

# Researchers develop new method to measure influence and susceptibility in social networks

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In a new paper, published today in *Science*, Sinan Aral, NYU Stern Assistant Professor of Information, Operations and Management Sciences, and his co-author Dylan Walker, a research scientist at Stern, present a new method to measure influence and susceptibility in social networks.

Today, finding influentials is all the rage. Companies such as Klout are trying to measure "influence scores" for people in social [media networks](#) like [Facebook](#) and [Twitter](#), and brands are using this information to target them with advertising. Beyond marketers, parents are interested in whether their children's peers influence education outcomes; managers are interested in whether workers' colleagues influence their productivity; and [policymakers](#) are interested in whether happiness, obesity and smoking are contagious, and if [risky behaviors](#), such as drug abuse, spread as a result of peer-to-peer influence.

"The important contribution of our method," explains Aral, "is that it avoids known [biases](#) in current methods such as homophily bias. Homophily means that we tend to make friends with people like ourselves. For example, if two friends adopt a product or behavior one after the other, current methods have a hard time distinguishing whether it is because of peer influence or if the friends simply have similar preferences and thus behave similarly."

Aral and Walker used their method to measure influence and susceptibility in the adoption of a commercial movie application on Facebook among 1.3 Million users. They found that:

- Men are more influential than women
- Women influence men more than they influence

- other women
- Older people (30+ years) are more influential and less susceptible to influence than younger people
- Married people are the least susceptible to influence in the decision to adopt the product they studied
- Influence and susceptibility trade off, meaning people who were more influential tended not to be susceptible to influence and people who were susceptible tended not to be influential
- Some people are clearly more influential than others and are themselves connected to other highly influential people, giving them the potential to be "super-spreaders"

This new method has a wide variety of applications, such as developing effective targeting strategies to spread products or behaviors in society. "We combine estimates of influence and susceptibility with estimates of people's natural tendency to adopt a product to devise precise and accurate targeting strategies for spreading the product or behavior in the population," explains Aral. "This is certainly important for targeted advertising and viral marketing of products but can also be used to affect social good. We are now working on applying the same science to promote HIV testing in Africa and other positive behaviors including exercise and political awareness."

Aral and Walker's research also helps resolve recent debates about the "Influentials Hypothesis." Some, like Malcolm Gladwell, author of *The Tipping Point*, argue that influential individuals catalyze the diffusion of opinions, behaviors and products in society. Others contend that it is not a small number of influential individuals but the prevalence

of susceptible individuals that catalyze social contagions. Aral and Walker's work shows that, "it is the joint distribution of both influence and susceptibility in the network which together determine the pattern of the contagion and someone's importance to the propagation of behaviors in a population."

Professor Aral's research focuses on social contagion and measuring and managing how information diffusion in massive social networks affects information worker productivity, consumer demand and viral marketing. He also studies the role of information and information technology in the productivity and performance of firms.

**More information:** "Identifying Influential and Susceptible Members of Social Networks", *Science*, DOI: [10.1126/science.1215842](https://doi.org/10.1126/science.1215842)

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