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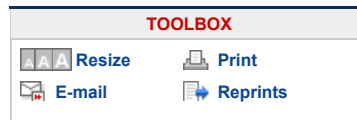
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Happiness Can Spread Among People Like a Contagion, Study Indicates

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Friday, December 5, 2008

Happiness is contagious, spreading among friends, neighbors, siblings and spouses like the flu, according to a large study that for the first time shows how emotion can ripple through clusters of people who may not even know each other.

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The study of more than 4,700 people who were followed over 20 years found that people who are happy or become happy boost the chances that someone they know will be happy. The power of happiness, moreover, can span another degree of separation, elevating the mood of that person's husband, wife, brother, sister, friend or next-door neighbor.

"You would think that your emotional state would depend on your own choices and actions and experience," said Nicholas A. Christakis, a medical sociologist at Harvard University who helped conduct the study published online today by BMJ, a British medical journal. "But it also depends on the choices and actions and experiences of other people, including people to whom you are not directly connected. Happiness is contagious."

One person's happiness can affect another's for as much as a year, the researchers found, and while unhappiness can also spread from person to person, the "infectiousness" of that emotion appears to be far weaker.

Previous studies have documented the common experience that one person's emotions can influence another's -- laughter can trigger guffaws in others; seeing someone smile can momentarily lift one's spirits. But the new study is the first to find that happiness can spread across groups for an extended period.

When one person in the network became happy, the chances that a friend, sibling, spouse or next-door neighbor would become happy increased between 8 percent and 34 percent, the researchers found. The effect continued through three degrees of separation, although it dropped progressively from about 15 percent to 10 percent to about 6 percent before disappearing.

The research follows previous work by Christakis and co-author James H. Fowler that found that obesity also appears to spread from person to person, as does the likelihood of quitting smoking. The researchers have been using detailed records originally collected by the Framingham Heart Study, a long-running project that has explored a host of health issues, to construct and analyze detailed maps of social networks.

The findings, Christakis and others said, provide striking new evidence of the power of social networks, which could have implications for public policy. Happy people tend to be better off in myriad ways, being more creative, productive and healthier.

"For a long time, we measured the health of a country by looking at its gross domestic product," said Fowler, a political scientist at the University of California at San Diego who co-authored the study. "But our work shows that whether a friend's friend is happy

has more influence than a \$5,000 raise. So at a time when we're facing such economic difficulties, the message could be, 'Hang in there. You still have your friends and family, and these are the people to rely on to be happy.' "

Other experts praised the study as a landmark in the growing body of evidence documenting the influence of personal connections and the importance of positive emotions.

"It's a pathfinding article," said Martin E.P. Seligman, a University of Pennsylvania psychologist. "It's totally original, and the findings are striking."

Stanley Wasserman, who studies social networks at Indiana University, said: "We've known that one's network ties are important, but we've never looked at anything on this scale. The implications are you can't look at individuals as little entities devoid of their social context."

Others, however, questioned the findings, noting that it is difficult to account for every variable that might affect the outcomes of such studies.

"Researchers should be cautious in attributing correlations in health outcomes of close friends in social network effects," wrote Ethan Cohen-Cole of the Federal Reserve Bank of Boston and Jason M. Fletcher of Yale University in an accompanying study. Their research used data from a large federal survey to show that acne, headaches and even height could appear to spread through social networks if not analyzed properly. "The methods of detecting 'social network effects' of health outcomes commonly found in the recent medical literature might produce effects where none exists."

But Christakis said his analysis took other possible explanations into consideration. Ed Diener, a psychologist at the University of Illinois at Urbana-Champaign, said the findings could explain why people in some countries tend to be happier than others. "This is an extremely exciting study -- interesting, provocative and important," Diener said. While obesity appeared to spread even among people who lived far apart, happiness appears to be transmitted only among people who live within a mile of one another. The influence was also greatest among people who considered themselves mutual friends. Because the researchers did not find the effect for people living on the same block beyond a next-door neighbor, they were confident that the positive mood was not the result of living in the same good neighborhood. Because people tended to get happier if someone they knew became happy, the researchers could rule out the alternative explanation that happy people tend to be drawn to each other.

"We know it's not a 'birds of a feather flock together' effect," Christakis said.

Surprisingly, happiness had no such effect at work. The researchers speculated that work relationships may have different dynamics. One worker might become happy because he or she got a raise or a promotion at the expense of another, for example.

Unhappiness also appeared to be catching, but not as strongly: An unhappy connection increased the chances of being unhappy by about 7 percent on average, while a happy connection increased the chances of being happy by about 9 percent. While having more friends is important for a person's happiness, the benefit of having more friends appears to be canceled out if they are unhappy, the researchers found.

The researchers and others speculated that the emotion may be important on an evolutionary level by helping people cooperate. Seligman likened happiness to an orchestra tuning up.

"Laughter and singing and smiling tune the group emotionally," Seligman said. "They get them on the same wavelength so they can work together more effectively as group."

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