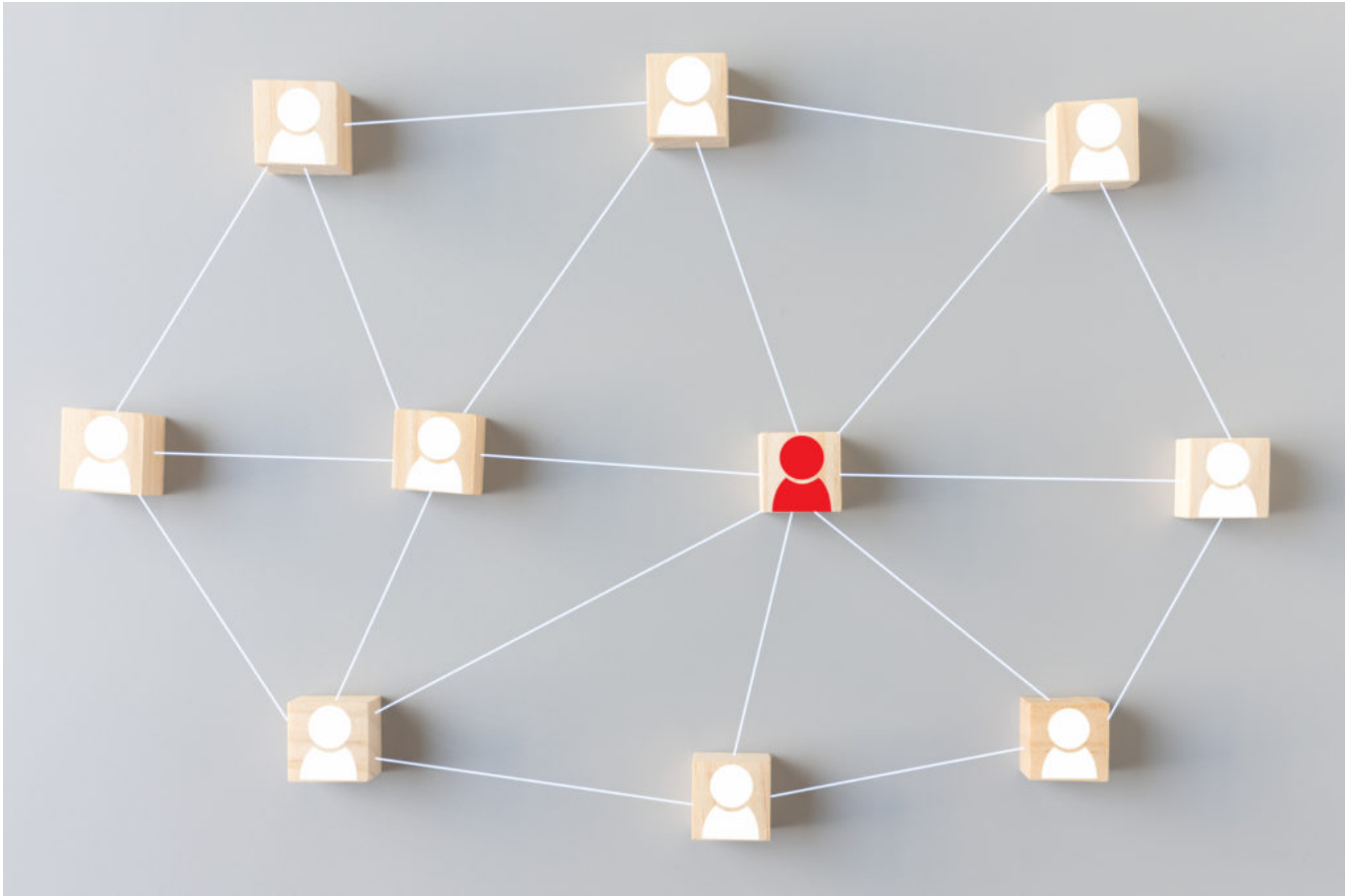# Assessing Ego-Centered Social Networks in formr: A Tutorial

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Social networks encompass a wide array of interactions and relationships, and investigating social networks can provide information about attitudes and behaviors surrounding these relationships and interactions. In a recent article in *Current Directions in Psychological Science*, APS Fellow Julianne Holt-Lunstad (Brigham Young University) discussed the links between social networks and major health outcomes. She examined social connection in terms of its components—structure (e.g., network size, marital status), functions (e.g., social support), and quality (e.g., relationship satisfaction)—and showed that low levels of these components appear to be associated with increased health risks, whereas high levels appear to be associated with health protection.

Cross-cultural research on social networks

Cross-cultural research on social networks throughout the lifespan has revealed different trends among older adults in different countries:

• Although Americans report having the largest social networks, with an average of 11.3 close relationships, their social networks tend to shrink and disperse geographically with age.

• Lebanese adults, who have the smallest, most local social networks (an average of 5.8 important relationships), often see those networks expand with age.

• Widowed or ill older adults in Germany and France have smaller social networks than their counterparts in Japan or the United States.

These findings highlight "a need for flexibility with respect to how policy is developed and implemented given the unique situational contexts of nations" (Ajrouch et al., 2017).

The effects of positive social connections are evident throughout the lifespan, but research has supported the idea that they play a major role in healthy aging. In a 2015 article in *Current Directions in Psychological Science,* APS Fellow Karen Rook (University of California, Irvine) analyzed the health-related effects of social-network involvement during later life, "a time when risks for declining health and for the loss or disruption of social relationships increase." Rook set out to explore the relationship between social connections and health in later life, including the fact that older adults who experience chronic disappointment and conflicts in their relationships with others are at increased risk for health issues. She proposed that a comprehensive understanding of how social networks affect health and well-being in later life can help to "inform the design of interventions, when warranted, that seek to improve the quality of older adults' social relationships."

"One way of studying social networks is the assessment of ego-centered networks," wrote Louisa Reins (University of Goettingen), Ruben Arslan (Max Planck Institute for Human Development), and Tanja Gerlach (University of Goettingen) in a 2021 article in *Advances in Methods and Practices in Psychological Science*. In such assessments, individuals report their number of interaction partners and their relationship with them, which can provide information about how social contexts influence individual-level outcomes. "Looking at ego-centered social networks makes it possible to learn more about the patterning of individuals' social relationships and about how these relationships may change over time or across life transitions," the researchers explained.

A tool to assess ego-centered social networks

In their article, Reins and colleagues provide detailed instructions about how to set up a study involving ego-centered social networks online using the open-source software formr. This software allows participants to report the people they interact with in specific contexts, the attributes of these people, and their relationship with them. All materials in the tutorial are publicly available via the Open Science Foundation.

As an online survey framework, formr (formr.org; Arslan et al., 2020) allows for the implementation of simple cross-sectional surveys and complex longitudinal, dyadic, or experience-sampling studies. The platform consists of three main components:

- The survey framework, which allows researchers to specify the information to be gathered (this information is specified in item tables, or spreadsheets imported from Excel or Google Sheets);

- The study control framework, which allows researchers to specify the design of their study and set up communication with the participants, including automated invitations, reminder emails, or personalized feedback;
- A utility R package, which allows researchers to enable complex survey features by executing R code and includes helper functions to organize and analyze collected data.

Two main advantages set formr apart from other programs that can be used to assess social networks: Its free and open-source nature makes it possible to easily share data, enhancing transparency and making it easier to reproduce studies, and its integration with R allows researchers to use their favorite packages to enable complex analysis and data visualization.

Building a study in formr

In their tutorial, Reins and colleagues include a sample study and guide users through the different steps of its implementation. This sample study can also be used as a template to create new social-network studies. In the sample study, researchers wanted to know how people's personalities are related to aspects of their support network and whether the degree of similarity between a person's own personality and the network members' personalities predict the amount of contact and experienced closeness.

Before implementing their own study, researchers should consider some questions:

- **What kind of ego-centered social network do they want to assess?** There are at least five types of (partly overlapping) ego-centered social networks: networks of close associates (i.e., people important to the focal person), exchange networks (i.e., people providing/refusing material or symbolic support), interactive networks (i.e., people interacted with in certain contexts or during a certain time), role-relation networks (i.e., networks defined by social roles), and global networks (i.e., all the people one knows). Researchers might also be interested in networks based on specific characteristics or behaviors (e.g., all the chess players one knows).
- **How will participants be guided in identifying their networks?** One possibility involves using name generators (i.e., prompts that instruct participants to list the people constituting the network in question). For example, in the sample study in Reins and colleagues' tutorial, participants were provided with a set of situations that could require the support of others and were asked whom they would typically ask for help in these situations.
- **How many people can participants include in their network?** Researchers may want to consult previous studies that have employed ego-centered networks for typical as well as maximum network sizes.
- **What kind of additional information on network members do the researchers want to gather, and with which measures?** In the sample study, apart from having participants rate their own personalities, Reins and colleagues asked participants about the personalities of people in their network, their amount of contact, and their experienced closeness to those people.
- **How to keep participants motivated throughout the study?** One way to motivate participants to engage in an extensive network assessment might be by rewarding them with personalized feedback. In the sample study, participants received feedback about how they perceived their own personality compared with the personalities of their network members and how the time

they had known their network members was related to how close they felt to them.

To prepare a study using formr, researchers can follow these steps:

1. Create a formr account.

2. Complete a survey spreadsheet that includes instructions ([survey spreadsheets for the sample study can be downloaded as Excel files](#)).

3. Upload the survey (in one or more survey spreadsheets).

4. Set up the study using the formr run function in the study control framework (this binds the different spreadsheets and elements that make up the study).

5. Test the study using the monkey mode, which allows for R code debugging.

While collecting data, researchers can track how many people have participated so far and check each participant's progress. The results are stored separately for every survey, with each row containing one participant's data and columns referring to the different survey questions plus information about survey participation (e.g., session ID, date, start and end time).

Reins and colleagues provide a detailed step-by-step guide on how to use formr and a template for survey spreadsheets. They also include sample code for creating personalized feedback and instructions for incorporating Graphical Ego-Centered Network Survey Interface (GENSI), a JavaScript-based module that allows participants to add social-network members to a graph as nodes connected by lines representing connections. Reins and colleagues also present a detailed list of previous studies on ego-centered social networks, which can provide information about the strengths and limitations of this type of research and may inspire new research questions.

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