Does subjecting health students to stressful scenarios better prepare them for real world practice?

Simulation is an education and training technique that allows students to practice in safe environments that replicate substantial aspects of the real world in a fully interactive fashion. Simulation is often used to train undergraduates as it is low-risk for learners and patients. However, there is limited research to date investigating the effects of stress on performance in simulation and opinions of educators remains divided, with some favouring exposing novice students to stressful situations early as they work to improve (i.e. 'being thrown in the deep end') while others suggest this can be detrimental to performance and learning. Stress can be particularly severe amongst novice students with only limited exposure to realistic clinical environments. Social evaluation anxiety (SEA) (i.e. the feeling of being judged by others) provides some insight into why students may experience such stress, but the relationship between stress, performance, and its contribution to learning is not yet fully understood. Not fully understanding the effect of students' stress on training performance means we may impair learning and acquisition of clinical skills during training or, even worse, fail to adequately prepare individuals to function in real situations. We therefore conducted an experiment to investigate the extent to which stress can impact upon students' performances in simulation.

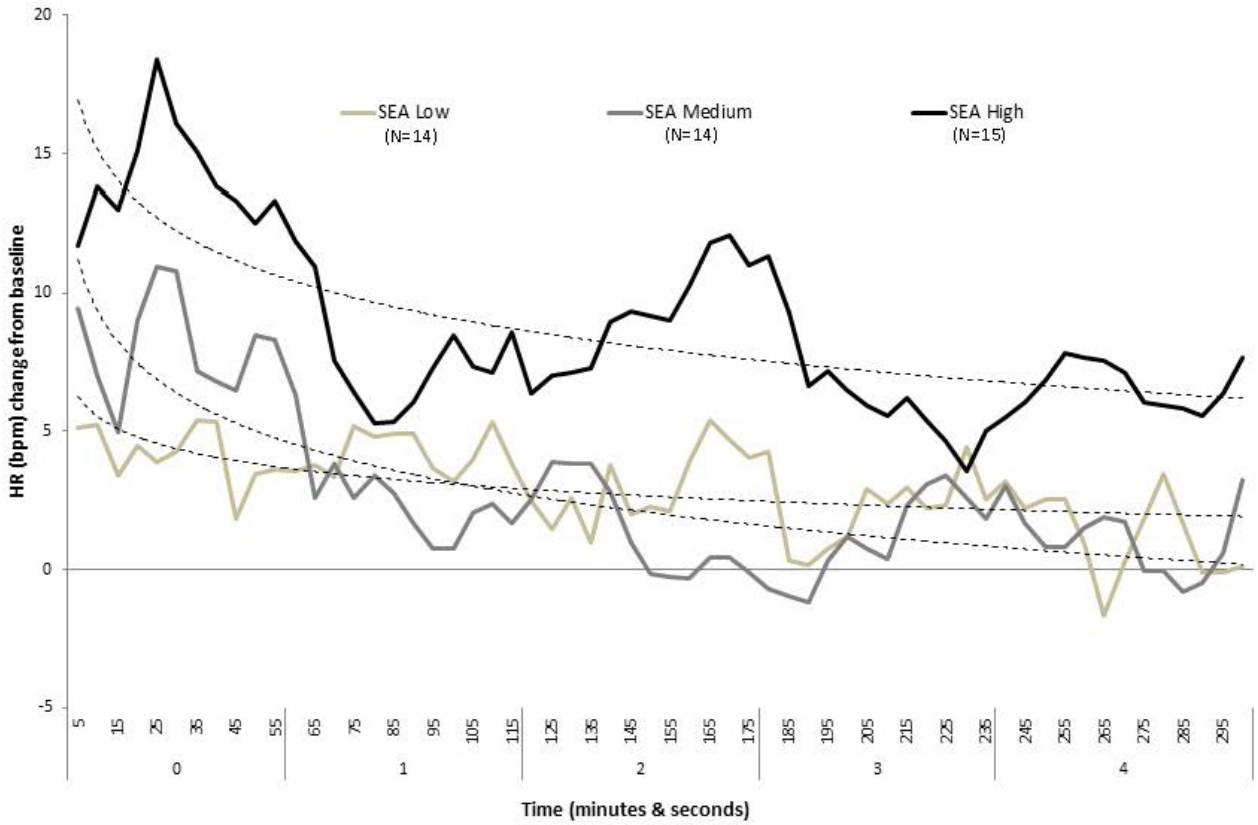

FIg. 1. Average HR deviation from baseline for first five minutes of scenario by experimental condition (with trend lines).

Final-year Bachelor of Science (Nursing) students (N=70) were randomly assigned to complete one of three clinically identical simulation-based scenarios designed to elicit varying levels of social evaluation anxiety by manipulating the number of other people present with the student during the simulation (1, 2 or 3 others). Rises in stress were measured via continuous heart-rate and salivary cortisol. Performance scores were calculated from the average of two educators using a structured clinical checklist scored out of 16.

Noticeably different increases in heart-rate were found within the first minute of the simulation between those students with one versus three other people in the room (+4.13 vs. +14.01 beats-per-minute respectively). Salivary cortisol measures similarly suggested higher changes in anxiety amongst those with three other people in the room compared to one (-0.05 vs. +0.11 µg/dL respectively). Students with only one other person accompanying them in the simulation significantly outperformed those accompanied by three others (12.95 *vs.* 10.67 respectively).

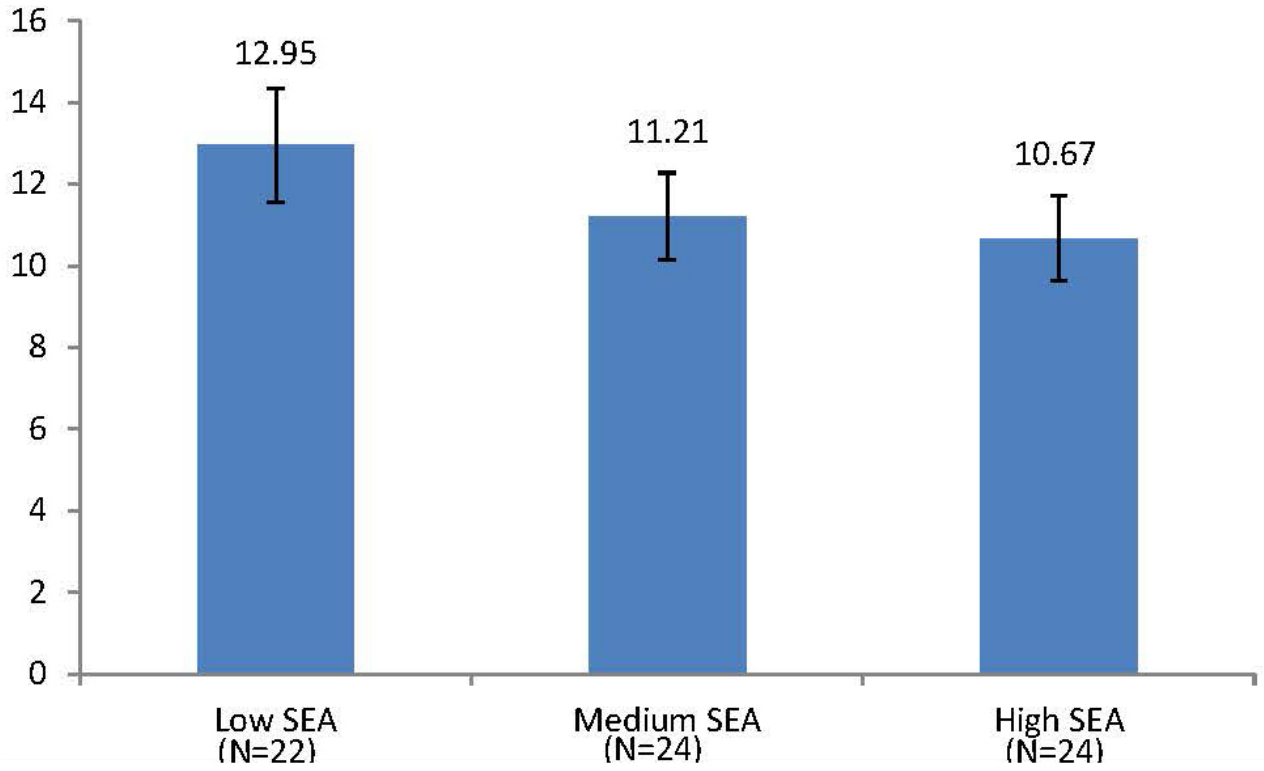

Fig. 2. Mean clinical assessment scores by group.

Students accompanied by greater numbers during simulations experienced measurably greater anxiety and measurably poorer performances. These results demonstrate the ability to manipulate social evaluation anxiety within simulation training of undergraduate health students in order to help students better acclimatise to stressful events prior to practising in real clinical settings.

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Publication

An experimental investigation into the extent social evaluation anxiety impairs performance in simulation-based learning environments amongst final-year undergraduate nursing students.
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