University of Southern Queensland

Participant Information Sheet

Scenario, data gathering and interview

USQ HREC Approval number: H21REA158

Project Title

Threat versus challenge: cognitive appraisal and stress responses comparisons of final year paramedicine students

Research team contact details

Principal Investigator Details

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Description

This project is being undertaken as part of a Doctor of Philosophy through the University of Southern Queensland.

The purpose of this project is to quantify the level of stress final year paramedicine students are under as they approach the beginning of their careers. Also to evaluate if the Univeristy providers can deliver education packages to better equip them to see high acuity patient scenarios as a challenge instead of always as a threat. By utilising targeted skills training for novice paramedicine clinicians, can we shift the mindset from threat to challenge appraisal when managing high acuity scenarios? If successful, can this be formulated into a dedicated learning package that would sit within any Paramedicine curriculum in the higher education area.

Participation

Your participation will involve undertaking two high acuity scenarios across a 7 day period with each taking approximately 75 minutes of your time. You will also complete several questionnaires, where questions will include: (1) how threatening do you expect the upcoming task to be; (2) how demanding do you think the upcoming task will be; with follow up questions after the scenario including (1) how demanding was the task you just completed, and (2) How able were you to cope with this task.

Each participant will solo complete a high acuity scenario as instructed. A checklist of performance will be completed to ensure the simulated patient outcome was a success. Baseline saliva samples and baseline blood glucose (BGL) samples will be taken before the scenario to obtain measures of physiological stress. Baseline blood pressure (BP), reasting heart rate (HR) and respiration rate (RR) will also be obtained. Other measures will be conducted as below:

Intra-scenario:

- fNIRS: Beta band (13-25 Hz) activity at the anterior temporal sites will be recorded throughout the scenario and for five minutes after the completion of the scenario. Mean fNIRS activity levels will be obtained for comparison to the subsequent scenario seven days later.

- Skin: Equivital sensors will measure changes in skin sweat levels of the upper arm of particpants via a GSR sensor and an infrared Thermopile to detect peripheral skin temperature changes. Mean levels will be obtained for comparison to the subsequent scenario seven days later.

Post Test:

- Cortisol and BGL: When the participant experiences the stressful scenario, the HPA axis is activated and cortisol is released. Cortisol levels peak at 20-30 minutes after the onset of the stressful event (Kemeny, 2016), therefore post-test salivary cortisol will be sampled at 25 minutes from the commencement of the scenario.

- Cardiovascular: HR, RR and BP readings are obtained to assess response to scenario and for comparison to the subsequent scenario seven days later.

Your participation in this project is entirely voluntary. If you do not wish to take part, you are not obliged to. If you do not wish to take part, you are not obliged to. If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. You may also request that any data collected about you be withdrawn and confidentially destroyed.

If you do wish to withdraw from this project or withdraw data collected about yourself, please contact A/Prof Erich Fein via email (Erich.Fein@usq.edu.au) or via phone (+61 7 4631 2932).

Your decision whether you take part, do not take part, or take part and then withdraw, will in no way impact your current or future relationship with the University of Southern Queensland or the Australian Catholic Univeristy.

Expected benefits

It is expected that this project will be of direct benefit by empowering you to appraise situations from a challenge perspective, therefore building confidence in your patient management skills and potentially leading to improved patient outcomes. However; it may also benefit Paramedic workforce as a whole, by:

- Providing targeted and individualized learning packages to final year undergraduate paramedicine students to improve confidence and clinical skills.

- Improving the quality of education offered to final year paramedicine students.

Risks

In participating in this research, there are minimal emotional risks such as, participants may feel a negative self-opinion as a result of their simulated scenario. To minimize this risk, it is important to realise that (a) the difficulty of the experimental tasks was higher than normal in order to enhance the potential effects between the baseline and intervention, and (b) the intervention is being tested, not the participant.

Sometimes thinking about the sorts of issues raised in this experiment can create some uncomfortable or distressing feelings. If you need to talk to someone about this immediately, please contact University Crisis Line service if you are feeling emotionally distressed / experiencing mental health issues / having thoughts of self-harm or other harm. Call 1300 638 485 or text 0488 884 191. Also, all Victorian Paramedicine students have access to Ambulance Victoria Peer Support program via these details: Ph: 0418 770 925 or Email: peerdog@ambulance.vic.gov.au

There is also minimal discomfort associated with saliva sampling and some minor pain with obtaining a blood sample (one drop) using a disposable lancet. Please notify the research team if this is of concern.

Privacy and confidentiality

All comments and responses are confidential unless required by law.

This research is being conducted by the University of Southern Queensland (USQ) and the Australian Catholic University (ACU). Any information obtained in connection with this project that can identify you will remain confidential. This will include de-identification of all documents relating to the study by assigning you an anonymous 'participant identification number'. Your individual data will be kept confidential and will not be accessible by any potential employers. Ambulance Services and other funding bodies may be offered de-identified collated data on request (subjects will not be identified in this documentation).

Your individual data will be stored on a secure server at USQ. Your data will be entered into an excel spreadsheet alongside your accompanying participant identification number. Only the research team will have access to the data. All Information will be kept confidential; electronic data will be kept on a password-secured computer and your results will only be identified by a subject ID code. Physical documents will be kept in a locked cabinet inside a locked office at ACU.

Any analysis, interpretation and publication of the study results will not identify you. In accordance with relevant Australian and/or Victorian privacy and other laws, you have the right to request access to the information collected and stored by the study team about you. You also have the right to request that any information with which you disagree, be corrected. Please contact the study coordinator if you would like access to your information.

Any collected samples (eg. Saliva) will be used only for the purpose of measuring hormones and stress markers in line with the aims of the study. Samples will be securely disposed of at the completion of the study.

Consent sought for this study is "extended consent", meaning you consent to participate in this current research project, as well as potentially being contacted again for future research or to use your de-identified data for other research projects with a similar focus.

Occasionally, legal bodies or courts can request information as part of a legal process. If a court of law requests information about you, then we are legally obliged to share this information.

Any hard copies gathered during this study will be scanned immediately to a secure server (USQ QCIF's Nextcloud) and then immediately placed in a secure document bin for shredding. Consent forms will be retained for 15 years after the project has concluded or is abandoned by USQ as stated in 601.2/C111 (Consent) of the above policy. The data generated for this project will be considered as Research Data - Significant, according to the definitions of the above policy and, as such, will be retained indefinitely as stated in 601.2/C123 of the above policy.

If you request a summary of findings, a copy will be sent to you via email when the research project has finished. It is important to note that feedback on individual results (i.e. individual data, or any other individual's specific data) will not be available for sharing, in any way, to other participants or anyone outside the research team. If a participant requests a summary of findings from the project, the findings will be provided as aggregate (grouped) data only i.e., not at an individual level beyond your own results which may benefit your clinical development. Participants are encouraged to contact the researchers via email at the conclusion of the project to access general, non-identifiable, information regarding the overall project findings.

Any data collected as a part of this project will be stored securely, as per University of Southern Queensland's Research Data and Primary Materials Management Procedure.

Consent to participate

We would like to ask you to sign a written consent form (enclosed) to confirm your agreement to participate in this project. Please return your signed consent form to a member of the Research team prior to participating in your interview.

Questions

Please refer to the Research team contact details at the top of the form to have any questions answered or to request further information about this project.

Concerns or complaints

If you have any concerns or complaints about the ethical conduct of the project, you may contact the University of Southern Queensland, Manager of Research Integrity and Ethics on +61 7 4631 1839 or email researchintegrity@usq.edu.au. The Manager of Research Integrity and Ethics is not connected with the research project and can address your concern in an unbiased manner.

Thank you for taking the time to help with this research project. Please keep this document for your information.

Schedule

The experiment should last between 45-60 minutes and be undertaken between 1100 hrs and 1800 hrs when cortisol levels are most stable.

Procedure

1. **Meet and greet:** Participants will be welcomed by the experimenter.
2. **Information sheet:** Participants will be informed verbally by the experimenter that they can withdraw from the study at any time without adverse consequences for their academic standing or employment. Reasons for withdrawal do not need to be justified. There will be no attempts by the researchers to convince participants to take part or stay in the study. An information sheet including summary details of the experiment will be shown for the participants to read. Participants will be given as much time as they need to read through the forms.
3. **Consent:** Informed consent will be obtained prior to testing. The experiment will only continue once the participants have signed the consent form.
4. **Rest Period:** Participants are given a 15 minute rest period during which baseline HR, BP, RR and fNIRS are recorded. Baseline salivary cortisol samples and baseline blood glucose samples are also obtained.
5. **Demand / resources questionnaire:** Participants will fill out a questionnaire based on the validated method described by Schneider (2008), cognitive appraisal will be established before the scenario utilising 'demand' questions such as "How demanding do you expect the upcoming task to be?".
6. **Cognitive test / executive function:** Participants will complete Part B of the Trail Making Test on an I-Pad (Trail Making Test J Lite). Time to completion (seconds) and number of misses will be recorded.
7. **Detailed instruction:** Each participant will be given verbal instructions about their tasks and demonstrations of the equipment used in the experiment.
8. **Scenario:** Each participant completes the scenario as instructed. A checklist of performance will be completed to ensure the simulated patient outcome was a success.
9. **Intra-scenario:**
    - **fNIRS:** With the rapid expansion of wearable real-time monitoring devices such as the Portalite fNIRS (Artinis Medical Systems, The Netherlands), it may be possible to obtain unobtrusive measures of the physiological response in brain activity (Gradl et al., 2019) to the threat state. Beta band (13-25 Hz) activity at the anterior temporal sites will be recorded throughout the scenario and for five minutes after the completion of the scenario. Mean activity levels will be obtained for comparison to the subsequent scenario 7 days later. This equipment is owned by

Exercise Science (Melbourne campus) who have agreed to loan to our research team for this study..

- **Skin:** Equivital sensors will measure changes in skin sweat levels via a GSR sensor and an infrared Thermopile to detect peripheral skin temperature changes. Mean levels will be obtained for comparison to the subsequent scenario seven days later.

10. **Post Test:**
    - **Cortisol:** When the participant experiences the stressful scenario, the HPA axis is activated and cortisol is released. Cortisol levels peak at 20-30 minutes after the onset of the stressful event (Kemeny, 2016), therefore post-test salivary cortisol will be sampled at 25 minutes from the commencement of the scenario.
    - **Cardiovascular:** HR and BP readings are obtained to assess response to scenario and for comparison to the subsequent scenario seven days later.
    - **Questionnaire:** Follow-up demand questioning along the lines of "How demanding was the task you just completed?" will be undertaken. Also, follow-up 'Resource' questions will also be asked such as "How able were you to cope with this task?". Results will be quantified using a 7-point Likert scale.
    - **Cognitive test / executive function:** Participants will complete Part B of the Trail Making Test on an I-Pad (Trail Making Test J Lite). Time to completion (seconds) and number of misses will be recorded.
11. **Debrief and credit:** There will be an open-ended discussion / interview between the researcher and the participants about the scenarios presented, the technology, and the experience of being in the study. The researcher will answer any questions. Participants will be thanked and informed about the next phase of the study.