

Day 1: Network Theory and Its Application to Health and Society

Keynote Lecture

Sponsored by Glaxo-Smith-Kline

EAT, DRINK, AND BE MERRY: THE SPREAD OF OBESITY, SUBSTANCE USE, AND HAPPINESS IN LONGITUDINALLY RESOLVED SOCIAL NETWORKS

Nicholas Christakis
Harvard University, USA

Abstract

Our work has involved the quantitative investigation of whether and how various health-related phenomena might spread from person to person in social networks. For example, we have explored the nature and extent of person-to-person spread of obesity. We developed a densely interconnected network of 12,067 people assessed repeatedly from 1971 to 2003; each node on the network has an average of 11 ties. We used longitudinal statistical models and network-scientific methods to examine whether weight gain in one person was associated with weight gain in friends, siblings, spouses, co-workers, and neighbors. Discernible clusters of obese persons were present in the network at all time points, and the clusters extended three people deep. These clusters were not solely due to selective formation of social ties. A friend becoming obese in a given time interval increased a person's chances of becoming obese by 57% (95% CI: 6%-123%). Among pairs of adult siblings, one becoming obese increased the chance that the other became obese by 40% (21%-60%). Among spouses, one becoming obese increased the likelihood that the other became obese by 37% (7%-73%). Among those working in small firms, a co-worker becoming obese increased a person's chances of becoming obese by 41% (17-59%). Immediate residential neighbors did not exhibit these effects. We have also conducted similar investigations of other health behaviors, such as smoking, drinking, exercising, and the receipt of health screening, and of other health phenomena, such as happiness and depression. For example, smoking cessation behavior spreads between friends and co-workers. And happiness can be seen as a network phenomenon. Various aspects of our findings suggest that the spread of social norms across network ties may partly underlie inter-personal health effects, but there also may be a

biological basis for the spread of some phenomena. Our findings have implications for clinical and public health interventions and for cost-effectiveness assessments of preventive and therapeutic interventions. They also lay a new foundation for public health by providing a rationale for the claim that health is not just an individual, but also a collective, phenomenon.

Biography

Biography

Nicholas A. Christakis, MD, PhD, MPH conducts research on social factors that affect health, health care, and longevity. He is a Professor of Medical Sociology in the Department of Health Care Policy at Harvard Medical School; Professor of Sociology in the Department of Sociology in the Harvard Faculty of Arts and Sciences; and an Attending Physician (with an emphasis on palliative medicine) in the Department of Medicine at the Mt. Auburn Hospital in Cambridge, Massachusetts. His current work is principally concerned with health and social networks.

He is the author of over 100 refereed publications and books. He is a member of the Institute of Medicine of the US National Academy of Sciences.