New brain research suggests eating disorders impact brain function

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Bulimia nervosa is a severe eating disorder associated with episodic binge eating followed by extreme behaviors to avoid weight gain such as self-induced vomiting, use of laxatives or excessive exercise. It is poorly understood how brain function may be involved in bulimia.

A new study led by Guido Frank, MD, assistant professor, Departments of Psychiatry and Neuroscience and Director, Developmental Brain Research Program at the University of Colorado Anschutz Medical Campus, studied the brain response to a dopamine related reward-learning task in bulimic and healthy women. Dopamine is an important brain chemical or neurotransmitter that helps regulate behavior such as learning and motivation. Frank found that bulimic women had weakened response in brain regions that are part of the reward circuitry. This response was related to the frequency of binge/purge episodes. Overeating and purging episodes thus could cause such a weaker response and set off a vicious cycle of altered brain function.

These findings are important for several reasons. First, they directly implicate the brain reward system and related dopamine function in this disorder. Second, bulimic behavior appears to directly affect brain reward function and it is uncertain whether such alterations return to normal with recovery or not. Third, brain dopamine could be a treatment target in bulimia nervosa using specific medication that targets those abnormalities.

"This is the first study that suggests that brain dopamine related reward circuitry, pathways that modulate our drive to eat, may have a role in bulimia nervosa. We found reduced activation in this network in the bulimic women, and the more often an individual had binge/purge episodes the less responsive was their brain. That suggests that the eating disorder behavior directly affects brain function. These findings are important since the brain dopamine neurotransmitter system could be an important treatment target for bulimia nervosa," said Frank.

This study was published in *Biological Psychiatry* June 28, 2011.

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