

## 2017/2018 Summer Studentship Project Application Form

Send to: Research Office, University of Otago Christchurch, PO Box 4345, Christchurch, by 5pm on 3 July 2017

### Supervisor Information (First named supervisor will be the contact):

First **Supervisor's** Name and Title: Dr Jennifer Jordan

Department - UOC &/or CDHB (if applicable): Psychological Medicine

First Supervisors Phone: 03 3726700

First Supervisors Email: jenny.jordan@otago.ac.nz

First Supervisors Mailing Address: Dept. of Psychological Medicine, University of Otago, Christchurch

Co-Supervisors Name and Title(s): Professor Doug Sellman

### Research Category (Choose one category only – to be used for judging the students' presentations):

Clinical

Laboratory

Community

### Project Title (20 words MAXIMUM):

Cognitive functioning in individuals with obesity: a systematic review

### Project Description:

#### Introduction:

Obesity is well recognised as a major public health concern in New Zealand, with 32% of all New Zealanders aged 15 years and over classified as obese, **higher rates in Māori adults (47%) and Pasifika (67%)**, and disproportional impacts in socially deprived areas (1.7 times increased risk of obesity)<sup>1</sup>. Considerable efforts at a public health level are being made to address changes in society, **especially “the toxic food environment”<sup>2</sup> that have contributed to the “obesity epidemic”** by promoting healthy food and beverages at school cafeterias and **limiting availability of “fizzy” drinks, or** promotion of a sugar tax.

The long term health costs of increasing levels of obesity are concerning but there are also considerable adverse psychological impacts on individuals with obesity, most of whom express high body dissatisfaction and the desire to lose weight. Current treatment guidelines include dieting combined with exercise and / or medications and surgery<sup>3,4</sup>.

The increasing rates of obesity have been of international concern for decades, but the literature on long term outcomes of behavioural weight loss (BWL) treatments for obesity are still relatively poor, with weight reductions being quite modest, and relapse with accompanying weight gain extremely common<sup>5,6</sup>. It seems clear that maintaining behavioural change necessary to maintain weight loss over the long term is difficult but the reasons for these poor BWL outcomes are still poorly understood.

Much research attention has focused on possible explanations by examining characteristics of individuals who develop obesity. Those with obesity are a heterogeneous group however and include some with binge eating disorder. Other research has focused on factors associated with long term adherence to lifestyle recommendations, including self-regulation factors<sup>7,8</sup>.

It is likely that explanation for the limited success for BWL interventions go beyond simple behavioural responses in the context of an obesogenic environment, and include interactions of these factors with metabolic and other biological factors, including brain functioning.

One area which has received some attention both as a potential contributing factor and as a potential treatment target for augmenting BWL treatment is that of neuropsychological (cognitive) dysfunction<sup>9</sup>. Factors relevant to dyscontrol of eating include aspects related to impaired executive function such as impulsivity, impaired inhibitory control, cognitive biases and volition<sup>10,11,12</sup>.

Aim: To conduct a systematic review of the literature to 1) identify and assess the evidence for specific differences in cognitive functioning (both neuropsychological and relevant psychological constructs) in adults with obesity (with or without binge eating disorder), compared to healthy control groups; and 2) to evaluate any outcomes for cognitive remediation in this group for this emerging area.

Possible impact (in lay terms):

This review aims to determine whether there is sufficient evidence to trial cognitive remediation adjuncts to improve response to treatment. This research will lead to a publication and may inform a future research project.

Method: The student, with assistance from supervisors, will conduct a systematic review to identify relevant published papers using key databases (Medline, PsycINFO, EMBASE and the Cochrane database for systematic reviews). The review will be registered prospectively on the PROSPERO registry for systematic reviews and will follow PRISMA guidelines - data reported will include the search strategy results, risk of bias assessments within and across studies and effect sizes for key outcomes from published studies. Results will be synthesized, taking into account limitations in the literature and the implications of the review highlighted for future research.

## References

1. Ministry of Health. Annual Update of Key Results 2015/16: New Zealand Health Survey. In: Ministry of Health, editor. Wellington: Ministry of Health; 2016.
2. Brownell KD, Horgen KB. Food fight: The inside story of the food industry, America's obesity crisis and what we can do about it. Chicago: McGraw Hill; 2004.
3. Brennan L, Murphy KD, de la Piedad Garcia X, Ellis ME, Metzendorf MI, McKenzie JE. Psychological interventions for adults who are overweight or obese. The Cochrane Library. 2016.
4. Yumuk V, Tsigos C, Fried M, Schindler K, Busetto L, Micic D, Toplak H, Obesity OMTFotEAftSo. European guidelines for obesity management in adults. Obesity facts. 2015;8(6):402-24.
5. Wing RR, Phelan S. Long-term weight loss maintenance. The American Journal of Clinical Nutrition. 2005;82(1):222S-5S.
6. Sellman D, Schroder R, Deering D, Elmslie J, Foulds J, Frampton C. Psychosocial enhancement of the Green Prescription for obesity recovery: a randomised controlled trial. NZ Med J. 2017;130(1450):44-54.
7. Teixeira PJ, Carraça EV, Marques MM, Rutter H, Oppert J-M, De Bourdeaudhuij I, Lakerveld J, Brug J. Successful behavior change in obesity interventions in adults: a systematic review of self-regulation mediators. BMC medicine. 2015;13(1):84.
8. Carraça EV, Marques MM, Rutter H, Oppert J-M, De Bourdeaudhuij I, Lakerveld J, Brug J. Successful behavior change in obesity interventions in adults: a systematic review of self-regulation mediators. BMC Medicine 1 (13), 84-100(2015). 2015.
9. Smith E, Hay P, Campbell L, Trollor JN. A review of the association between obesity and cognitive function across the lifespan: implications for novel approaches to prevention and treatment. Obesity reviews. 2011;12(9):740-55.
10. Lavagnino L, Arnone D, Cao B, Soares JC, Selvaraj S. Inhibitory control in obesity and binge eating disorder: A systematic review and meta-analysis of neurocognitive and neuroimaging studies. Neuroscience & Biobehavioral Reviews. 2016;68:714-26.
11. Voon V. Cognitive biases in binge eating disorder: the hijacking of decision making. CNS spectrums. 2015;20(6):566-73.
12. Fagundo AB, De la Torre R, Jiménez-Murcia S, Agüera Z, Granero R, Tárrega S, Botella C, Baños R, Fernández-Real JM, Rodríguez R. Executive functions profile in extreme eating/weight conditions: from anorexia nervosa to obesity. PloS one. 2012;7(8):e43382.

Student Prerequisites (e.g. Medical Student) if applicable:

## Administration Details

1. Is ethical approval required? No

If Yes: please circle or tick one of the following:

- a) Applied for (provide application #)
- b) Approved (attach a copy of the letter of approval from the ethics committee or application #)
- c) To be done

2. Are you able to provide the funding for this project (ie. \$5,000 for the student, incidental expenses should be met from departmental or research funds) Some - \$1000

If Yes: Please provide name of the funder Prof Sellman can contribute \$1000 from National Addiction Centre funding sources

If Yes: You will be sent a request for more information.

3. Medical Records or Decision Support accessed No

4. Health Connect South or other DHB records No

5. Signatures:

- I have read the 2017/2018 Summer Studentship programme handbook.
- I am prepared to supervise the project and will be available to the student during the studentship (including Christmas/New Year break if the student is working during this time).
- I agree to assume responsibility for the submission **of the student's reports to the Research Office** by the due date 29 January 2018.
- I agree that the project lay report may be available to local media for publicity purposes.

Signature of Project Supervisor(s):

Dr Jennifer Jordan

Date:

3.7.17

- I understand that I am responsible for hosting the Summer Student chosen for this project and will meet any costs incurred. I agree that incidental expenses will be met from departmental or research funds.

Signature of Head of Department:  
(Print Name)

Date:

Signature of Clinical Director: (if applicable)  
(Print Name)

Date: