

Analysis says social networking services may foster users' negative perceptions about their own popularity, happiness

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About 2.8 billion people are estimated to use social media worldwide. Credit: Indiana University

A study led by computer scientists at Indiana University has found that people with the most connections on social media are also happier. This may cause most social media users to not only regard themselves as less popular than their friends but also less happy.

The recently published study is essentially the first to provide scientific evidence for the feeling many people experience when they log into services like Facebook, Twitter or Instagram: that everyone else looks like they're having more fun.

For the purposes of this study, which used publicly available data from Twitter, reciprocal followers were defined as "friends" and users with the most connections were defined as "popular."

"This analysis contributes to a growing body of

evidence that [social media](#) may be harmful to users who 'overindulge' in these services since it's nearly impossible to escape negative comparisons to their friends' popularity and [happiness](#)," said lead author Johan Bollen, associate professor in the IU School of Informatics and Computing, who advises people to carefully monitor and limit use of these services.

"Given the magnitude of social [media](#) adoption across the globe, understanding the connection between social media use and happiness may well shed light on issues that affect the well-being of billions of people," he added.

The study builds upon a phenomenon known as the Friendship Paradox, which finds that most people on a social network have fewer connections on average than their friends, since the most popular users intersect with a higher-than-average number of social circles. The IU-led study is the first to reveal that these more popular users are also happier on average, inflating the overall happiness level of a user's social circle—an effect the researchers dubbed the "Happiness Paradox."

"As far as we're aware, it's never been previously shown that social media users are not only less popular than their friends on average but also less happy," Bollen said. "This study suggests that happiness is correlated with popularity, and also that the majority of people on social networks aren't as happy as their friends due to this correlation between friendship and popularity."

To conduct the analysis, Bollen and colleagues randomly selected 4.8 million Twitter users, then analyzed the group for people who followed one another on the network, creating a social network of about 102,000 users with 2.3 million connections.

The team then narrowed their focus to individuals

with 15 or more "friends" on the network, after which [10.1140/epjds/s13688-017-0100-1](https://doi.org/10.1140/epjds/s13688-017-0100-1) they analyzed the sentiment of these users' tweets, a common method in computer science and marketing to assess whether digital postings are generally positive or negative in tone. This created a group of 39,110 Twitter users. Users with higher positive sentiment were defined as "happy."

Provided by Indiana University

A statistical analysis of that final group found with high confidence that 94.3 percent of these users had fewer friends on average than their friends. Significantly, it also found that 58.5 percent of these users weren't as happy as their friends on average.

"In other words, a majority of users may feel that they're less popular than their friends on average," Bollen said. "They may also have the impression that they're less happy than their friends on average."

The study also found that social media users tend to fall into two groups: happier users with happier friends and unhappier users with unhappier friends. Surprisingly, the unhappier users were still likely to be less happy than their unhappy friends, suggesting they're more strongly affected by their friends' unhappiness.

"Overall, this study finds social media users may experience higher levels of social dissatisfaction and unhappiness due to negative comparison between their and their friends' happiness and popularity," Bollen said. "Happy social media users may think their friends are more popular and slightly happier than they are—and unhappy social media users will likely have unhappy friends who still seem happier and more popular than they are on average."

The paper, titled "The happiness paradox: your friends are happier than you," appears in the *European Physical Journal Data Science*. Additional authors are Guangchen Ruan, doctoral researcher at IU; Bruno Gonçalves of New York University; and Ingrid van de Leemput of Wageningen University, The Netherlands.

More information: Johan Bollen et al, The happiness paradox: your friends are happier than you, *EPJ Data Science* (2017). [DOI:](https://doi.org/10.1140/epjds/s13688-017-0100-1)

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