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## Obesity Is Contagious, Study Finds

By LAURA BLUE

Wondering why your waistline is expanding? Have a look at those of your friends. Your close friends can influence your weight even more than genes or your family members, according to new research appearing in the July 26 issue of *The New England Journal of Medicine*. The study's authors suggest that obesity isn't just spreading; rather, it may be contagious between people, like a common cold.

Researchers from Harvard and the University of California, San Diego, reviewed a database of 12,067 densely interconnected people — that is, a group that included many families and friends — who had all participated in a major American heart study between 1971 and 2003. The participants met with heart researchers every two to four years. To facilitate study follow-up, the researchers asked participants to name family members and at least one friend who could be called on if the participant changed addresses. It was that information the *NEJM* authors mined to explore obesity in the context of a social network.

According to their analysis, when a study participant's friend became obese, that first participant had a 57% greater chance of becoming obese himself. In pairs of people in which each identified the other as a close friend, when one person became obese the other had a 171% greater chance of following suit. "You are what you eat isn't the end of the story," says study co-author James Fowler, a political scientist at UC San Diego. "You are what you and your friends eat."

It's not just that people who share similar lifestyles become friends, Fowler says. He and co-author Nicholas Christakis of Harvard Medical School considered the possibility — and were surprised. For one thing, geographic distance between friends in the study seemed to have no impact: friends who lived a 5-hour drive apart and saw each other infrequently were just as influenced by each other's weight gains as those who lived close enough to share weekly take-out meals or pick-up basketball games. The best proof

that friendship caused the weight gain, says Fowler, is that people were much more likely to pattern their own behavior on the actions of people they considered friends — but the relationship didn't work in the other direction. If you had named another person as a friend, and your friend became obese, than you were more than 50% more likely to get fat too. But if your friend had not named you as a mutual friend, and you became obese, it would have no significant impact on your friend's weight.

The obvious question is, Why? Spouses share meals and a backyard, but the researchers found a much smaller risk of gaining weight — a 37% increase — when one spouse became obese. Siblings share genes, but their influence, too, was much smaller, increasing each other's risk 40%. Fowler believes the effect has much more to do with social norms: whom we look to when considering appropriate social behavior. Having fat friends makes being fat seem more acceptable. "Your spouse may not be the person you look to when you're deciding what kind of body image is appropriate, how much to eat or how much to exercise," Fowler says. Nor do we necessarily compare ourselves to our siblings. "We get to choose our friends," says. "We don't get to choose our families."



Video from The New England Journal of Medicine

Fowler and Christakis say that the contagion effect should hold just as much for weight loss as it does for

weight gain. "I would hope this influences individuals to get friends and families involved in decisions about health," Fowler says. After all, he says, a weight-loss plan may be more effective if the people closest to you are on board. And, if you're successful, your good health will help others achieve a healthy weight too. The impact extends not just to your friends, it turns out — but also to your friends' friends, and even to their friends. Fowler and Christakis found that the ripple effect of a weight gain was significant to three degrees of separation.

For policy analysts, then, the lesson is that public-health interventions may well be far more cost-effective than previously acknowledged. Helping one person lose weight can have a snowball effect through an entire social network, affecting social norms among the target person's friends and acquaintances. "There's been a lot of talk about limiting portion size, getting rid of vending machines in schools," says Thomas Sander, a civic-engagement specialist at Harvard's John F. Kennedy School of Government, not involved in the research. Those interventions may be useful, he says. "This study suggests that if we're fighting obesity without taking into account the social aspect, we're going to be acting with our hands behind our backs." Most people recognize that smoking behavior and drinking behavior are influenced by group standards. But such thinking is relatively new for obesity, still so often thought of as an individual's moral failing or clinical condition. Next up for Fowler and Christakis's consideration: how a social network can influence an individual event — like a heart attack. "There are all kinds of processes," says Fowler, "and we'd like to know whether they spread like this."

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