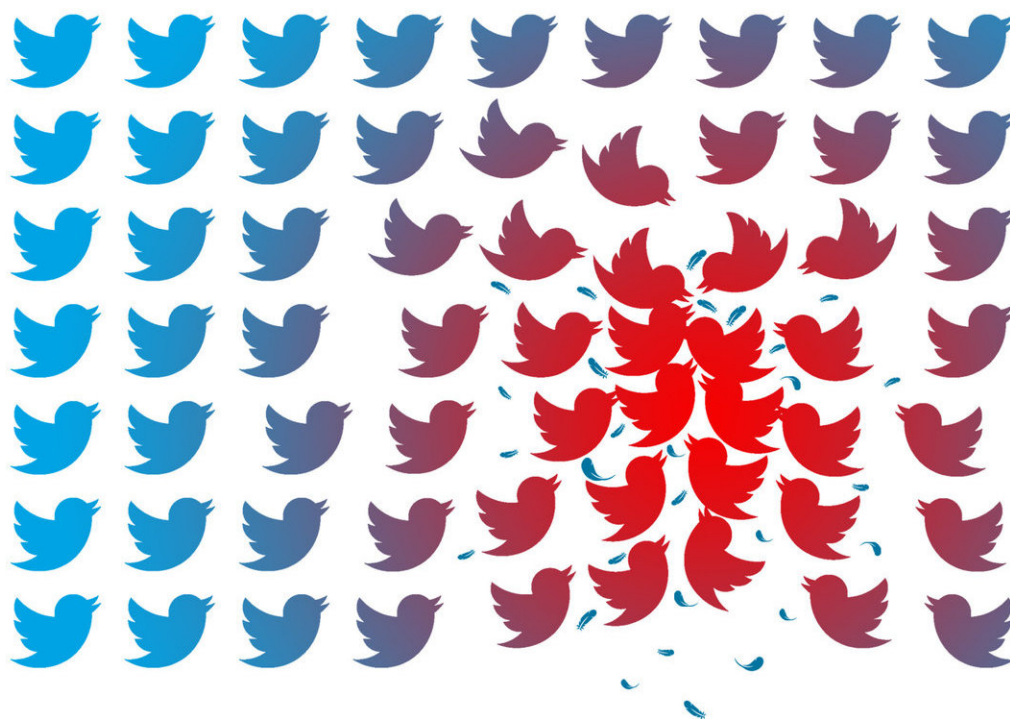# Social media posts may signal whether a protest will become violent

May 23 2018

A new study by researchers at USC, Northwestern University and Rensselaer Polytechnic Institute analyzed tweets during Baltimore's Freddie Gray protests and found the intensity of moral rhetoric indicates when the protests are about to turn violent. Credit: Nima Dehghani

A USC-led study of violent protest has found that moral rhetoric on Twitter may signal whether a protest will turn violent.

The researchers also found that people are more likely to endorse violence when they moralize the issue that they are protesting—and when they believe that others in their social network moralize that issue, too.

"Extreme movements can emerge through social networks," said the study's corresponding author, Morteza Dehghani, a researcher at the Brain and Creativity Institute at USC. "We have seen several examples in recent years, such as the protests in Baltimore and Charlottesville, where people's perceptions are influenced by the activity in their social networks. People identify others who share their beliefs and interpret this as consensus. In these studies, we show that this can have potentially dangerous consequences."

Utilizing a deep neural network—an advanced machine learning technique—to detect moralized language, the scientists analyzed 18 million tweets posted during the 2015 Baltimore protests for Gray, 25, who died as police took him to jail.

Then, they investigated the association between moral tweets and arrest rates, a proxy for violence. This analysis showed that the number of hourly arrests made during the protests was associated with the number of moralized tweets posted in previous hours.

In fact, tweets containing moral rhetoric nearly doubled on days when clashes among protesters and police became violent.

The study was published on May 23 in *Nature Human Behavior*.

Social media as a barometer for activism

Social media sites such as Twitter have become a significant platform for activism and a source for data on human behavior, which is why

scientists utilize them for research.

Recent examples of movements tied to social media include the #marchforourlives effort to seek gun control, the #metoo movement against sexual assault and harassment, and #blacklivesmatter, a campaign against systematic racism which began in 2014 after the police-involved shooting death of Michael Brown, 19, in Ferguson, Mo.

A more violent example is the Arab Spring revolution, which began in Tunisia in late 2010, and set off protests in many other countries, including Egypt and Libya, that forced changes in their leadership. In Syria, clashes escalated into a war that has killed hundreds of thousands of people and displaced a multitude of refugees.

Detecting moralization online

The scientists developed a model for detecting moralized language based on a prior, deep learning framework that can reliably identify text that evokes moral concerns associated with different types of moral values and their opposites. The values, as defined by the "Moral Foundations Theory," are focused on care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, and purity/degradation.

For this release, the researchers provided two examples of tweets containing moralized language and the moral foundations with which they are associated.

Sample Tweet 1: Why does the opposition speak only abt black on black crime as a rebuttal to police brutality/murder? #AllCrimeMatters, right? #FreddieGray

Moral Foundations: Fairness and Loyalty

Sample Tweet 2: regardless of how anyone feels, prayers to the police force and their family

Moral Foundations: Care and Purity

Moralization and political polarization are exacerbated by online "echo chambers—social networks where people connect with other like-minded people while distancing themselves from those who do not share their beliefs.

Why more protests are violent

"Social media data help us illuminate real-world social dynamics and test hypotheses in situ. However, as with all observational data, it can be difficult to establish the statistical and experimental control that is necessary for drawing reliable conclusions," said Joe Hoover, a lead author of the paper and Ph.D. candidate studying psychology at the USC Dornsife College.

To make up for this, the scientists conducted a series of controlled behavioral studies, each with more than 200 people, how much they agreed or disagreed with statements about the use of violence against far-right protesters after they had read a paragraph about the 2017 Charlottesville, Va., clashes over the removal of Confederate monuments.

The more certain people were that many others in their network shared their views, the more willing they were to consider the use of violence against their perceived opponents, the scientists found.

  More information: Marlon Mooijman et al, Moralization in social networks and the emergence of violence during protests, *Nature Human*

Behaviour (2018).