

Brain circuitry is different for women with anorexia and obesity

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Why does one person become anorexic and another obese? A study recently published by a University of Colorado School of Medicine researcher shows that reward circuits in the brain are sensitized in anorexic women and desensitized in obese women. The findings also suggest that eating behavior is related to brain dopamine pathways involved in addictions.

Guido Frank, MD, assistant professor director of the Developmental Brain Research Program at the CU School of Medicine and his colleagues used [functional magnetic resonance imaging](#) (fMRI) to examine [brain activity](#) in 63 women who were either anorexic or obese. Scientists compared them to women considered "normal" weight. The participants were visually conditioned to associate certain shapes with either a sweet or a non-sweet solution and then received the taste solutions expectedly or unexpectedly. This task has been associated with brain dopamine function in the past.

The authors found that during these fMRI sessions, an unexpected sweet-tasting solution resulted in increased neural activation of reward systems in the anorexic patients and diminished activation in obese individuals. In rodents, [food restriction](#) and weight loss have been associated with greater dopamine-related reward responses in the brain.

"It is clear that in humans the brain's reward system helps to regulate food intake" said Frank. "The specific role of these networks in eating disorders such as [anorexia nervosa](#) and, conversely, obesity, remains unclear."

Scientists agree that more research is needed in this area. The study was published in *Neuropsychopharmacology*.

Provided by University of Colorado Denver

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