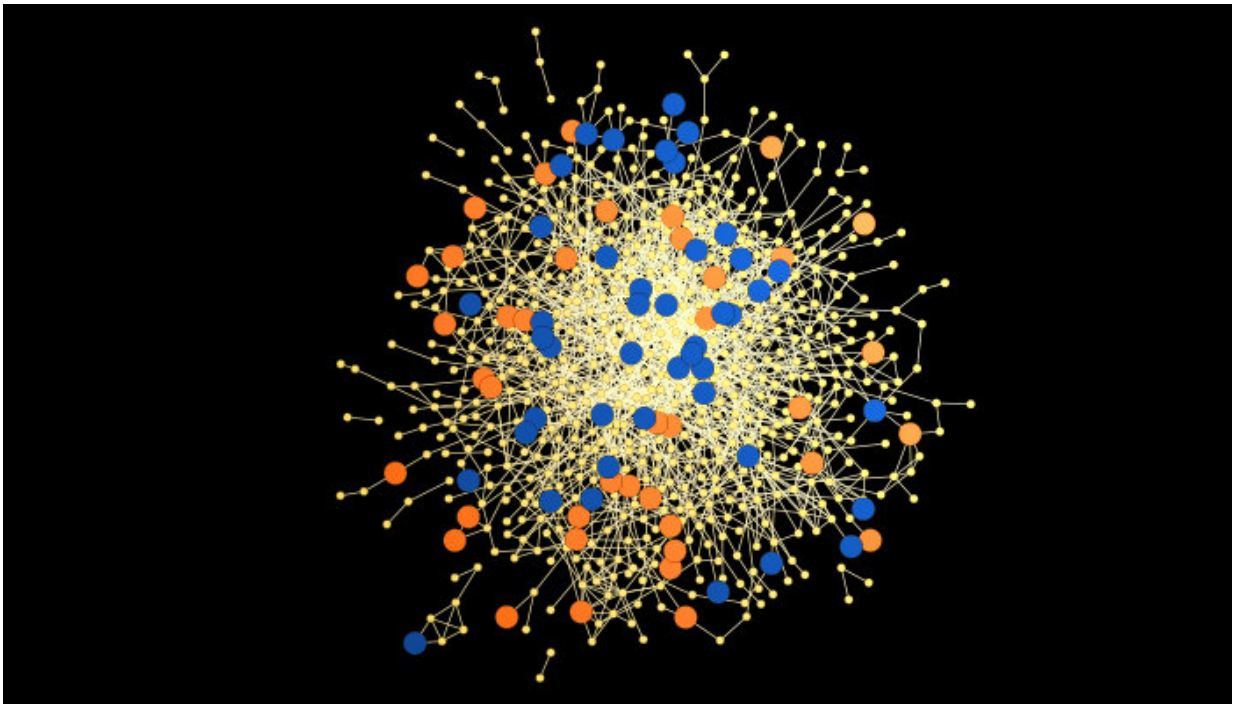# Night owls have larger social networks than early birds

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Night owls (blue) are more central than early birds (orange) in their social networks. Each circle represents one person, and the lines connecting the circles are indicative of interactions (phone calls) between them. Credit: Jari Saramäki, Talayeh Aledavood / Aalto University

Using anonymous mobile phone data, Aalto University doctoral researcher Talayeh Aledavood has tapped into patterns in people's behaviour. She has found out that individual 'chronotypes,' the inherent

periods of sleep during a 24-hour-period, correlate with the size of people's social networks, how much they are in contact with others, and also the kind of chronotypes with whom we interact.

Night owls tend to have wider social networks than morning persons. Night owls are also more central in their own networks and—distinctively more so than early birds—and stick to their kind and interact with others who stay up late.

"The digital breadcrumbs our daily phone use leaves behind can be used to monitor our behaviour. They provide a picture of our activities, movements and communication," says Aledavood.

In her dissertation, Aledavood has used such digital traces to investigate people's patterns of behaviour. Times of sleep can be inferred from periods of no smartphone use. The timing of calls made to friends and the size of our social networks, based on calls, texts, or emails, reveal our social habits. It's a lot harder to get accurate information like this from surveys, for example, and it's possible to widen the scope of the study up to entire countries.

While providing interesting knowledge of sleep pattern correlations with social interactions and networks, Aledavood's research has wider implications. Her findings could lead to understanding and treating [mental health issues](). Data collected and linked together from mobile devices, social networks and other digital platforms could work as indicators for mental disorders. Aledavood has outlined a method to collect data for this purpose.

"There are no clear-cut biomarkers for detecting mental disorders as there are for diabetes or tumours, so you have to find new ways to seek them out. Disruptions in sleep rhythms can indicate several [mental disorders](), and my plan is to infer these disturbances from data collected

from people's use of digital devices," Aledavood explains.

Aledavood's ultimate goal is to develop automated systems that can help patients to seek professional help before their condition becomes severe. Making visualisations, for example, from the data collected could assist [health care professionals](link) to get an in-depth view of their patient's condition.

Aledavood stresses that the privacy and information security of all study participants and particularly patients are crucial. "The [data collection method](link) we have developed has been designed to secure people's privacy from the get-go. Privacy matters in all walks of our digital lives, and unlike the multitude of openly available mobile phone apps that are not scientifically validated or ethically approved, future research and clinical use of our methods will go through strict ethical evaluation. We have to be sure that a data collecting method or app is actually beneficial for a patient's well-being and treatment," Aledavood says.

More information: [aaltodoc.aalto.fi/bitstream/ha …](link) [quence=1&isAllowed=y](link)

Provided by Aalto University