Stress and Resident Interdisciplinary Team Performance: Results of a Pilot Trauma Simulation Program

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Article Summary

Our team studied general surgery and emergency medicine residents’ non-technical skills, stress, and workload during trauma simulations, and found that stress and workload were significant predictors of deteriorated non-technical skills. These finding highlights the importance of offering stress management and performance optimization skills training to trainees to reduce their stress and workload, and optimize their non-technical skills in trauma situations.
Abstract

Background
Excessive stress negatively impacts surgical residents’ technical performance. The effect of stress on trainee non-technical skills (NTS), however, is less well studied. Given that NTS are known to impact clinical performance, the purpose of this study was to assess the relationship between residents’ perceived stress and NTS during multidisciplinary trauma simulations.

Methods
First year surgery and emergency medicine residents voluntarily participated in this study. Residents participated in three trauma simulations across two training sessions in randomly assigned teams. Each team’s NTS were evaluated by faculty using the trauma non-technical skills scale (T-NOTECHS). The T-NOTECHS consists of 5 items: Leadership, Cooperation, Communication, Assessment, and Situation Awareness/Coping with Stress. Following each scenario, residents completed the 6-item version of the State-Trait Anxiety Inventory and the Surgery-Task Load Index to detail their perceived stress and workload during scenarios. Linear regressions were run to assess relationships between stress, workload, and NTS.

Results
Twenty-five residents participated in the first simulation day, and 24 residents participated in the second simulation day. Results from regressions revealed that heightened stress and workload predicted significantly lower NTS performance during trauma scenarios. In regards to specific aspects of NTS, residents’ heightened stress and workload predicted statistically significant lower situation awareness and decision-making during trauma scenarios.

Discussion
Residents’ perceived stress and workload significantly impaired their NTS during trauma simulations. This finding highlights the need to offer stress management and performance optimizing mental skills training to trainees to lower their stress and optimize NTS performance during challenging situations.
**Background**

Non-technical skills (NTS), which consist of constructs such as teamwork, communication, situation awareness, and decision making, are critical for safe and effective surgical performance.\(^1,2\) Previous research has shown that poor communication was the cause of 43% of surgical errors during all phases of care, and NTS errors occur more frequently than technical errors in trauma situations.\(^3-5\) Recent systematic reviews of the literature have cited numerous studies showing failures in NTS are related to an increased rate of technical errors.\(^3,6-8\) Clearly, NTS are critical for surgical performance, but it is unclear which factors can compromise surgeons’ NTS. One factor that could impair NTS and compromise patient safety is stress.

Stress is a challenging concept to define. While some theorists contend that stress is an environmental stimulus that necessitates a change in psychological and physiological states to manage it, others argue that stress is a response pattern to environmental stimuli.\(^9,10\) In this manuscript, we will define stress as the resulting psychophysiological response when situation demands exceed one’s perceived resources and ability to cope with those demands.

When stress heightens to an excessive level, it can initiate primitive survival responses to fight or flee from a threatening situation.\(^9\) Physiologically, excessive stress can initiate the sympathetic-adrenomedullary axis, which is defined by the release of catecholamines (i.e., particularly norepinephrine and epinephrine) into the bloodstream to mobilize the body’s resources to respond to perceived threats and challenges.\(^11\) In regards to cognitive function, excessive stress can impair attention through the reallocation of attention from intention-based attention to stimulus-driven focus (i.e., leading to distractibility), decreased working memory (i.e., the system responsible for temporarily storing and manipulating relevant information), and
impaired decision making (i.e., reduced executive function, and decreased cognitive control/increased reliance on automatic decisions).\textsuperscript{9,12-14}

In surgery, there are several intraoperative factors that can contribute to heightened stress for surgeons including: time pressures, technical complications, interruptions and other distractions, and heightened workload.\textsuperscript{15} In a systematic review of the literature, Arora et al. (2010) found that excessive stress can reduce laparoscopic surgical performance and NTS, particularly for novices who are particularly susceptible for the damaging effects of stress due to their inexperience.\textsuperscript{15} The authors explain, however, that there is limited data on the effects of stress on NTS, and that further study is needed to better understand how stress influences NTS during crisis situations. Recent research has supported the notion that excessive stress can have deleterious effects on surgical performance.

Grantcherov et al. (2019) collected continuous heart-rate variability (HRV) data from a single attending surgeon over multiple procedures, and found that heightened stress was associated with poorer technical performance (i.e., near misses or injuries to patients).\textsuperscript{16} Recently, our team recently found that compared to low-stress situations, heightened perceived stress was associated with significantly worse laparoscopic surgical performance among resident surgeons.\textsuperscript{17} Importantly, researchers have studied the effects of stress on residents’ performance during simulated trauma scenarios, and found that while stress had a significantly negative effect on technical performance, there were no observed effects of stress on residents’ NTS performance.\textsuperscript{18} The authors acknowledged that given their low sample size (n = 13), it is possible that a relationship may exist that was not detected. Given the importance of NTS to surgical performance, and the negative effects of stress on other aspects of surgical performance, it is necessary to study the effects of stress on residents’ NTS further.
Thus, the purpose of the current study was to evaluate the relationship between residents’ stress, workload, and NTS during simulated multidisciplinary trauma events. We hypothesized that stress and workload would be negatively associated with residents’ NTS.

**Methods**

Following Institutional Review Board approval, general surgery (post-graduate year 1) and emergency medicine (EM) residents (post-graduate years 1 and 2) voluntarily consented to participate in this study during two interdisciplinary trauma team training simulation days.

*Trauma Simulation Day #1*

The first trauma team training simulation day was held in August 2019. General surgery and EM residents were randomly assigned to one of six groups. Groups consisted of four to five residents, with a maximum of one EM resident per group. Upon arrival to the Indiana University Health Fairbanks Simulation Center, residents were asked to complete a pre-simulation questionnaire detailing their confidence to manage trauma situations. For each item, residents rated their confidence on a 5-point Likert scale ranging from 1-“Not at all confident” to 5-“Very confident”.

Residents then received an orientation to the simulated emergency rooms and patient manikins (SimMan 3G, Laerdal Medical, Wappingers Falls, NY) to become familiar with all equipment and functionality of the rooms and manikins. Patient manikins that were controlled and voiced by experienced simulation technologists who had general surgery and EM attending physicians providing instructions. Following the orientation, residents participated in three, 15-minute trauma simulations, where they were expected to work as a cohesive team to effectively diagnose and treat patients in a simulated emergency room. The presenting cases included a
penetrating chest trauma (i.e., requiring a thoracostomy tube placement), a head and neck trauma (i.e., a crush injury requiring placement of a cricothyroidotomy), and a pelvic fracture (i.e., blunt injury requiring a pelvic binder). Following a standardized template, cases were designed by general surgery and EM faculty (i.e., with ≥ 10 years of simulation-based education experience, all holding institutional leadership positions in simulation, and all having faculty development exposure to adult education) to present challenging, but straightforward trauma situations. Faculty were mindful to design the cases to be level-appropriate and avoided including purposeful deception (e.g., equipment not being available, unrealistic changes in patient status, etc.). Study team members, consisting of general surgery and EM attending physicians, simulation and education fellows, and registered nurses, assisted trauma teams as confederates. Staff were instructed to only assist teams if their help was requested. If teams completed all aspects of a scenario prior to the 15-minute cutoff, the scenario was ended. Since our team utilized iterations of previously-used scenarios that we were familiar with, we accurately anticipated the time needs of our learners and no teams required more than the allotted 15 minutes to complete any of the scenarios.

Upon the conclusion of each scenario, residents completed questionnaires detailing their perceived stress and workload during the scenario. In regards to perceived stress, residents completed the six-item version of the State-Trait Anxiety Inventory (STAI-6), which asks users to detail their level of stress by rating the intensity of six emotions (e.g., calm, upset, worried) from 1-“Not at all” to 4-“Very Much”. Residents also completed the surgery-specific version of the NASA-Task Load Index (SURG-TLX), where they rate how demanding (i.e., mentally, physically, and temporally), complex, stressful, and distracting the event was. Following scenarios, faculty completed the Trauma-Nontechnical Skills (T-NOTECHS) assessment to rate
each team’s leadership, cooperation, communication, assessment and decision making, and situation awareness/ability to cope with stress. Faculty T-NOTECHS training was provided for one hour prior to residents’ arrival at the simulation center, to ensure that all faculty were consistent with their T-NOTECHS assessments. T-NOTECHS training focused on familiarizing faculty with each domain of the T-NOTECHS, guided reflection on what behaviors represented different scores (e.g., a 2 vs. a 3), and addressing any outstanding questions about the instrument. Faculty were only instructed to evaluate team’s NTS during the scenario, and care was taken to avoid explicitly sharing the study aims with faculty to avoid biasing their ratings. At the conclusion of each scenario, faculty engaged in a guided debrief with residents to provide feedback and answer any outstanding questions following the PEARLS debriefing method.

Following participation in the three scenarios, residents completed a post-simulation questionnaire (i.e., the same questionnaire used prior to the event) to again gauge their confidence to manage trauma events.

**Trauma Simulation Day #2**

The second trauma simulation day was held in December 2019. The group of general surgery residents remained unchanged, but different EM residents participated in training. Also, group distribution differed slightly in the second trauma simulation day due to scheduling conflicts, so groups consisted of three to five residents per group. Residents followed the same assessment and simulation protocol detailed for the Trauma Simulation Day #1, however, the scenarios differed to ensure that residents were appropriately challenged and engaged. The scenarios included in this second simulation day included a chest trauma (i.e., hemothorax requiring chest tube placement), a head and neck trauma (i.e., requiring cricothyroidotomy and recognition of coagulopathy with need for pharmacological reversal), and a two-patient scenario including a
pelvic fracture and a traumatic lower extremity amputation (i.e., the amputation case interrupted the pelvic fracture case and ran concurrently for the remainder of the simulation). For the traumatic amputation case, a simulation fellow portrayed the patient with an amputated leg resulting from a motorcycle crash with a high-fidelity prosthesis.

Data Analyses

Descriptive statistics (mean ± standard deviation) were calculated for all variables. Since the number of residents in each group and faculty for each scenario may have differed (i.e., between scenarios and simulation days), means were calculated for all variables for each group per scenario and used for data analysis. Pearson correlations were calculated for all variables. Linear regression analyses were calculated to determine if stress, workload, pre-simulation confidence, or group size predicted NTS scores. Between-session differences in stress, workload, and NTS scores were analyzed using two-sample t-tests. Changes in confidence between sessions, and differences in stress, workload, and NTS scores between scenarios (i.e., within the same session) were analyzed with paired t-tests. For all analyses, a p-value of less than 0.05 was considered significant.

Results

Twenty-five residents participated in the first trauma simulation day (80% general surgery, 52% female) and twenty-four residents participated in the second trauma simulation day (83.3% general surgery, 54.2% female). There were no significant differences in stress, NTS, or pre-session confidence between simulation days 1 and 2, however, there was a significant increase in workload across sessions (Table 1). In regards to between-scenario differences in stress and workload, the only observed difference for the first simulation day was that participants reported
significantly higher workload during the difficult airway scenario than the chest trauma scenario (Table 2). During the second simulation day, residents reported significantly higher stress and workload scores during the two-patient scenario than the chest trauma scenario, and significantly higher workload during the two-patient scenario than the facial trauma scenario. Lastly, residents reported significantly higher workload scores during the facial trauma scenario compared to the chest trauma scenario.

There was a significant positive correlation between stress and workload (R = 0.47, p = 0.004). We did not observe significant correlations between group size and stress, workload, or NTS. However, we found a significant negative correlation observed between pre-session confidence and stress (R = -0.37, p = 0.03), and a significant positive correlation between pre-session confidence and NTS (R = 0.4, p = 0.02). We also found a significant negative correlation between stress and NTS (R = -0.49, p = 0.002), but there were no significant correlations between workload and NTS scores.

When controlling for pre-session confidence and group size, our linear regression model revealed that stress and workload scores were significant negative predictors of NTS (Tables 3 and 4). Furthermore, higher workload was a significant negative predictor of communication, assessment and decision making, and situation awareness/ability to cope with stress. Stress was a significant negative predictor of assessment and decision making and situation awareness/ability to cope with stress.

**Discussion**

We aimed to assess the impact of stress and workload on junior surgery and EM residents’ NTS during trauma simulations. We found that across two simulation days and participation in multiple trauma scenarios, perceived stress and workload were significant negative predictors of
residents’ NTS. That is, for each unit increase in stress and workload, NTS deteriorated significantly. When evaluating the specific aspects of NTS that were negatively impacted by stress, we found that decision making and situation awareness significantly declined. Situation awareness/coping with stress and decision making are important cognitive constructs for surgical performance. Since previous literature has shown that stress and workload can compromise cognitive processing and executive function, it is understandable that these NTS constructs would be compromised during challenging trauma situations.9,12-15

In regards to workload, we observed a significant decline in communication in addition to situation awareness and decision making. The sensitivity of the SURG-TLX to assess increases in workload from multiple sources may have also contributed to our findings that only workload was associated with poorer communication. The literature in the aviation industry has shown that heightened workload can contribute to poor communication.23 The STAI-6 is a unidimensional assessment of stress in the form of emotional anxiety.19 Conversely, the SURG-TLX assesses several “stressors” that contribute to heightened workload beyond anxiety alone (e.g., mental demands, temporal demands, distractions, etc.) that can also impair executive function.20 Given its unidimensional approach to measuring emotional anxiety, the STAI-6 may not have been sensitive enough to detect influences on workload from multiple sources like the SURG-TLX, which designed for use in surgical situations.19,20 Clearly, heightened perceived stress and workload are barriers to junior residents’ NTS. Based on the importance of NTS to safe and effective surgical performance, this finding highlights the need to consider methods to reduce residents’ stress and workload.

Our finding is congruent with some research in this area. In a pilot study of OR team performance during multidisciplinary crisis simulations, Undre et al. (2007) found that
intraoperative bleeding was associated with reduced NTS, which suggests crisis situations may deteriorate NTS due to the inherent stress these situations evoke.\textsuperscript{24} That being said, the authors did not measure stress directly, so the relationship between stress and NTS during surgical crises could only be hypothesized. There have also been qualitative studies into the effects of stress on surgeons’ NTS, and the results from these studies indicated that stress deteriorates communication and cohesion among the operative team.\textsuperscript{25,26} However, since this data was collected through semi-structured interviews, there is no empirical data to support these findings. The current study adds to this previous literature meaningfully, as our team assessed stress, workload, and NTS directly, and found data to confirm that excessive stress and workload are significant barriers to optimal surgical performance for junior residents.

It is possible that based on their experience managing difficult trauma situations in the clinical environment, senior residents participating in similar scenarios would perceive lower stress and display better NTS than their junior counterparts. Previous research has found that due to their inexperience coping with intraoperative challenges and stress, junior surgeons experience significantly higher stress than senior surgeons.\textsuperscript{15} Since senior residents have likely managed trauma situations in the clinical environment as the team leader, it would be logical to hypothesize that this experience would translate to the current study. Accordingly, future work should aim to compare junior to senior residents using simulated trauma scenarios to determine if experience is associated with lower perceived stress, workload, and better NTS.

In regards to differences in stress, workload, NTS, and confidence between simulation days, the only significant difference we found was a significant increase in workload from the first simulation day to the second. This was likely due to the heightened workload residents experienced during the two-patient trauma scenario implemented during the second simulation.
day. Residents reported significantly higher workload during this scenario than the others during the second day, as well as higher stress than the chest trauma scenario. These findings support our team’s expectation that the complexity of managing two trauma events simultaneously would cause heightened stress and workload for residents. In an effort to assess the effectiveness of interventions designed to teach residents stress or workload management, simulation-based scenarios could be tailored based off of these findings to feature multiple patients requiring immediate care. These types of simulation would require clear and effective leadership/communication, as well as decision making (e.g., prioritizing care tasks) and situation awareness (e.g., patient monitoring).

Similar to our findings that workload (i.e., and not stress) was related to detriments to resident communication, the lack of observed differences in stress compared to workload from scenario-to-scenario may also be due to the fact that stress is assessed differently using the STAI-6 and SURG-TLX. While stress may have been consistent for all scenarios during the second trauma simulation day (i.e., as assessed with the STAI-6), some scenarios (i.e., particularly the two-patient scenario) may have caused residents to feel under more time pressure or distracted than the other scenarios in addition to anxiety that were detected by the SURG-TLX that contributed to the observed findings.

There were some limitations in the present study. We were not able to assess objective markers of stress in the current study. While we attempted to have residents wear heart rate monitors to assess heart rate and heart rate variability during the second trauma simulation day, we were limited in the number of recordings we could take concurrently. Additionally, some residents did not consent to wearing heart rate monitors, so we were limited in our collection of physiological stress measures. We relied on self-report measures of stress, workload, and NTS to
investigate these variables, which can introduce bias into our results. That being said, all of the instruments selected for use in this study have sufficient validity and reliability evidence for use in the surgical environment.\textsuperscript{17,20,21} Furthermore, in regards to stress, there is literature to suggest that cognitive stress is more impactful on performance than physiological stress.\textsuperscript{17,27} In a previous study, our team found that in spite of equally high HR and HRV, residents that reported lower cognitive stress had better laparoscopic performance than residents reporting higher cognitive stress.\textsuperscript{17} In the sport psychology literature, the catastrophe model of anxiety and performance contends that in spite of a performer’s level of physiological arousal, their cognitive anxiety is the biggest determining factor in how stress impacts performance.\textsuperscript{27} If cognitive stress exceeds one’s perceived coping ability, the resulting response is a catastrophic performance collapse. In future studies, our team plans to continue to collect perceived stress data, as well as additional physiological stress data to develop more comprehensive insight into how stress impacts residents’ NTS during multidisciplinary trauma simulations. Based on our findings, it may also be necessary to incorporate techniques into residents’ training to reduce stress and optimize NTS performance. Another limitation in the present study was that our team implemented a team-based NTS assessment, so we were unable to determine how the trauma team leader’s stress and workload impacted their NTS, specifically. In future iterations of this study, we plan to assess the impact of trauma team leader stress and workload on their NTS using the Non-Technical Skills for Surgeons (NOTSS) assessment.\textsuperscript{28}

Mental skills are set of psychological techniques designed to enable performers to consistently achieve their optimal mental state for performance, and manage stress effectively during challenging situations.\textsuperscript{29,30} Our team has developed a comprehensive mental skills curriculum for surgery residents,\textsuperscript{31} and found that residents who participated in our mental skills
curriculum were able to maintain their laparoscopic performance under heightened stress significantly better than controls. However, it is unclear if participation in our mental skills curriculum will enable residents to better preserve their NTS during stressful situations. Accordingly, our team plans to implement mental skills training with EM and general surgery residents and study the effectiveness of this training on residents’ stress and NTS during simulated trauma scenarios.

Conclusions

The results from this study show that heightened stress and workload predict significantly worse NTS performance for junior surgery and EM residents participating in multidisciplinary trauma simulations. Importantly, this finding highlights the need to identify strategies to reduce junior residents’ stress and workload, and preserve their NTS during crisis situations. Further study is needed to identify if physiological measures of stress also predict poorer NTS performance among junior residents, and compare junior and senior residents’ stress, workload, and NTS during simulated trauma scenarios to identify if these findings differ based on experience level.

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Author Contributions

Mr. Nicholas Anton conceived and designed the analysis, collected the data, interpreted results, and wrote the paper.

Dr. Elizabeth Huffman assisted with conceiving the study design and data collection.

Dr. Rami Ahmed assisted with conceiving the study design and data collection.
Dr. Dylan Cooper assisted with conceiving the study design and data collection.

Dr. Dimitrios Athanasiadis assisted with data collection and performed data analysis.

Dr. Jackie Cha assisted with data collection and selection of appropriate assessments.

Dr. Dimitrios Stefanidis assisted with conceiving the study design and approach for analysis.

Dr. Nicole Lee oversaw all aspects of the study including design and conception, data collection, interpretation of findings.
References


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Table 1. Differences between Simulation Days

<table>
<thead>
<tr>
<th></th>
<th>Simulation Day #1</th>
<th>Simulation Day #2</th>
<th>p-value</th>
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</thead>
<tbody>
<tr>
<td>STAI-6</td>
<td>14.7 ± 1.8</td>
<td>14.8 ± 1.5</td>
<td>0.87</td>
</tr>
<tr>
<td>SURG-TLX</td>
<td>59.5 ± 8.8</td>
<td>77 ± 15.9</td>
<td>0.0003</td>
</tr>
<tr>
<td>T-NOTCHES</td>
<td>17.2 ± 3.2</td>
<td>17.6 ± 4.1</td>
<td>0.77</td>
</tr>
<tr>
<td>Confidence</td>
<td>47.7 ± 6.8</td>
<td>50.6 ± 8.9</td>
<td>0.14</td>
</tr>
</tbody>
</table>

Higher STAI-6 scores represent higher stress, higher SURG-TLX scores represent heightened workload, Higher T-NOTCHES scores represent better non-technical skills.
Table 2. Between Scenario Differences in Stress and Workload

<table>
<thead>
<tr>
<th>Simulation Day/Scenarios</th>
<th>STAI-6</th>
<th>SURG-TLX</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: Chest Trauma vs. Difficult Airway</td>
<td>14.3 vs. 14.6, p = 0.52</td>
<td>53.9 vs. 64.6, p = 0.01</td>
</tr>
<tr>
<td>1: Chest Trauma vs. Pelvic Injury</td>
<td>14.3 vs. 15.3, p = 0.22</td>
<td>53.9 vs. 59.4, p = 0.17</td>
</tr>
<tr>
<td>1: Difficult Airway vs. Pelvic Injury</td>
<td>14.6 vs. 15.3, p = 0.25</td>
<td>64.6 vs. 59.4, p = 0.1</td>
</tr>
<tr>
<td>2: Two-Patient Trauma vs. Chest Trauma</td>
<td>15.5 vs. 14, p = 0.03</td>
<td>92.7 vs. 64.7, p &lt; 0.0001</td>
</tr>
<tr>
<td>2: Two-patient Trauma vs. Facial Trauma</td>
<td>15.5 vs. 14.3, p = 0.07</td>
<td>92.7 vs. 71.4, p &lt; 0.0001</td>
</tr>
<tr>
<td>2: Chest Trauma vs. Facial Trauma</td>
<td>14 vs. 14.3, p = 0.6</td>
<td>64.7 vs. 71.4, p = 0.05</td>
</tr>
</tbody>
</table>

Higher STAI-6 scores represent higher stress, higher SURG-TLX scores represent heightened workload.
Table 3. Linear Regression Analysis of Stress and Non-Technical Skills

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>95% Confidence Interval</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-NOTECHS</td>
<td>-0.90</td>
<td>-1.6,-0.18</td>
<td>0.02</td>
</tr>
<tr>
<td>Leadership</td>
<td>-0.09</td>
<td>-0.26,0.07</td>
<td>0.26</td>
</tr>
<tr>
<td>Cooperation</td>
<td>-0.16</td>
<td>-0.33,0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>Communication</td>
<td>-0.17</td>
<td>-0.35,0.01</td>
<td>0.06</td>
</tr>
<tr>
<td>Assessment/Decision Making</td>
<td>-0.25</td>
<td>-0.41,-0.1</td>
<td>0.002</td>
</tr>
<tr>
<td>Situation Awareness/Coping with Stress</td>
<td>-0.23</td>
<td>-0.39,-0.07</td>
<td>0.006</td>
</tr>
</tbody>
</table>

For each unit increase in stress, the coefficient reflects the responding decrease in non-technical skills.
Table 4. Linear Regression Analysis of Workload and Non-Technical Skills

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Confidence Interval</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-NOTECHS</td>
<td>-0.1</td>
<td>-0.18,-0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Leadership</td>
<td>-0.01</td>
<td>-0.03,0.01</td>
<td>0.17</td>
</tr>
<tr>
<td>Cooperation</td>
<td>-0.02</td>
<td>-0.04,0.001</td>
<td>0.06</td>
</tr>
<tr>
<td>Communication</td>
<td>-0.02</td>
<td>-0.04,-0.003</td>
<td>0.03</td>
</tr>
<tr>
<td>Assessment/Decision Making</td>
<td>-0.02</td>
<td>-0.04,-0.007</td>
<td>0.008</td>
</tr>
<tr>
<td>Situation Awareness/Coping with Stress</td>
<td>-0.02</td>
<td>-0.04,-0.006</td>
<td>0.01</td>
</tr>
</tbody>
</table>

For each unit increase in workload, the coefficient reflects the responding decrease in non-technical skills. The