Compulsive eating and substance dependence share similar brain patterns

Addictive eating behaviour and substance dependence have similar patterns of brain activity, finds a new study from the Rudd Centre for Food Policy and Obesity at Yale. The study is published in the *Archives of General Psychiatry* and is the first to link symptoms of addictive eating behaviour with specific patterns of brain activity in both obese and lean individuals.

(Image: Michael Marsland, Yale University)

Previous research has identified similar patterns of brain activity in obese and substance-dependent peop which has led to the theory that some people may be addicted to high-calorie foods, but no previous studi have explored whether lean as well as obese individuals who exhibit symptoms of addictive eating behavic have neural responses similar to those of drug addicts.

Looking at how the brain responds to cues

In the current study, 48 healthy adolescent women ranging from lean to obese completed the Yale Food Addiction Scale (YFAS), which applies the diagnostic criteria for substance dependence to eating behavic Next, using brain-imaging procedures such as functional magnetic resonance imaging (fMRI), the study examined the relation of food addiction symptoms, as assessed by the YFAS, with the women's brain activity in response to food-related tasks. The first task looked at how the brain responded to cues signalli the impending delivery of a highly palatable food (chocolate milkshake) versus cues signalling the impend delivery of a tasteless control solution. The second test looked at brain activity during the actual intake of t chocolate milkshake versus the tasteless solution.

What drives compulsive eating?

Both lean and obese participants with higher food addiction scores showed different brain activity patterns than those with lower food addiction scores. In response to the anticipated receipt of food, participants wit higher food addiction scores showed greater activity in parts of the brain responsible for cravings and the motivation to eat, but less activity in the regions responsible for inhibiting urges such as the desire to drink milkshake. Thus, similar to drug addicts, individuals exhibiting signs of food addiction may struggle with increased cravings and stronger motivations to eat in response to food cues and may feel more out-of-control when eating highly palatable foods.

According to Ashley Gearhardt, clinical psychology doctoral student at Yale University and lead author, "Th

findings of this study support the theory that compulsive eating may be driven in part by an enhanced anticipation of food rewards and that addicted individuals are more likely to be physiologically, psychologically, and behaviourally reactive to triggers such as advertising. The possibility that food-related cues may trigger pathological properties is of special concern in the current food environment where highl palatable foods are constantly available and heavily marketed."

The authors assert that efforts to change the current food environment may be critical to successful weigh loss and prevention efforts since food cues may take on motivational properties similar to drug cues. The current emphasis on personal responsibility as the reason for increasing obesity rates may have minimal effectiveness as palatable food consumption may be accompanied with a loss-of-control for individuals exhibiting signs of food addiction.

Source: Yale University