Exploring Gender Differences in Emotional Intelligence Variables on Stress Habituation During High Intensity Trauma Simulation Training

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BACKGROUND

This pilot project explored the relationship between emotional intelligence variables on the habituation process for military medical students involved in a high stress simulation, week-long training exercise, called Intensive Surgical Skills Week, also known as “Cut-Suit Week". Medical students, physicians, and military personnel experience high levels of stress while being asked to perform extraordinary activities. Individuals respond to stress in varying ways that can affect the learning process[1]. Emotional intelligence variables can play a significant role in the stress response and habituation process for military medical students.

Although simulation training with a stress component has shown to be greatly effective[1,2], the impact of this process on emotional wellness may vary between genders. Our hypothesis is that emotional intelligence variables that are involved in the stress response and impact the habituation process will differ for male and female participants. Determining these differences could allow for more targeted training and improve learning and performance outcomes.

Students engaging in an intense surgical simulation exercise completed Emotional Intelligence questionnaires to determine correlations between the habituation process, emotional quotient variables, and gender. They also participated in real-time measures of stress response (cortisol) and habituation.

METHODS

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Second year military medical students from Rocky Vista University completed the Bar-On Emotional Quotient 2.0 inventory (EQ-i 2.0) on the first and last day of the weeklong intensive training exercise, as well as real-time measures of stress response (cortisol). The EQ-i 2.0 is a validated psychometric test with 133 items that measures emotional intelligence and how it impacts people. The model consists of five composite scores (self-perception, self-expression, interpersonal, decision making, and stress management) which are further broken down into 15 subscales[3]. Content validity analyses, exploratory factor analyses, and confirmatory factor analyses suggest that the EQ-i 2.0 is a valid measure of emotional intelligence[4]. Salivary cortisol was measured by the methods of “SALIMETRICS-Carlisbad CA.” A decrease in cortisol in response to repetitive stressful experiences has been used to demonstrate habituation[5]. Habituation in this study was defined as a decrease in cortisol levels by day 3 of the training week.

Fifty scenarios of increasingly intense mass casualty events and simulated Emergency Department and Operating Room procedures were performed. Students lived as if deployed in an Afghan village in a movie set village at Stu Segall Productions of Strategic Operations in San Diego, CA. These events were combined with the training of Federal Firefighters, California Highway Patrol, local SWAT, US Border Patrol, and military personnel.

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RESULTS

Aggregate data of the EQ inventory were analyzed and correlated with varying levels of habituation throughout the exercise. A greater decrease in cortisol was found in female participants who had a greater sense of reality testing (p<.01), impulse control (p=.029), and a stronger sense of assertiveness (r=.621, p=.031) before and after the training exercise. Additionally, a greater decrease in cortisol was found in male participants who began and maintained a higher sense of independence (r=.545, p<.01).

	Reality Testing	Impulse Control	Assertiveness	Independence
Males				<0.01
Females	<0.01	0.029	0.031	

Table 1: p-values of habituation response for males and females.

Gender was also extrapolated as a variable and emotional intelligence changes and gender response differences were explored. Upon completion of the weeklong exercise, it was found that males experienced significantly increased levels of self-perception (p=.014), self-regard (p=.032), and self-awareness (p<.01), thus feeling stronger and more self-assured.

	Increased Self-Perception	Increased Self-Regard	Increased Self-Awareness	Decreased Decision Making
Males	0.014	0.032	<0.01	
Females				<0.01

Table 2: p-values of various emotional intelligence variables for males and females.

CONCLUSIONS

Medical simulation training exercises coupled with a high stress environment is essential and effective for learning and performance improvement[1]. The outcomes of this project offer insight into how educators could target improved training for personnel in high stress simulation environments, with emphasis on gender differences.

Since it has been established that males and females manage and respond to stress in different ways[6], these results may aid in adjusting military training to target efforts relative to males and females to produce better outcomes. Facilitating a greater sense of reality testing and impulse control for students prior to stress induced simulation may improve the habituation process and result in greater learning outcomes and individual performance. Prior training and exposure to autonomous decision making and self-directed activities (independence) may help males habituate faster in high stress training situations. Similarly, facilitating greater ability to be forthright and expressive (assertiveness) may help females habituate and learn in high stress educational environments. Training our military medical students now in ways that will best enhance their learning and performance can help improve how they practice military medicine in the future.

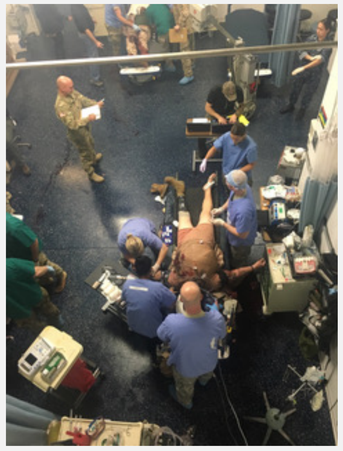

Figure 1: Combined male and female military and medical personnel working together in a high stress simulation training exercise during Intensive Surgical Skills Week.

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