

Is Liking Contagious?

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The development of online networking sites, such as Facebook, has made it possible to conduct large-scale field experiments to identify crisp causal effects of social influence, among friends, *within* a network (Bond et al., 2012; Aral and Walker, 2012). A natural question to researchers, policy-makers, and marketers is how much of these effects that can be ascribed to being influenced by other people in general, and how much is due to being influenced by friends in particular. The seminal studies of Solomon Asch indicate that strangers can be very persuasive (Asch, 1956). At the same time, subtly decreasing social distance has been shown to strengthen the degree of influence (Goldstein et al., 2008). In this paper we direct attention to the distinction between friends and strangers as we manipulate networks on Facebook to study the micro foundations of social influence.

One of the most popular features on Facebook allows users to post status updates for their network to read; in turn, friends may react to these short messages by adding comments or by pressing the Like button to show they enjoyed reading it. Since its introduction in 2009, Facebook's Like button has become a widely used way of expressing positive feedback on the Internet. Businesses are also using this digital word-of-mouth as a customer acquisition channel, offering discounts in return for Likes. The idea is that this will increase brand visibility in the customer's social network and, ultimately, generate additional revenue. To test whether liking is contagious, we post authentic updates from real Facebook accounts during a seven month period. For every new update, we randomly assign subjects into either a treatment or a control group. Hence, while both groups are exposed to identical content, treated individuals see the update after someone, controlled by us, has Liked it; whereas individuals in the control group see it without anyone doing so. To shed further light on threshold effects, we exploit unique features of this setting and expose subjects to three different treatment conditions: (i) one unknown user Likes the update, (ii) three unknown users Like the update and (iii) one user who subjects are connected to Likes the update. Comparing (i) and (ii) determines the importance of the number of predecessors, whereas comparing (i) and (iii) tests whether social ties matters (holding mean group behavior constant).

The results from this exercise reveal that strangers, as opposed to friends, are not influential in isolation: one Like from an unknown user did not trigger herding, however, being exposed to previous opinions from either three strangers or one friend more than doubled the probability of Liking an update, and these effects are statistically significant. To the contrary, the decision to comment is unaffected in all treatments, implying that the effect is not driven by limited attention. When comparing the two treatment conditions that affect behavior, we find indications that observing a friend's opinion is a stronger signal than observing the opinions of three strangers. In light of this, the well-documented in-group bias (Hewstone et al., 2002) can be interpreted as a double-edged sword: people are more generous towards members of their own group (Ruffle and Sosis, 2006; Leider et al., 2009), on the other hand, our results show that people are substantially more susceptible to pressure from in-group members than from outsiders. As we look closer into the data we find the treatment effects to be independent of how active subjects are on Facebook, their gender, the content of updates, or who posted the update, suggesting they apply broadly. This result highlight that idiosyncratic initial conditions can determine final outcomes (Salganik et al., 2006), and why it therefore can be difficult to predict the virality of stories and products (Aral and Walker, 2011; Berger and Schwartz, 2011; Berger and Milkman, 2012). A neat aspect when we consider potential mechanisms is that decisions in the experiment are made after subjects have experienced the product and have been able to evaluate it against comparable alternatives. Hence, choices are made under perfect private information, meaning there is little room to learn from others in an objective sense, whereas normative pressures are likely to be present. To test this we separate status updates in terms of the degree to which they are ambiguous, by letting a large group of people judge them. We then show that ambiguity in status update language does not drive the observed peer effect. That subjects, nevertheless, respond to a signal that does not carry any information suggests that conformity is the plausible mechanism (Corazzini and Greiner, 2007; Goeree and Yariv, 2010).

The existence of a social multiplier in this type of environment speaks directly to firms that use online word-of-mouth for marketing purposes. However, there is no reason to believe that imitative behavior is restricted to Facebook, or even online interactions. More likely, it will emerge (in varying degrees) as long as people are exposed to others' opinions.

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