

# Healthy Outlook Blog

## How Social Network Connections Can Affect Health

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By Sue Russell | Posted December 9 2011

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Research into people's social network connections has revealed that peer influence can change thoughts and feelings and impact health, from flu spread to obesity. Now, identifying a network's top "influencers" is set to have a big pay-off for the field of healthcare.

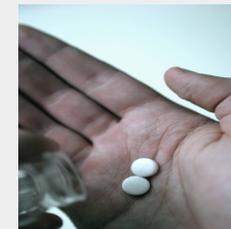
People have formed social networks for thousands of years. Not Facebook-style networks – at least not exclusively – but old-fashioned relationships with friends, friends' friends, family



### ABOUT OUR BLOG

Our blog is a collection of thoughts and stories that serve as inspiration for what healthymagination is—a shared commitment to creating better health for more people. It's written by the people behind healthymagination, as well as members of our advisory board and guest contributors from around the web.

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Each year, 56,000 Americans end up in emergency rooms due to acetaminophen overdoses. However, there are effective treatments for acetaminophen overdoses, which cause toxic hepatitis. The problem is deciding—very quickly—which treatment is best in each case.

members, neighbors and colleagues.

“Humans form social networks wherever they are, including in companies and other organizations,” says Larry

Miller, M.D., president and CEO of [Activate Networks, Inc.](#) And because people are interconnected, so is their health, according to physician and sociologist Nicholas A. Christakis, M.D., a Harvard professor and in 2009, one of *Time’s* 100 Most Influential People.

He is at the forefront of research into mapping social networks and the emerging but growing field of “network science.” Prior to 2009’s flu season, with research partner James Fowler, Ph.D., a political scientist and professor at University of California San Diego, he monitored 744 Harvard students. First, a random group of 319 undergraduates, and a second group of 425 friends they named. The [study](#) found that on average members of the interconnected “friends” group got flu 14-46 days earlier.

So social ties can be hugely beneficial, but there can be a flipside. Dr. Christakis’ and Dr. Fowler’s work also has suggested that happiness, divorce, obesity, smoking cessation, and more spread via networks. Such analysis could help predict the spread of infectious disease in cities and larger geographical regions.

Currently, influenza is monitored by occurrence – physicians see patients then fill out forms. “Google has its own approach, which is very clever,” says Dr. Miller, “which looks at how many people are searching under ‘flu.’ Now, again, the Google message occurs simultaneously with the epidemic.” So both give a snapshot of current events but come too late to vaccinate people.

“What we’re saying is, we can get a couple of weeks ahead,” says Dr. Miller. And if



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such tracking is predictive, officials can respond to an epidemic early. Hypothetically, we might one day see volunteer groups in cities taking their temperatures daily and health officials using the results to map which cities are in for a rise in influenza. “You could make vaccines, encourage a vaccination program there,” says Dr. Miller. “And you have a few weeks lead time to do so.”

Dr. Christakis’ [lab](#), where genotypes are currently a hot topic, is a veritable petri dish of innovation. And Activate Networks, Inc., his company with Miller, is now translating its research into commercial applications. “The potential,” says Dr. Miller, “is extraordinary.”

Social influence occurs as we learn from one another – recommend a book or film, adopt a fashion, improve a health or work habit. It’s how we impact one another’s behavior. And it extends beyond our immediate friends to hundreds of people, many of whom we will never meet. Because social networks are great amplifiers, says Dr. Miller, they are ideal for spreading important messages to large numbers of people.

Learning how social influence functions in a given network and identifying its most powerful “influencers,” is critical, “and the newer discovery is that it’s become possible to evaluate social influence systematically and in fact to measure it,” says Dr. Miller. “In Facebook terms, your friend’s friend’s friend, whom you may not know, influences you. That includes health behaviors like smoking, obesity, alcohol use, drug use, sleep, depression; and emotions like happiness or loneliness; and a whole range of other behaviors that have been studied.”

Social influence’s optimal reach is three degrees of separation. And if several hundred dollars spent to help an individual stop smoking also impacts their friends and their friends’ friends, suddenly an expense can seem minimal.

People in corporations form connections that have little to do with company structure. They perhaps connect because they need one another, talk regularly, or are linked



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within a department or area of responsibility.

“We would argue that these networks are at least as important, probably more important, than the formal organizational charts,” Dr. Miller explains. “This is how information really travels within companies and that’s how behavior also travels.”

Active Networks, Inc. advises corporations on improving collaboration, innovation, leadership, and health and wellness. It has partnered with [Healthways](#) in developing a wellness program for Southern California’s Beach Cities Health District. To help Healthways identify the communities’ most influential individuals, it created social network maps of their citizens. Trying to encourage 300,000 inhabitants into a bike-and-walk program would be prohibitively expensive and impractical. But focusing on a core group of “influencers” – perhaps a thousand, or even twenty thousand – and letting its members influence their networks cuts to the heart of the challenge.

“You can follow a relatively small number of individuals in the network and their behavior will predict the behavior of the entire network,” says Dr. Miller.

His company is using a similar method to predict the use of prescription medications geographically: “And you get about a two-month window in advance of what’s going to happen in the whole population; a substantial period.”

It can also map networks of physicians community by community and use social network connections to encourage better practices in, say, the treatment of diabetes. Once the target “influencers” are identified, a message can be spread face-to-face or electronically.

“When presented with information about their peers, people change their behavior. It makes sense intuitively,” says Dr. Miller. If he learns that most of his close colleagues have adopted a more effective or beneficial practice, for example, “it is going to be a powerful influence on changing my behavior.”

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He imagines that ultimately a host of wellness programs will be implemented through networks: “We’re about to start doing a social network map of the entire state of Iowa with 3 million people and wellness programs across the state, because the governor of Iowa has said that he wants Iowa to become the healthiest state in the country.”

There is still much to learn because influence moves in mysterious ways, not all of which are yet fully understood. For someone in Boston, having an obese friend of a friend living in California heightens their risk of obesity, whether or not they know one another. It’s curious. And it suggests that geographical proximity has less impact on influence than expected.

Dr. Miller concedes that it seems counter-intuitive at first: “But it’s not really – influence travels...bounces around, if you will. It doesn’t just occur between individuals, it occurs among groups of people. That’s one of the key insights. It’s the group that’s critical, not just the individual.”

#### QUICK TAKE ON A FEW OF DR. CHRISTAKIS’ “NETWORK SCIENCE” STUDIES:

+ Is divorce contagious? A 2010 [study](#) with Rose McDermott suggested that someone is 75 percent more likely to get a divorce if a friend, sibling or colleague does. Clusters of divorcees were observed to two degrees of separation.

+ A 2009 [study](#) with James O’Malley looked at health traits in friendships and changes in their status. Depression and blood pressure did not impact friendship ties. Ties between smokers were the least likely to end, and smoker-to-smoker ties the most likely to form.

+ A 2008 [review](#) of 4,739 people found that their happiness depended on their connections’ happiness. Clusters of happy and unhappy friends were visible up to three degrees of separation. And a happy friend living within a mile increased someone’s happiness probability by 25 percent; a cohabiting spouse, just 8 percent.

+ A 2007 [study](#) analyzed obesity's spread among 12,067 adults revealing that a person with an obese friend's own chance of becoming obese is 57 percent higher. The risk also is elevated by the weight gain of friends of friends, even hundreds of miles away. "It's not that obese or non-obese people simply find other similar people to hang out with...Rather, there is a direct causal relationship," said Dr. Christakis. The good news: the same may be true of being trim.

## CONNECT THE DOTS

Check out Nicholas Christakis' and James Fowler's [book](#) *Connected: The Surprising Power of Our Social Networks and How They Shape Our Lives*. [Watch](#) Dr. Christakis talk about social networks predicting epidemics. [Read](#) a study on social connectedness among older adults. Also, you may like these healthymagination articles: [Journaling for Health and Peace of Mind](#), [Boosting Your Brain Health](#), and [Pic Health Photo Diary Mobile App](#)



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