**2020 Summer Winter Research Project Description**

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| **Project title:** | **What can sensory perception tell us about the brain?** |
| **Positions available:** | **1**  |
| **Project duration and delivery**  | Please outline the length of the project.  * *Expected hours per week = ~30 hour/ week*
* *Expected number of weeks = 10*
* *Most of the project will require on-site attendance due to the need for data collection. Some analysis will be completable remotely*
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| **Description:** | Please insert a project description to give applicants a comprehensive overview of the project. *For example, this may include a program background, aim, hypothesis and/or approach.**Our senses (vision, audition, touch, taste, smell) are incredibly important to our normal daily functioning. They are our bridge to the outer world, allowing us to understand and experience what is around us. Given how important they are, we have a lot to gain by optimising how our senses function.**My research shows that, just like many other skills, you can actually train your senses to improve. Not only is this useful on its own, but this work also shows we can use sensory training to learn about the brain.**For example, I’ve shown that when you train a person to improve touch perception on their middle finger, their perception improves on this finger, but also on the index finger of the other hand (even though this finger never had any training).**This shows us touch training doesn’t change anything about your finger itself or its sensory receptors, but causes changes in the brain. Because your two index fingers have a connection in the brain, they both learn. This is just one example of how we can look at patterns of sensory learning to find out hidden facts about the brain.**The project I will be offering will look at this sensory learning phenomenon – trying to find out more about what we can learn from it. Some previous research shows this spreading of touch learning does not happen when you use vibration stimuli as the training stimuli, training is restricted to the trained finger. We will try find out why. We may also look at other questions, like whether adding visual stimuli that match the touch stimuli (multi-modal stimulation) might help boost this learning process. Or whether your touch perception before you start can predict how successful your training will be.* |
| **Expected outcomes and deliverables:** | Please highlight what applicants can expect to gain/learn from participating in the project, and what they will be expected to complete as a part of the project. *For example, scholars may gain skills in data collection, or have an opportunity to generate publications from their research. Students may also be asked to produce a report or oral presentation at the end of their project.**Students will gain hands-on experience for the whole process of scientific research. There will be a chance to use your ideas to shape the specific hypotheses and aims of the study, experience in data collection, some training in simple programming (a great skill to have), conducting some statistical tests and training in academic writing. If a student has interest, a small amount of experience in brain imaging may be possible e.g., observation of testing in a fMRI brain scanner (pending MRI safety screening) or a whirlwind walk-through how we analyse brain data.* |
| **Suitable for:** | Please highlight any particular qualities that individual supervisors are looking for in applicants to assist with the selection process. *For example, this project is open to applications from students with a background in chemistry, 3-4 year students, UQ enrolled students only, etc.**This project is open to applications from students of any background training. Any experience in psychology, neuroscience, experimental methods will be helpful, but not necessary.* |
| **Primary Supervisor:** | Harriet Dempsey-Jones |
| **Further info:** | If you would like applicants to contact your unit for further information, please provide the relevant contact details here. Please highlight if the supervisor wishes to be contacted by students prior to submitting an application.Please indicate the UQ campus where the project takes place if not St Lucia.The project will take place largely in the Psychology Building of the UQ St Lucia Campus.If students would like to hear more about the project, they can feel free to email me (h.dempseyjones@uq.edu.au), pop in for a chat on campus or Zoom. |
| **Will you be collaborating with an external organisation on this project (for example NGO, government agency or private industry)?**  | If yes, please state which organisation. No. |