Facebook, Yahoo to test 'six degrees of separation'

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Yahoo Inc. and Facebook Inc. are joining forces to test an iconic 1960s-era social experiment that showed there are just six degrees of separation between most people on the planet.

The world's population has almost doubled since social psychologist Stanley Milgram's famous but flawed "Small World" experiment gave people a new way to visualize their interconnectedness with the rest of humanity. Something else has also changed - the advent of online social networks, particularly Facebook's 750 million members, and that's what researchers plan to use.

Starting this week, social scientists from Facebook and Yahoo are hooking into that vast digital network to discover how many average online connections it takes for people to relay a message to a "target" - someone they don't know, in countries around the world.

The Yahoo-Facebook experiment could settle ongoing questions about whether the degrees of separation between people are as few as Milgram and other investigators concluded. Milgram's conclusion was based on a small number of letters making it to their target, leaving room for doubt about his findings among many social scientists. The latest version of the Small World experiment running on Facebook could help erase those questions.

"You really couldn't have done this until very recently," said Duncan Watts, Yahoo's principal research scientist who is leading the

experiment. "It's a milestone, in terms of it's the kind of research question you can answer now that you could have imagined 50 years ago, but that you couldn't have answered 50 years ago - or even 15 years ago."

On average, each of Facebook's members has 130 friends on the social network, and Facebook visualizes that web of connections as a person's "social graph." The social graph doesn't just grow wider as the social network - Facebook has tripled in size in the past two years - adds members. It also gets more dense, as the gaps between people are filled in by new members, said Cameron Marlow, Facebook's chief data scientist.

While the digital record of that graph shows the far-flung web of connections between people, individuals might not always be aware of how large their network really is, because they don't always know the friends of their friends. Therefore, it's important to test how effective people really are at transmitting a message from friend to friend, Watts said, to gauge how closely connected people really are.

The current "Small World" experiment - anyone with a Facebook account can participate by going to smallworld.sandbox.yahoo.com - could help determine that. The study is intended as academic social research and will be published in peer-reviewed scientific journal, said Watts, a widely recognized authority on social networks.

But the results could have applications to Facebook's business, Marlow said, because the degrees of separation between individuals, and between people and commercial brands that run ads on Facebook, are important. "Facebook depends on its connectedness, and the fact that users are connected to each other and users are connected to brands, enables the diffusion of important messages, a big part of which is our advertising platform," Marlow said.

The world had about 3.5 billion people when Milgram conducted his "Small World" experiments in the 1960s. Milgram asked groups of people in Wichita, Kan., and Omaha, Neb., to use their social connections to get a chain letter to a stockbroker in Boston in as few steps as possible.

The letters arrived in an average of 5.5 steps. Milgram never used the "six degrees of separation" phrase, but it has become a cultural icon.

Milgram "introduced the concept, or at least he gets credit for it, that our social networks are all intertwined, so in fact all of us are connected to other people through very few hops," said Santa Clara University psychology professor Jerry Burger.

It is now widely accepted that there were potential flaws in Milgram's research, said Phil Cowan, a professor emeritus of psychology at the University of California-Berkeley, because his conclusions were based on the small number of results - just 64 out of the 300 letters Milgram sent made it to their target.

"Here you had a very surprising factoid, cloaked in science, and I just think everybody who heard it, including me at the time, said, 'Wow, that's amazing. We are more connected than we thought we were,' " Cowan said. He said the validity of the current Yahoo-Facebook study would depend on whether it's representative of the general population, particularly since social network users skew younger.

Yahoo and Facebook hope to attract many times more participants than Milgram could get through the U.S. mail, perhaps tens or even hundreds of thousands. People who sign up see a thumbnail description of their target, and then choose one person from their Facebook friends who they think has the best chance of getting a step closer to the target.

"This is our best chance to measure this fundamental piece of the social graph, so the more users that participate, the clearer the signal will be," Marlow said.

Watts has already researched the small-world concept, having published the first mathematical model of people's social connections in 1998 with a colleague at Cornell University. Five years later as a professor at Columbia University, Watts used email to explore the length of connections between people, and got similar results to Milgram's.

But he said Facebook's network provides a much better proxy for the world's 6.8 billion people.

"It's not 6 billion, but it's twice the size of the U.S. population. If it works on this network, (the six degrees hypothosis) really is true," Watts said. "I don't think anyone can say, 'Oh, it works on Facebook, but it really doesn't count.' This is an opportunity to show that it's true, or not true."