Facebook study suggests online users reinforce their views by creating echo chambers

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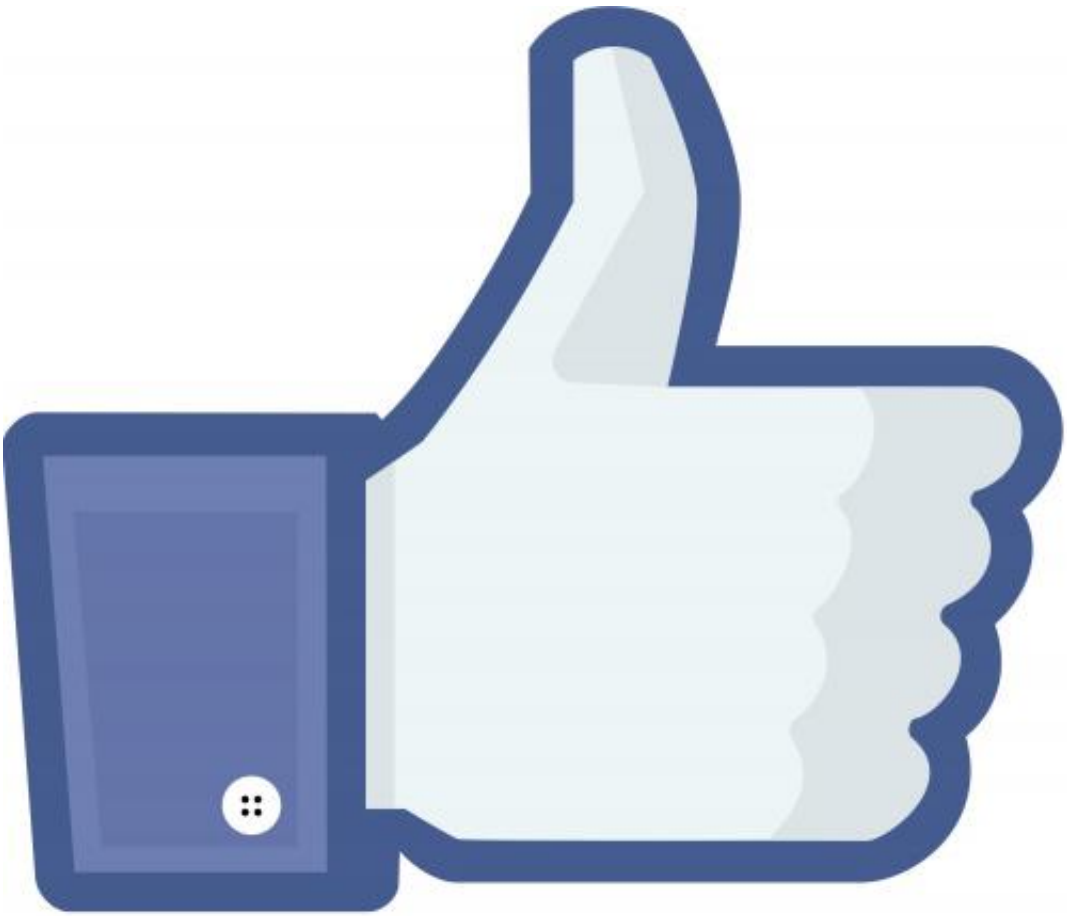

(Phys.org)—A team of researchers from several institutions in Italy and

one in the U.S. has found evidence that suggests Internet users follow a pattern similar to that found in other media regarding how they look for and use information they find. In their paper published in *Proceedings of the National Academy of Sciences*, the team describes how they downloaded data from Facebook, analyzed it and found examples of echo chamber type behaviors.

Scientists and other people have known for quite some time that many people tend to limit their exposure to news sources that offer information that goes against their own beliefs—instead, they are drawn to sources that they find agreeable and in so doing bolster their beliefs—when multiple people do the same thing and use the same sources they create what has become known as echo chambers. The researchers with this new effort have found a similar pattern in information processing by people that use the Internet—most specifically, those that use Facebook.

Suspecting that Facebook users access and consume news information in ways similar to that found previously with other news outlets, the researchers accessed publicly available data via Facebook's Graph application program interface and used it as a source of information. It provided them with data regarding user content which the researchers divided into different categories, such as conspiracy theories or science news. They also created a dataset consisting of data from what they describe as "troll pages," which of course are the comments that people leave on other people's pages. Both types of data were obtained for the five year span 2010 to 2014. The team then ran analysis software on the dataset to obtain pattern information.

In examining their results the researchers report that they found evidence that Facebook users do indeed tend to engage in creating echo chambers, encasing themselves in environments that mesh with their own personal beliefs while rejecting other viewpoints, thereby reinforcing their own

views. The researchers suggest such practices help explain such odd phenomenon as the widespread rejection of scientific evidence of global warming, or Jade Helm 15, where alarmists set off online panic by suggesting that military training exercises occurring in various parts of the U.S. last summer were a sure sign of an impending civil war. The researchers suggest that those seeking to break into echo chambers with what they believe is truthful information, find a way to reach a larger audience, rather than by knocking their way into small subgroups. They note that some have achieved some success by resorting to buying advertising space to get their message through.

More information: Michela Del Vicario et al. The spreading of misinformation online, *Proceedings of the National Academy of Sciences* (2016). DOI: 10.1073/pnas.1517441113

Abstract
The wide availability of user-provided content in online social media facilitates the aggregation of people around common interests, worldviews, and narratives. However, the World Wide Web (WWW) also allows for the rapid dissemination of unsubstantiated rumors and conspiracy theories that often elicit rapid, large, but naive social responses such as the recent case of Jade Helm 15—where a simple military exercise turned out to be perceived as the beginning of a new civil war in the United States. In this work, we address the determinants governing misinformation spreading through a thorough quantitative analysis. In particular, we focus on how Facebook users consume information related to two distinct narratives: scientific and conspiracy news. We find that, although consumers of scientific and conspiracy stories present similar consumption patterns with respect to content, cascade dynamics differ. Selective exposure to content is the primary driver of content diffusion and generates the formation of homogeneous clusters, i.e., "echo chambers." Indeed, homogeneity appears to be the primary driver for the diffusion of contents and each echo chamber has

its own cascade dynamics. Finally, we introduce a data-driven percolation model mimicking rumor spreading and we show that homogeneity and polarization are the main determinants for predicting cascades' size.