Post-Doctoral Transitional Development Support scheme
Final report

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Over the last 8-months I have been funded as a research associate by the SSA, working part-time. This support has allowed me to pursue investigation of cannabis' effects on reward processing, to develop a better understanding of cannabis' links with addiction and dependence. Following on from the work outlined in my four-month report, I have made good progress that has as helped me develop further as a researcher in my field.

I published my first fMRI analysis paper from my own data in *Psychopharmacology*, showing cannabis users to have disrupted functioning in midbrain regions (Blest-Hopley et al., 2019a) and a subsequent review on alterations in memory following cannabis use in *Brain Sciences* (Blest-Hopley et al., 2020). I have further submitted a review paper on the evidence for increased risk from cannabis use during adolescence to *Frontiers in Psychiatry*'s cannabis issue. Following the publication of these papers, I have received invitations to speak at three neuroscience and psychiatry conferences, in the UK, Europe and the USA.

The results from my paper in *Addiction Biology* (Blest-Hopley et al., 2019b), lead me to develop a more detailed hypothesis for two papers I had prepared, and subsequently carried out new analysis and revisions to these manuscripts. I have reached out to an external researcher to collaborate on a manuscript prepared previously, based on acute cannabis exposure. These three manuscripts, I aim to submit soon.

I have completed analysis of the monetary incentive delay task, comparing cannabis is users to controls during salience processing; the results of which I am currently preparing for publication. I have acquired and sorted the data from the Human Connectome Project designing methods of analysis based on the paradigms and imaging data formats available. As part of this analysis and with aim to conduct further analysis on similar data sets, I have begun collaborative talks with an external data science company, acquiring and learning a unique analysis tool to carry out multi-variate pattern analysis; allowing more complex and nuanced investigations to be completed. I have been co-supervising Masters students, helping them develop research questions and training them in imaging data analysis to investigate functional connectivity in cannabis users; with an aim to further assist them in publishing the results.

Finally, I have researched and discussed future funding options with my supervisor. I have applied to the SSA Fellowship scheme, outlining a program of intended research developed from the work I have been able to achieve during the period of this funding. I intend to apply for any other appropriate fellowship schemes that support my intended work, as well as assist in preparing a project funding application based on the results from my previous work (Blest-Hopley et al., 2019b), that I would be a researcher on if successful.

Blest-Hopley, G., Giampietro, V., Bhattacharayya, S., 2020. A Systematic Review of Human Neuroimaging Evidence of Memory-Related Functional Alterations Associated with Cannabis Use Complemented with Preclinical and Human Evidence of Memory Performance Alterations. Brain Sciences 10.

Blest-Hopley, G., O'Neill, A., Wilson, R., Giampietro, V., Bhattacharyya, S., 2019a. Disrupted parahippocampal and midbrain function underlie slower verbal learning in adolescent-onset regular cannabis use. Psychopharmacology (Berl).

Blest-Hopley, G., O'Neill, A., Wilson, R., Giampietro, V., Lythgoe, D., Egerton, A., Bhattacharyya, S., 2019b. Adolescent-onset heavy cannabis use associated with significantly reduced glial but not neuronal markers and glutamate levels in the hippocampus. Addict Biol, e12827.