.

Recommendations:

Based on these data, conclusions and more recent research we recommend the following:

1) Identify Advocates and Trainers within each organization and provide ongoing consultation as they roll out the curriculum. Where the curriculum has been integrated into existing Academy programs has demonstrated the greatest longitudinal success at maintaining increases in resiliency scores.[17] These and other data strongly suggest that, while significant gains can be made in resilience scores as the result of a one or two-day resilience training, without organizational advocacy and support the program is not viable. We would suggest following a model developed with the University of Arizona College of Nursing and the Metropolitan Emergency Medical Service, where consultation by faculty to trainers and advocates would be a part of sustaining this program.[18, 19] It is our impassioned belief that to do otherwise, makes this training another "check the box" exercise. This lesson came painfully home to us with the suicide of Debbie Crawford, chair of the Denver Health Peer Support Committee.

2) Include spousal or familial participation during the early phases of the trainings and explore potential engagement of trained spouses in creating a spouse support system within their organization. It is our recommendation that by including the family members in the training, we increase the likelihood of sustaining the use of the skills at a familial level, but also within the organization. By engaging the family in creating case studies we have found the organization able to expand and incorporate their perspective. And by doing so, empower family members with their involvement. [20, 21]

3) Incorporate web site, mobile applications, and classroom technology to support learning, communication, and building ongoing communities of support for resilience skills learners. Retention and transference of resilience skills learned in workshops and online materials would be enhanced by supporting a just-in-time on demand access to information and communities of practice and support (peers, organizations, family, friends). To enhance classroom sessions (face to face or online), tools for communication and collaboration (chat, audio/video, shared white board, screen and file sharing, activities to access and create audio, images, and video presentations, access to online content, news other resources, web search, instant messaging, recording sessions, etc.) would be incorporated into the curriculum and follow-up activities. [22] Instructional design would include new activities such as presentation and review of content, opportunities for student evaluation and reflection, online discussions and forums, multimedia examples and interactive practice activities, ability to maintain reflection journals, instant contact/communication with instructor, peers, webquests for researching and exploring similar organizations examples and best practices, new gamification attributes such as rewarding experience, building

skill points, performance on activities, earn badges, other perks?). Data footprints from learner activities will be mined, analyzed, and used to provide feedback, improve our teaching and student learning, and for internal or grant sponsored research. We are also exploring possibilities of students wearing biofeedback sensors (FitBit, Apple Watch, etc.) for monitoring physiological conditions and correlating data with their volunteer responses of SUDS scores, and perhaps alerting student or other designated person of abnormal conditions.

4) Technology has the ability to identify, intervene and improve resiliency traits within the first responder community. For example, using an organization's record management system (RMS), it's possible to monitor critical events your members have responded to over a given period. Technology can also help identify modifiable environmental factors – such as sleep deprivation, common not only in the first responder community, but in healthcare overall.[23,24, 25] Finally, given the marital problems associated with first responder profession it is our recommendation research occur at the state level for the purpose of identifying which resiliency skills are most closely correlated with positive social relationships. [26,27]

References:

1. Tillman, Gail D., Clifford S. Calley, Timothy A. Green, Virginia I. Buhl, Melanie M. Biggs, Jeffrey S. Spence, Richard W. Briggs, Robert W. Haley, John Hart, and Michael A. Kraut. "Event-related potential patterns associated with hyperarousal in Gulf War illness syndrome groups." *Neurotoxicology* 33, no. 5 (2012): 1096-1105.
2. Brewin, Chris R., Bernice Andrews, and John D. Valentine. "Meta-analysis of risk factors for posttraumatic stress disorder in trauma-exposed adults." *Journal of consulting and clinical psychology* 68, no. 5 (2000): 748.
3. Brito, Javier., Callahan, Phil., & Marks, Michael. Case study: A hispanic combat veteran returns to college. Paper presented at the Conference on Issues Related to Higher Education and Returning Veterans, SAVAHCS, Tucson, AZ. (November, 2008). In *ERIC Digest*.
4. Markel, Nicholas, Ralph Trujillo, Philip Callahan, and Michael Marks. "Resiliency and Retention in Veterans Returning to College: Results of a Pilot Study." *Online Submission* (2010).
5. Gunderson, Jonathan, Mike Grill, Philip Callahan, and Michael Marks. "An Evidence-based Program for Improving and Sustaining First Responder Behavioral health." *JEMS: Journal of Emergency Medical Services (JEMS)* 3 (2014): 57-61.
6. Bromage, Bruce K., and Richard E. Mayer. "Quantitative and qualitative effects of repetition on learning from technical text." *Journal of Educational Psychology* 78, no. 4 (1986): 271.
7. Race, Elizabeth A., David Badre, and Anthony D. Wagner. "Multiple forms of learning yield temporally distinct electrophysiological repetition effects." *Cerebral Cortex* 20, no. 7 (2010): 1726-1738.
8. Cobb, Paul, and Janet Bowers. "Cognitive and situated learning perspectives in theory and practice." *Educational researcher* 28, no. 2 (1999): 4-15.

9. Bjork, Robert A., and Alan Richardson-Klavehn. "On the puzzling relationship between environmental context and human memory." (1989).
10. Eich, Eric. "Context, memory, and integrated item/context imagery." *Journal of Experimental Psychology: Learning, Memory, and Cognition* 11, no. 4 (1985): 764.
11. Saxe, Geoffrey B. "Transfer of learning across cultural practices." *Cognition and instruction* 6, no. 4 (1989): 325-330.
12. Bandura, Albert. "Perceived self-efficacy in cognitive development and functioning." *Educational psychologist* 28, no. 2 (1993): 117-148.
13. Margolis, Howard, and Patrick P. McCabe. "Improving self-efficacy and motivation what to do, what to say." *Intervention in school and clinic* 41, no. 4 (2006): 218-227.
14. Smyth, Joshua M., Arthur A. Stone, Adam Hurewitz, and Alan Kaell. "Effects of writing about stressful experiences on symptom reduction in patients with asthma or rheumatoid arthritis: a randomized trial." *Jama* 281, no. 14 (1999): 1304-1309.
15. Andersson, Matthew A., and Colleen S. Conley. "Optimizing the perceived benefits and health outcomes of writing about traumatic life events." *Stress and Health* 29, no. 1 (2013): 40-49.
16. Schmidt, Henk G., and Jos HC Moust. "Factors affecting small-group tutorial learning: A review of research." *Problem-based learning: A research perspective on learning interactions* (2000): 19-52.
17. Lo Giudice, Tony A. "Hospital Based Resilience: A Pathway To Combating Stress," *Arizona Hospital and Healthcare Associaton,* Marana, Arizona, June, 2016.
18. Lo Giudice, Tony A., and Jeff Dyar, "MEMS Resilience Training," *Metropolitan Emergency Medical Services,* Little Rock, Arkansas, October, 2016
19. Wilger, P., Kosanke , H. Bouchard, L., Pasquet , C., Williams, D., Oja, K., Callahan, P., Marks, M.W., and Larson, W. "Developing Professional Resiliency in Pre-Licensure Nursing Students." *Arizona Nurses Association Symposium: Healthy Nurse, Healthy Patient, Healthy Nation.* Phoenix, AZ., October, 2016.
20. Marks, Michael "Getting to Why: Increasing Personal and Organizational Resilience," *Metropolitan Emergency Medical Services,* Little Rock, Arkansas, November, 2016.
21. Walsh, Froma. *Strengthening family resilience*. Guilford Publications, 2015.
22. http://www.resilienceskills.org/
23. Mark P. Jensen, "Measuring sleep quality." In *The pain stethoscope: A clinician's guide to measuring pain*, pp. 29-31. Springer Healthcare Ltd., 2011.
24. Carey, Mary G., Salah S. Al-Zaiti, Grace E. Dean, Loralee Sessanna, and Deborah S. Finnell. "Sleep problems, depression, substance use, social bonding, and quality of life in professional firefighters." *Journal of occupational and environmental medicine/American College of Occupational and Environmental Medicine* 53, no. 8 (2011): 928.
25. Takeyama, Hidemaro, T. Itani, Norihide Tachi, Osamu Sakamura, K. Murata, Takanishi Inoue, Toshimasa Takanishi, Hatsuko Suzumura, and Sayuri Niwa. "Effects of shift schedules on fatigue and physiological functions among firefighters during night duty." *Ergonomics* 48, no. 1 (2005): 1-11.
26. Lowry, Megan M. *Keeping the flame alive: A qualitative analysis of marital satisfaction and resiliency among firefighters and their spouses*. ProQuest, 2007.
27. Alvarez, Jennifer, and Melissa Hunt. "Risk and resilience in canine search and rescue handlers after 9/11." *Journal of traumatic stress* 18, no. 5 (2005): 497-505.