

# Fear of getting fat seen in healthy women's brain scans

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A group of women in a new study seemed unlikely to have body image issues - at least their responses on a tried-and-true psychological screening presented no red flags.

That assessment changed when Brigham Young University researchers used MRI technology to observe what happened in the [brain](#) when people viewed images of complete strangers.

If the stranger happened to be overweight and female, it surprisingly activated in women's brains an area that processes identity and self-reflection. Men did not show signs of any self-reflection in similar situations.

"These [women](#) have no history of eating disorders and project an attitude that they don't care about [body image](#)," said Mark Allen, a BYU neuroscientist. "Yet under the surface is an anxiety about getting fat and the centrality of body image to self."

Allen makes his report with grad student Tyler Owens and BYU psychology professor Diane Spangler in the May issue of the psychological journal *Personality and Individual Differences*.

Spangler and Allen collaborate on a long-term project to improve treatment of eating disorders by tracking progress with brain imaging. When anorexic and bulimic women view an overweight stranger, the brain's self-reflection center - known as the [medial prefrontal cortex](#) -

lights up in ways that suggest extreme unhappiness and in some cases, self-loathing.

The motivation for this new study was to establish a point of reference among a control group of women who scored in the healthy range on eating disorder diagnostic tests. Surprisingly, even this control group exhibited what Allen calls "sub-clinical" issues with body image.

Seeing that, Allen and Owens ran the experiments with a group of men for comparison.

"Although these women's [brain activity](#) doesn't look like full-blown [eating disorders](#), they are much closer to it than men are," Allen said.

Spangler says women are bombarded with messages that perpetuate the thin ideal, and the barrage changes how they view themselves.

"Many women learn that bodily appearance and thinness constitute what is important about them, and their brain responding reflects that," Spangler said. "I think it is an unfortunate and false idea to learn about oneself and does put one at greater risk for eating and mood disorders."

"It's like the plant in my office," she continued. "It has the potential to grow in any direction, but actually only grows in the direction of the window - the direction that receives the most reinforcement."

Provided by Brigham Young University

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