Towards better anxiety treatments for teenagers and young adults

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Anxiety disorders are very common, yet even the most effective treatments are long and expensive, difficult to access and do not work for everyone. Currently, the most promising available treatment is exposure therapy, a psychological treatment where a patient intentionally encounters a situation they are afraid of. However, only about 50% of adults benefit from intervention, and response rates are even worse in teenagers. There is an urgent need to develop more effective, more targeted treatment approaches.

Previous work in our and other laboratories in adults has shown that drugs targeting the renin-angiotensin system, such as the routinely prescribed blood pressure medication losartan, may have the potential to improve response to exposure therapy. In particular, it is thought that such drugs may facilitate better clinical outcome by improving emotional information processing and learning relevant to good treatment response – even at single doses.

This project will explore whether such a pharmacological-psychological treatment approach could also be effective in teenagers. We will investigate i) why standard treatment is even less effective in teenagers compared to adults, and ii) whether single-dose drug challenges such as losartan can make up for any deficits in information processing. Such information will ultimately lead to the development of losartan and similar agents for the more effective and more compact treatment of anxiety disorders in young people.

Your training plan will involve working with healthy and highly anxious teenagers and young adults, applying clinical diagnostic interviews for mental disorders, running and analysing neurocognitive tests including computational approaches and fear extinction paradigms, working with pharmacological challenges, taking and analysing biomarkers of stress levels such as cortisol. There may be opportunities to gain additional experience and training in brain imaging and data analysis, as well as brief standardised psychological treatment.

Ethics approvals are in place for some studies of this project so that data collection can commence soon after taking up a DPhil position. Parts of this project may also be run within the department's one-year MSc in Research programme.

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Some further reading and examples of our previous work:

Reinecke, A., Nickless, A., Browning, M., & Harmer, C. (2020). Neurocognitive processes in d-cycloserine augmented single-session exposure therapy for anxiety: A randomized placebo-controlled trial. Behaviour Research and Therapy, 129: 103607.

Shkreli, L., Woud, M.L., Ramsbottom, R., Rupietta, A.E., Waldhauser, G., Kumsta, R., & Reinecke, A. (2020). Angiotensin involvement in trauma processing-exploring candidate neurocognitive mechanisms of preventing post-traumatic stress symptoms. Neuropsychopharmacology, 45(3):507-514.

Pulcu, E., Shkreli, L., Guzman-Holst, C., Woud, M., Craske, G.M. & Browning, M., Reinecke A. (2019). The effects of the angiotensin II receptor antagonist losartan on appetitive versus aversive learning. Biological Psychiatry, 86(5): 397-404.

Reinecke, A., Browning, M., Klein-Breteler, J., Kappelmann, N., Ressler, K., Harmer, C., Craske, M. (2018). Angiotensin regulation of amygdala response to threat in high-trait anxiety individuals. Biological Psychiatry – CNNI, 3(10):826-835