Stress Exposure Training for the Dismounted Squad: The Human Dimension

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ABSTRACT

Today's soldiers face a complex, unpredictable, and fluid operational environment encountering more stressors and trauma than ever before. Mental disorders account for more hospitalizations of U.S. service members than any other diagnostic category. The Army is aggressively pursuing programs to address these challenges, including revising the Comprehensive Soldier and Family Fitness Program and launching the Ready and Resilient Campaign to improve the performance, resilience, and readiness of soldiers.

While most of the emphasis has been on post-event treatment, preventative resilience training that focuses on the human dimension is a key priority for the Army. The Army Study Program Office provided funding for the Squad Overmatch Study in 2013 and 2014 as its top priority program. This study is focused on investigating how to improve existing training methodologies and technologies to better develop cognitive skills and mental resilience at the squad level with more combat realistic exercises and experiences.

The vision for the Squad Overmatch Study is to optimize performance by enhancing existing training—from basic individual skills to unit training prior to, during, and post-deployment—through early and continuous Stress Exposure Training (SET) to reduce post-traumatic stress and to better prepare soldiers for the stressful situations that are a natural part of combat operations. In June of 2014 the study team conducted a demonstration of graduated SET, as well as cognitive and situational awareness skills training. Of the soldiers who participated, 90% agreed that the use of virtual technologies is effective for training situational awareness and resilience and 100% agreed that training that provides realistic scenarios are helpful in preparing for stressful combat situations.

This paper will describe the Squad Overmatch Study objectives, the squad-based SET gaming, virtual and live scenario exercises and technologies used, and present results of the 2014 demonstration at Fort Benning, Georgia.

ABOUT THE AUTHORS

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INTRODUCTION

The US Army is proactively addressing the challenge of improving soldier performance, resilience, and readiness, and reducing vulnerability to Post-Traumatic Stress PTS and suicide (US Department of the Army, 2013, Ready and Resilient Campaign – R2C). R2C requires developing tactically proficient soldiers and highly adaptive problem solvers capable of overcoming challenges and making decisions with strategic consequences in ambiguous situations. Preventative training for resilience is an R2C key priority; beginning in the schoolhouse, and continuing through lifelong learning experiences. The Army Maneuver Center of Excellence (MCoE) has been aligned with this vision; their concept for Squad Overmatch (SOVM) focuses on making the squad "the foundation of the decisive force." SOVM training requirements include cognitive, physical, social-cultural, resilience, and moral-ethical components of the human dimension.

The Army Study Program Management Office recognized the significant gap in the availability of innovative training capabilities to achieve the R2C and SOVM objectives to optimize soldier performance. Therefore, it made building soldier resilience its top priority by awarding funding to the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) and MITRE in both FY13 and FY14 to identify and demonstrate an innovative approach to conducting pre-deployment training to reduce Post Traumatic Stress (PTS). The SOVM study team was expanded based on cooperative working agreements coordinated among PEO STRI, Army Research Laboratory-Human Research and Engineering Directorate (ARL-HRED), the ARL-HRED Simulation and Training Technology Center, the Army Research Institute, the US Marine Corps Program Manager for Training Systems, and the MCoE. The SOVM study team also coordinated with the Federal Law Enforcement Training Center to leverage their leading-edge research on Stress Exposure Training (SET) methodologies, and their scenario-based assessment and review approach to performance assessment and after action review (Driskell, Salas, Johnston, & Wollert, 2008). This paper describes the SOVM FY13 and FY14 findings including the evaluation of an innovative SOVM training demonstration. A future SOVM training vision and research recommendations are provided.

STRESS EXPOSURE TRAINING

Initially, the study team surveyed the literature and interviewed Subject Matter Experts (SMEs) to identify exemplary stress training programs that could be leveraged. They identified SET as the central instructional framework that could transform the current squad training in battle drills that focus on the physical and mechanical aspects of combat, to developing resilience alongside warrior skills (Johnston & Cannon-Bowers, 1996). SET was developed in the early 1990's as a non-clinical experiential learning approach to improve tactical decision making under stress in US Navy combat teams (Johnston & Cannon-Bowers, 1996). The goal is to develop individual and unit resilience and adaptability; instead of stressors triggering performance problems and PTS, they trigger employment of effective stress coping skills. In recent years, numerous guidelines have recommended SET for pre-deployment combat training, but it has never been implemented (e.g., Driskell, Salas, & Johnston, 2006; Helmus & Glenn, 2005: Meredith, Sherbourne, Gaillot, Hansell, Ritschard, Parker, & Wrenn, 2011). These authors assert that training under extreme conditions alone does not harden the warfighter to combat stressors and does not necessarily improve resilience and performance. Warfighters must first receive information about the stressors they will experience, and be trained in techniques and methods for managing them. For example, the Mind Fitness Study program (Stanley & Jha, 2009) recommended that training under more extreme conditions (e.g., injecting stressors such as battle sounds and smells), exposing warfighters to more complex tasks (such as having to concurrently manage treatment of casualties, communicate with locals, and provide security) may enhance soldiers' resilience and performance after adequate physical and psychological preparation (Stanley & Jha, 2009). Evidence for the effectiveness of specific SET phases

has been demonstrated to improve self-confidence, critical thinking, stress management, and teamwork skills, but only a few studies have established evidence for effectiveness of the entire three-phase approach (Driskell et al., 2006; Stanley & Jha, 2009).

SET Components

SET is a three-phase training program designed to provide information, skills training, and practice; with the goal of learning how to cope and perform while exposed to combat stressors. Instructional content, delivery strategies, and the sequencing method are important for learning resilience skills and trainers must have adequate training in the delivery of SET. Multiple measures of attitudes and performance of trainees are needed to provide immediate feedback, and assess attitudes and learning outcomes. In the second and third phases, practice takes place under graduated exposure to stressors, the number and types of stressors are gradually increased in successive training scenarios.

Phase I

The first phase of SET is preparatory; it provides basic knowledge about stress and its effects. Trainees are informed of the training goals and the procedures that will be used. Delivery modes should include lectures, discussions, examples, videos, and instructional simulations to explain how situational stressors can be handled with coping skills. Modeling of appropriate behaviors and thought processes are essential to the trainee's understanding of how both thoughts and actions influence stress reduction. Videos of people modeling appropriate coping skills behaviors should be people in roles similar to ones the trainees encounter.

Phase II

The second phase focuses on skills acquisition; learning skills for stress coping, decision making and team adaptation through practice and feedback. Skills training should address the physiological, emotional, social, cognitive, and performance components of stressors that are typically encountered by the trainee on the job. Using relaxation techniques with the ability to recognize dysfunctional thoughts/emotions, trainees should create an integrated coping response to stress, dealing with both the physiological and cognitive outcomes of stress. This trains the individual to regulate his/her emotions and distracting thoughts while maintaining task orientation. Relaxation skill training should include practice in acquiring and using deep muscle relaxation, deep breathing methods, and practice in using words and images to trigger relaxation methods. Coping skills should be taught using such delivery modes as modeling, practice, and feedback that can include live and/or simulation-based training.

Phase III

The third phase involves practicing the skills in a setting that simulates or reproduces the problem stressors. Skills should be practiced under gradually increasing stressful conditions, with performance feedback provided by the instructor and other trainees. Delivery modes should include simulated and/or real scenarios, with during and after action reviews. For example, SET trainers should coach trainees during live role-play or simulation of typical stressful situations to identify the critical points during stress exposure that should trigger the individual to use positive task focused thoughts and relaxation skills, to use the appropriate coping skills at those critical events, and engage in self-reward for using the appropriate coping skills. Mental imagery of stressful scenarios should be used by the trainee to rehearse ways to deal with stressors and to practice coping responses to be used in the actual stressful situation. Trainees should keep a daily log to monitor their perceptions of when they did and did not cope well with stress, and should have assignments outside of class in order to monitor their reading of SET materials and to practice acquiring the skills. Assignments should be reviewed at the next training session to ensure that trainees follow through on skill learning. Trainees should be encouraged to practice cognitive coping skills and relaxation at least once per day outside of the training environment and preferably during typical stressful situations.

Applying SET

Next, the study team applied the Johnston and Cannon-Bowers (1996) SET design recommendations to guide defining task stressors and stressor fidelity, and identify resilience skills that mitigate stress effects in squads. The purpose of establishing fidelity was to identify relevant and realistic stressors that are as close to the actual setting in which the

trainee performs. The Walter Reed Army Institute for Research (WRAIR) has thoroughly documented the combat stressors known to be related to PTSD (Grieger, Cozza, Ursano, Hoge, Martinez, Engel, & Wain, 2006; Hoge, Castro, Messer, McGurk, Cotting, & Koffman, 2004). The following "during deployment" stressors are examples of some selected for inclusion in this study.

- Clearing or searching homes or buildings
- Indirect fire attack from Incoming artillery, rocket, or mortar fire
- Attack by enemy on forward operating base or patrol base perimeter
- Engaging enemy with direct fire or returning fire
- Had a close call, was shot or hit, but protective gear saved you
- Wounded in action
- Seeing ill or injured women or children whom you were unable to help
- Being responsible for the death of a noncombatant
- Being responsible for the death of an enemy combatant
- Exposure to human remains

Drawing from the SET concept, team performance research, and the typical combat scenarios, squad tasks, and stressors, the study team identified Situation Awareness (SA) and Stress Management (SM) skills as the criteria for final selection of training capabilities (Cannon-Bowers & Salas, 1998). Establishing SA involves detecting, observing, and evaluating cues in the physical environment (including the human domain) that are needed to anticipate and effectively react to and make decisions about potential threats. Teams develop shared SA of the common operating picture by passing key information and using proper communication protocols (Wilkinson, Holness, & Giesey, 2010). SM skills involve using attention and concentration skills that manage and reduce the distracting negative thoughts and physiological reactions experienced under stress. To adapt to high stress and reduce errors, team leaders and members proactively monitor each other for signs of stress, provide backup and support, and take corrective actions without having to be asked.

Following these analyses, the study team reviewed literature, visited training sites, and interviewed SMEs to broadly survey potential instructional content and delivery methods. The team focused on training capabilities soldiers would most likely encounter during their progression through the training continuum. In addition, they drew on findings and lessons learned from the FITE-JCTD (Wilkinson et al., 2010).

Lastly, the team used an innovative, analytical screening method to optimize addressing SET requirements, Training Aids, Devices, Simulators and Simulations (TADSS) availability, and cost. The TADSS were analyzed using a software model that used SME inputs to define how a given technology portfolio contributed to the development of cognitive skills under the stressors listed above. The model provided relative return on investments for various technologies. The model predicted improved human performance with relatively little cost by adding software centric solutions and low cost hardware to existing training devices. Additionally, inserting hardware based technologies, such as virtual targetry, into live training devices predicted the largest improvements in human performance.

SOVM SET DEMONSTRATION CONCEPT

In year two the SOVM team used the above findings to select the final set of TADSS and instructional strategies and then develop, execute, and evaluate an innovative SOVM SET demonstration at the MCoE at Fort Benning, GA. The purpose of the evaluation was for squad SMEs to "kick the tires" for the first time. Since this is an entirely new concept for squad training, it was necessary to first provide an opportunity to evaluate the demonstration's capabilities. It was not a training effectiveness experiment. Squads were not evaluated; instead soldiers evaluated the demonstration's capability for producing more realistic stressors and providing an instructional strategy for squad training.

Figure 1 depicts the SOVM stress exposure training demonstration concept. It is a completely new application of SET, whereby the selected instructional capabilities are organized according to the SET sequencing approach.

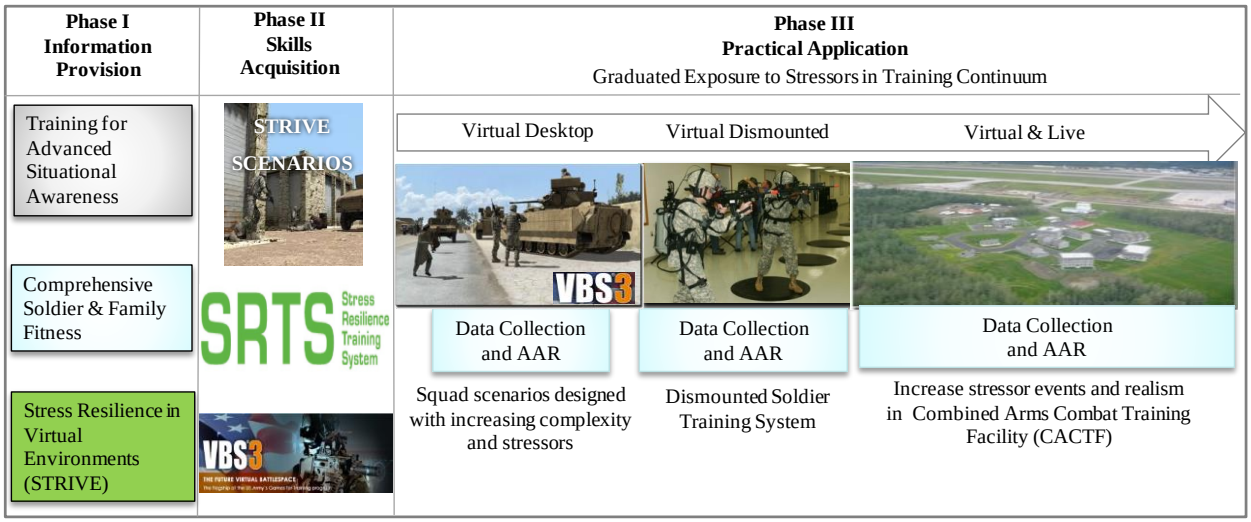

Figure 1. SOVM Stress Exposure Training Demonstration Concept

Information Provision

The study team selected several training programs and capabilities that were highly relevant to soldier training, and had capabilities for both the information provision and skills phases of SET. The MCoE recently implemented training for Advanced Situation Awareness (ASA) (US Department of the Army, October 9, 2013) which focuses on identifying at risk, dangerous situations and persons before a destructive event occurs. ASA provides classroom and live field exercises in learning deliberate, proactive human behavior pattern recognition and analysis skills and the effective use of optics to improve situational awareness and assess threats.

The US Army's Comprehensive Soldier & Family Fitness (CSF2) program is envisioned to be integrated throughout the MCoE professional military education and functional training. It provides cognitive skills training to build confidence, goal-setting, attention control, stress and energy management, visualization and imagery, problem solving, identifying strengths in self and others, and assertive communication. CSF2 is available twice during the 24+ month training continuum: once during unit training and once during deployment. It consists of classroom-based instruction.

Sponsored by ARL and the Office of Naval Research, the *Stress Resilience In Virtual Environments* (STRIVE) was developed by the Institute for Creative Technologies, University of Southern California as an experiential learning prototype for service members prior to deployment. Its aim is to develop stress management techniques and cognitive-behavioral emotional coping strategies by presenting a set of combat scenarios that are part of a multi-episode interactive narrative experience. Users can be immersed within challenging combat contexts and interact with virtual characters within these episodes.

Skills Acquisition

The study team selected several capabilities for the skills acquisition phase of SET. STRIVE is included in this phase because the STRIVE videos teach and allow practice of breathing techniques to self-regulate and help manage stress.

Sponsored by DARPA and the US Navy, the Stress Resilience Training System (SRTS) is a mobile application for tablets that focuses on SM skills. It collects noninvasive physiological measures for trainee biofeedback (Smith, Woo, Parker, Youmans, LeGoullon, Weltman, & de Visser, 2013). It provides educational modules and games using the biofeedback data to enable learning cognitive restructuring and physiological stress management skills. An Adaptive Coach monitors the trainee's progress and self-test results, and provides recommendations on how best to progress through the training program.

The US Army Games for Training Program's VBS3 – Virtual Battlefield Simulation version 3.0 - is a PC-based individual and team training system that provides semi-immersive environments, dynamic terrain, simulated military and civilian entities, and a range of geo-typical (generic) and geo-specific virtual terrains. It has a 3-D scenario editor

and after action review capability. This feature allows instructors to design and implement event-based scenarios with increasing levels of stressors. The VBS3 was inserted into the skills acquisition phase to enable squads to begin practicing their SA and SM skills in the team context using a baseline scenario with just a few low level task stressors. This phase also gives trainers the opportunity to practice their team management skills and feedback strategies.

Practical Application

VBS3 can be used as a beginning stage of graduated exposure to stress, allowing soldiers to practice and develop their SA and SM skills in the team context.

The Dismounted Soldier Training System (DSTS) was selected because it is a US Army program of record (POR) for squad training that can support increasing levels of stressors using the virtual gaming environment technology. It combines gaming technology in a virtual, 360-degree environment using un-tethered weapons simulations. Each standalone system is comprised of nine, un-tethered, manned modules, with an exercise control/After Action Review (AAR) workstation and one SAF workstation.

The Combined Arms Collective Training Facility (CACTF) is a US Army POR that provides a live environment for conducting individual soldier-through-battalion-level training in urban-operations at home station. It was selected because it facilitates execution of live and virtual simulation events that can be manipulated to increase challenges and stressors in the training environment. Units train on building-entry/egress and room-clearing techniques under lethal and non-lethal operational conditions. The CACTF has an observer/controller facility that monitors, controls and documents the training exercise with video recording for AAR.

SOVM DEMONSTRATION EVALUATION PLAN

The study team planned a two-day compressed schedule of demonstrations to assess the methods, tools, and strategies described above, including various capabilities for introducing and manipulating stressors and their realism in the virtual and live environments.

Scenario Design

The simulation scenarios are critical to developing SA and SM skills in squads (Salas, Priest, Wilson, & Burke, 2006). The study team adopted a case-based method that was developed for the FITE-JCTD by Ross and Kobus (2011). The scenarios are connected through the storyline to stimulate opportunity to practice SA and SM. Scenario documentation established the traceability of event features in the storyline to requirements for SA and SM behaviors. Scenario 0 is designated a "no stress" scenario to enable squads to practice establishing a "pattern of life baseline" for SA. Scenarios 1, 2 and 3 have increasing levels of stressors embedded in them. Events add to mental workload and overall stress by increasing crowds of people, adding behavioral anomalies, communicating with townspeople, and detecting deception by potential hostiles. Table 1 presents the details for each of four related scenarios as they incorporate the "during deployment" stressors that were selected by the study team.

Table 1. SOVM Scenarios

Performance Indicator or Trigger	S0-Baseline	S1-Raid	S2-Financier	S3-Hostage
Conduct initial planning and preparation for mission under time pressure	x	x	x	x
Communicate information within squad	x	x	x	x
Change of mission; in-stride planning & coordination		x		x
Interact with civilian population (vendors)	x	x	x	x
Calibrate ASA baselines	x			
Detect anomalies from ASA baselines		x	x	
Adjust or re-calibrate ASA baselines			x	x

Take an action based on perceptions of anomalies		x	x	x
Perceive threats		x	x	x
Communicate with village church leader	x			x
Prioritize actions under high risk conditions		x	x	x
Conduct tactical questioning			x	x
Performance Indicator or Trigger	S0-Baseline	S1-Raid	S2-Financier	S3-Hostage
Collect information about the environment	x	x	x	
Detain an individual		x		
Respond to contact		x	x	x
Monitor adjacent unit's situation		x		x
Handle casualties		x	x	x
Exposed to dead bodies or human remains		x	x	x
Member of patrol killed in action			x	
Member of patrol wounded in action			x	x
Direct fire engagement		x		x
Responsible for death of a non-combatant			x	x
Clearing or searching homes/buildings		x		x
Seeing ill or injured females or children		x	x	x

Manipulation of stressors and realistic events is implemented using various technologies for the purpose of making comparisons. Examples include:

- Enhanced graphic realism models in virtual reality vs. the as-is models in VBS3 and DSTS,
- Live role players and virtual avatars displaying behavioral cues that should evoke ASA and SM skills in VBS3, DSTS, and CACTF,
- Static pop-up targets vs. interactive virtual human civilians and hostiles in CACTF,
- Lifelike mannequins vs. live role players with realistic wounds in CACTF, and
- Special effects non-pyro explosives, moulage (blood), and scent generators in CACTF.

Schedule

The study methodology was an accelerated two day series of sessions that modeled key learning opportunities that should be presented to soldiers across their entire warrior skill training continuum, from basic through advanced training, unit training, and while deployed. The two-day demonstration was repeated four times over a two week period in June 2014. Four squads (one squad for each two-day demonstration) from the 3rd Infantry Division (3ID), 3rd Brigade Combat Team (BCT), each with an experienced leader, participated as SMEs. The morning of the first day focused on information provision and skills acquisition. An introduction to ASA, CSF2, STRIVE, and SRTS was provided. Squads then experienced the practical application phase in VBS3 during the afternoon. First they saw scenarios 1 and 2, and then they saw scenario 2 implemented with enhanced graphic realism models. The second day, squads participated in two DSTS sessions in the morning. The first session implemented scenario 1 in the existing DSTS system that used VBS2 as its virtual environment. Then they experienced scenario 1 in DSTS using an enhanced graphics virtual environment. In the afternoon, squads participated in scenario 3 within the CACTF.

Assessment

The SOVM study team evaluated the demonstration using several collection methods. Questionnaires were completed by each soldier before, during, and after the training events; trainers and study team members engaged the soldiers in open-ended discussions; and study team members recorded significant observations throughout the demonstration, both on paper and in some cases through video. The questionnaires evaluated soldier confidence and skill levels, their opinions about game and simulation-based training, and their opinions about the effectiveness of different training strategies both before and after each training event occurred.

Data collection forms were administered to 33 participants. The intent of the data collection was to determine participants' reactions to the training technologies used to support SET and ASA skills development. Data were

collected 1) before the demonstration; 2) following the block of orientation (classroom) presentations; and 3) at the completion of the three practical application events (gaming, virtual, and live).

Collecting SME observations and opinions helped to verify the proper fidelity of scenario cues. Observation during real-time scenario runs helped identify whether the performance triggers were presented by the training technology based on the approved scenario designs. Squads reported whether they saw or used them during the AAR discussions. A data collection form based on Table 1 listed each significant scenario event so that two separate observers could check whether squads noticed and reported the key events that would trigger SA and SM behaviors. Observations were conducted during VBS3 scenarios 1 and 2, the two DSTS scenario 1 runs, and the CACTF scenario 3.

Following each session on days 1 and 2, SME reactions and feedback were collected through focus group discussions and self-report surveys. Similar to an AAR, the squads were led through a series of questions immediately following the scenarios. Critical tasks were identified and squads were asked what made the tasks difficult to perform, whether they noticed the enhanced TADSS, what their reactions were with respect to stressor realism, whether the scenarios and enhancements could contribute to developing ASA, and how to improve them. As a check, observer data collection was compared against SME focus group sessions.

SOLDIER FEEDBACK

The study team conducted the demonstration at training facilities provided by the MCoE at Ft. Benning on 17–26 June 2014. The demonstration had the "look and feel" of a training event. It consisted of four identically structured two-day events; each demonstration event 'hosted' a different squad. The infantry squad soldiers came from the 3rd Infantry Division (3ID), 3rd Brigade Combat Team (BCT) and participated through the study team's coordination efforts with the MCoE.

Technology

Some of the soldiers who participated in the demonstration had as many as three to five deployments, although some had none. Over half of the soldiers indicated they were well trained in current Army tactics, techniques, and procedures. A pre-demonstration survey of the soldiers revealed that over one-third originally believed that use of simulations, games, and technologies is not a good way to build skills needed in combat and not realistic enough for training tactical skills. However, most of the soldiers also held a prior belief that they can learn to manage emotional stressors through training and stress exposure during training can improve combat decision making, reflecting a general open-mindedness and receptive attitude towards what they were soon to experience.

The soldiers experienced the following (see Figure 2):

- High resolution game engine environments.
- Live role players and virtual avatars displaying behavioral cues that could evoke cognitive skills in VBS3, DSTS, and CACTF environments.
- Live role players with realistic wounds in the CACTF.
- Static pop-up targets supplemented with interactive human civilians and hostiles in the CACTF.
- Special effects explosives, moulage (blood), haptic feedback devices, and scent generators in the CACTF

In the high resolution game environment with detailed character facial expressions enabled soldiers to observe ASA cues that identify when a person was being truthful, evasive, or lying. Additionally, the richness of the urban environment provided more complex features and shadowing, forcing the soldiers to stay more focused (vs. an environment where structures and characters are represented as simple polygonal entities). One squad leader, who was once a graphics artist, commented that the "attention to detail was…in depth…and this helped with the situational awareness atmospherics." Another squad leader, on the other hand, questioned the effectiveness of gaming for training collective tasks, but by the end of the demonstration event commented that gaming could be useful for training basic skills such as tactical communication.

Concerning virtual avatars, all four squads of soldiers were extremely impressed with the tactical questioning capabilities enabled by this technology. The first squad leader stated that, "it was awesome, because this was serious

dialog…everyone was taking this very seriously…at no point did I feel like this was check-a-box type training…I was 100% immersed in what was going on." He further described how one virtual character became very agitated while being questioned, providing valuable biometric and kinesic ASA feedback. This, of course, became an excellent instructional moment for the ASA subject matter experts during the after action review.

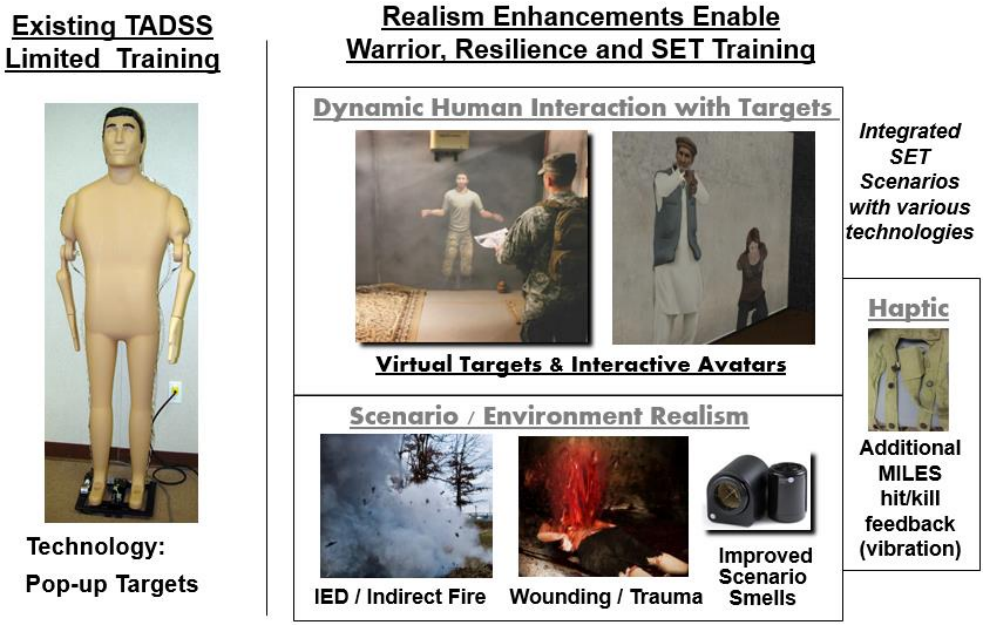

Figure 2. SOVM Live Technologies

Additionally, the live scenario presented a well-trained live actor to the soldiers. This actor, a young girl, was wearing a casualty effects vest beneath her clothing and acted gravely injured during a cross-fire between soldiers and virtual characters. Seeing the actor bleed out in such a realistic manner caused one squad leader to immediately direct his soldiers to attend to her. In the AAR, he spoke of his heightened stress level. In another squad, a team leader stated that this experience should be a part of his squad's preparation for deployment. He described his past experiences with mass casualties, but noted that he had received no training to prepare for such events and that the live scenario provided such training.

The live scenario began with an indirect fire (IDF) event as soldiers first entered the live training village. The IDF represented an artillery event near the village, and was intended to provide a warning signal to the squad and put them on a heightened state of alert. During the AARs the squads spoke of how the IDF, when triggered, created an emotional reaction and placed them in a more ready state for a possible threat. Three of the four squads switched their weapons status from red to amber after hearing the IDF. One soldier stated that after the IDF "my attitude changed, I thought this was a normal village." After the IDF event, the study team observed, across all squads, an increased level of radio chatter, more active scanning, and ready posture.

The live scenario concluded with the triggering of an IED (and its aftermath). At the time of the trigger the squad leader was engaged with terrorists holding a hostage, some soldiers were working to save the life of an innocent civilian who was accidentally caught in a crossfire, other soldiers were providing perimeter security, and the village residents were approaching the scene, curious to know what has happened and why. This created the decision and information overload the study team had hoped to achieve, giving the team an opportunity to assess how the squad reacted and if they appeared to use their coping skills (as determined afterwards in the AAR). Said one squad leader, concerning this moment, "I went cold when I experienced the IED attack."

After Action Review

After the demonstration each squad provided positive feedback on the learning approach, scenario realism, and the training value they received. They added that this type of training would have prepared them well for their deployment and the realities of war. A consistently high percentage (over 90%) of the soldiers surveyed stated that the high fidelity implementation of scenarios in gaming, virtual, and live was effective for them to train identifying patterns of human behavior (situational awareness) and to train regulating emotions when experiencing stress. Each squad felt they were a more cohesive unit and more competent after the study exercises and they had fun in the process. Soldier feedback indicated that the squad approach for integrating physical, cognitive, and social skills (Squad Integrated Training Approach) had a profound effect and as one leader stated, "it (the training) took us back to the basics…caused me to rethink how I train." As a testament to the training value added, one platoon leader tried to insert additional squads from his unit into the exercise.

CONCLUSION

Establish an R2C Training Vision

Soldiers should be able to execute their missions more effectively, perform optimally, and be better prepared to recognize and cope with situations that could otherwise lead to PTS, thereby demonstrating readiness and resilience. Of the soldiers that were surveyed, 97% agreed that their training should provide a foundation of mental skills needed to build more resilient soldiers, and after receiving STRIVE training, 100% agreed that programs like STRIVE could provide them the knowledge to prepare for stressful situations. The SOVM findings have initiated actions to greatly increase broader access to an integrated portfolio of instructional opportunities. As the study continues in FY15, the study team is evaluating how and where to augment existing training to enhance HD skills.

It begins with Basic Combat Training, progresses to Advanced Individual Training, then to the Unit Training Cycle (Team, Squad, Section, Platoon, Company, Battalion and Brigade Combat Team). The aim is to provide a comprehensive physical and psychological strategy for training soldiers to recognize situations that cause psychological stress and to apply learned techniques to manage stress. It shows a notional example of the training for typical soldiers, from the time they enter the Army through their deployment cycle. We propose applying SET training methods to this continuum, from basic through unit training, prior to, during, and post-deployment. Note that the study team recommends use of programs such as Army Games for Training (AGFT) at the beginning, providing the first in a gradual series of exposures to combat stressors in a soldier's training lifecycle. By increasing the availability and frequency of ASA and CSF2 training and injecting cognitive skills-enhancing technologies into current TADSS programs of record, soldiers could continuously learn to regulate, replay, and review situations that cause stress.

Implement a Train the Trainer Program

While it is tempting to assume that simulators will solve the problem of developing resilience, the importance of having qualified instructors and team leaders for implementing SET cannot be overemphasized. Developing a squad's resilience requires a training curriculum specifically for instructors and team leaders. Leaders must be able to assess and review soldiers' performance in such a way that will accelerate squad performance and ensure training effectiveness of the SET continuum.

Overarching Recommendations

The study team recommends maturing and implementing the training approach presented in the demonstration into Army doctrine. The first step is to identify a senior TRADOC champion who will select and lead a team to manage the following activities:

- Obtain senior Army leadership commitment.
- Identify a TRADOC implementation manager and develop a single holistic TRADOC implementation strategy.
- Develop training support packages.
- Develop integrated scenarios.
- Develop a technology insertion and refinement plan.

- Align Live/Virtual/Gaming architecture to support cognitive training.
- Develop long term Program Objective Memorandum (POM) updates.
- Develop a test bed to bring the overarching strategy to fruition.

The analysis must evaluate solutions from the perspective of doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLF-P). Additionally, the Army should consider near and mid-term, quick-win opportunities by leveraging and implementing some of the key recommendations from the Squad Overmatch Study:

- **Foundation Training**: Expand availability of CSF2 and ASA training programs of instruction. CSF2 and ASA instruction should develop a curriculum for mastery of concepts and techniques.
- **Scenarios**: Extend the initial set of Squad Overmatch-developed scenarios to incorporate additional WRAIR-identified stressors.
- **Gaming/Virtual**: Implement higher fidelity representations of the environment (urban, terrain) and virtual humans/threats to enable training situational awareness, decision making, problem solving, and stress management/self-regulation.
- **Live**: Inject into live training aids technologies that provide stimuli that the Squad Overmatch Study has shown to train cognitive skills. For example, integrate interactive avatars into CACTFs to improve realism and training effectiveness by enabling soldier target interactions that supplement engagements with pop-up plastic targets.
- **AAR**: Incorporate a focus on the cognitive component of the Human Dimension into after action reviews. This will reinforce trained concepts and empower soldiers to become proactive when faced with complex decision events.
- **Live/Virtual/Gaming Architecture**: Establish an architecture approach that facilitates leveraging common Gaming standards for presentation, natural behaviors and movement of virtual humans (avatars) across both the synthetic and live training environments.

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