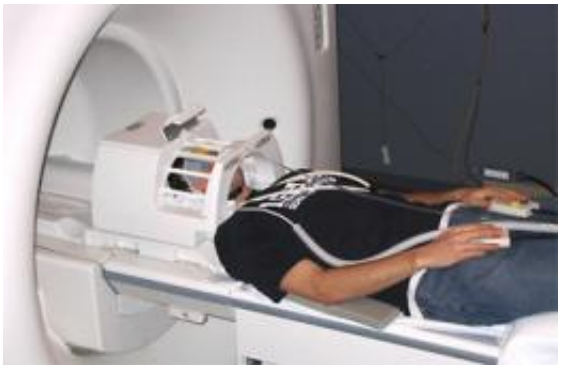
Findings on overeating may aid in the fight against obesity when metabolic and psychological treatments fail

November 26 2012



Test subjects underwent MRI scans after ingesting their favorite high-calorie beverages.

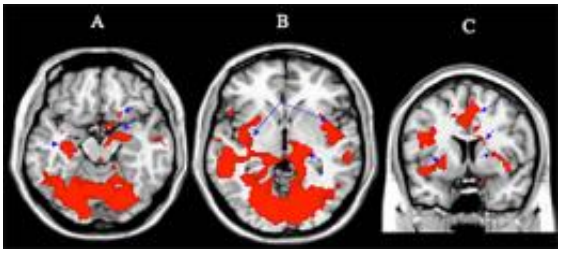
(Medical Xpress)—A similar, insidious craving plagues all addicts, no matter the substance of choice. A new study published in *NeuroImage* from Center for BrainHealth scientists Dr. Francesca Filbey, assistant professor in the School of Behavioral and Brain Sciences, and doctoral student Samuel DeWitt has found that for binge-eaters, as with all addiction sufferers, the compulsion to overeat is rooted in the brain's reward center.

In the last 20 years, the incidence of obesity has doubled in the U.S. and many European countries, and related chronic diseases such as heart

disease and diabetes are on the rise. One-third of Americans are obese, and more than two-thirds are overweight. Obesity has become a leading health problem in the United States, and its challenging personal and economic ramifications fuel the desire to quell the pandemic.

Until now research and treatment focusing on physiological factors, such as metabolic disorders, and psychological causes, such as eating when depressed or bored, have failed to solve the problem. However, recent research from Center for BrainHealth's lead addiction scientist, Dr. Filbey, seeks to further understand how addiction manifests in the brain and drive innovative treatment solutions.

"The reason I'm interested in studying the brain's reward system in response to food is that current treatments for obesity often do not work. Only 5 percent of those who seek interventions such as diet and exercise are successful in maintaining a healthy weight. Even in the case of gastric bypass, many still experience dependence symptoms like extreme desire to overeat and the associated feelings of guilt after surgery," Filbey said.



Cross-sections of the scans show which parts of the brain reacted to the drinks.

"For someone with addiction, they are constantly bombarded by temptation, which is triggered by cues. For someone with an alcohol

addiction, a cue might be driving down the road and seeing a bar or just seeing a wine glass. For someone who has problems with food, it might be the image of a milkshake or the smell of popcorn. Constant cues or triggers are what often makes it very difficult to abstain from substances," Filbey said.

Filbey and her team examined 26 obese individuals who exhibited binge-eating symptoms without purging behaviors. Obese is defined as having a body mass index above 30. Binge-eating symptoms were measured using a questionnaire called the Binge Eating Scale. All participants had moderate to severe binge eating behavior.

Participants were asked to divulge their favorite high-calorie beverages and complete self-assessments about their eating behavior. Using functional MRI technology, researchers then observed each participant's brain while the chosen, high-calorie beverage was piped into the participant's mouth.

As researchers suspected, the brain showed heightened activity in the reward, motivation, and memory areas of the brain. The more severe the binge-eating symptoms exhibited by the participant, the greater the activity in the brain. The results demonstrate similarities between brain disorders of the reward system commonly seen in other forms of addiction and binge eating.

Despite the cognitive connection between addiction and obesity, the term "food addiction" is up for debate in the field. "It is not a concept people have been open to in the past. Right now, it does not exist as a recognized disorder." However, Filbey concedes, "The National Institute on Drug Abuse has begun supporting research into food addiction, and although previously not considered a legitimate diagnosis, the next *Diagnostic and Statistical Manual of Mental Disorders* will list binge eating as a disorder."

This study provides evidence that the solution to weight loss for some goes beyond preaching behavior changes such as "just say no" to another milkshake, and urges us to better understand brain-based issues that lead to obesity. Further research into binge eating, addiction, and the brain's reward system will help identify risk factors for weight problems and provide the basis for treatments helping those who struggle with "food addiction".

Provided by University of Texas at Dallas