

Summary of Project

Healthy Cognition: The Role of Executive Functioning in Balanced Eating and Body Weight

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Ethic approval Number: 2016-121

Aims of study:

Obesity is a growing worldwide problem that puts a large drain on the health system and can lead to a person developing other chronic and serious diseases. The World Health Organisation suggests approximately 39% of the world's population are overweight and of these, 13% are obese. Hence, it appears some people are better able to control their weight than others. This study was interested in exploring whether certain brain functions could be involved in a person being able to maintain a balanced diet and healthy body weight.

The aim of this study was to explore the relationships between a person's age, three components of executive functioning (EF): inhibition, working memory and task-switching and a person's ability to maintain a balanced diet and healthy weight. Executive functioning is an umbrella term that encompasses a number of mental processes that are involved in self-regulation which enable a person to both inhibit and act upon certain behaviours on a daily basis. This ultimately governs a person's ability to behave appropriately in society. These behaviours include the following skills: inhibition, planning, focusing of attention, problem-solving, multi-tasking, task-switching, working memory and ability to regulate emotions.

In total 5 predictions were made regarding the likely outcomes of the study:

1. Inhibition, working memory, task switching abilities and a person's level of control over eating will decline with age and their Body Mass Index (BMI) would increase.
2. A lower level of inhibition will result in a higher tendency to overeat and therefore will be linked with a higher BMI
3. A person's subjective opinion of their level of success in dieting will be closely linked to their BMI, whereby, a lower BMI would be linked to a higher level of success in dieting.
4. Inhibition, working memory and task-switching abilities would all be related to each other.
5. Inhibition, working memory and task-switching, would all be strongly linked to a person's ability to maintain a healthy diet, rather than just inhibition alone.

Method:

The study involved 100 participants who undertook computer based tests and surveys. Participants were firstly asked some basic demographic questions about themselves and then completed two diet related questionnaires to determine their success at maintaining a healthy weight and their typical eating behaviour patterns. The executive functioning tests that measured: inhibition, working memory and task-switching were then administered. Finally, their BMI was calculated.

Results:

Effects of age

Statistical analysis was then conducted and the findings produced mixed results. In a nutshell the results revealed that a person's age was a more reliable predictor of their BMI and EF than any of the executive functions tested. This study revealed that a person's BMI increases with age, however their reaction times involving inhibition and task-switching deteriorated with age. With ageing a person also had better control of their eating and they were less likely to eat emotionally.

EF relationships

The EF of working memory and task-switching were related, which suggests the slower a person was at task-switching, the worse they performed on memory tasks. A relationship between task-switching and inhibition was also found, suggesting that a person who took longer at task-switching, also took longer with the inhibition tasks.

Effects of dieting success, eating healthily

It was also found that a person who felt less satisfied with their level of dieting success had a higher BMI. Uncontrolled eating and emotional eating were also related, suggesting that a person who finds it difficult to control their eating, also tends to be more prone to emotional eating. Both uncontrolled eating and emotional eating were also related to how a person felt about their success in dieting, further suggesting that the higher level of control a person felt about their dieting success, the less they were likely to experience uncontrolled and emotional eating episodes.

Conclusion/ Key Findings

This study found that age has more influence in a person's capability of eating healthy and maintaining a balanced diet, than the executive functions of inhibition, working memory and task-switching have. Ageing also resulted in a person having better control over their eating and less likely to eat emotionally. Additionally, the executive function tasks of inhibition, working memory and task-switching though correlated with each other, did not have any relationship with a person's BMI.