Collection of Ego-Centered Network Data with Computer-Assisted Interviews

Joachim Gerich and Roland Lehner
University of Linz, Austria

Abstract. Although ego-centered network data provide information that is limited in various ways as compared with full network data, an ego-centered design can be used without the need for a priori and researcher-defined network borders. Moreover, ego-centered network data can be obtained with traditional survey methods. However, due to the dynamic structure of the questionnaires involved, a great effort is required on the part of either respondents (with self-administration) or interviewers (with face-to-face interviews). As an alternative, we will show the advantages of using CASI (computer-assisted self-administered interview) methods for the collection of ego-centered network data as applied in a study on the role of social networks in substance use among college students.

Keywords: ego-centered networks, computer-assisted interviews, social networks, substance use

Introduction

An ego-centered network is defined as the perceived network of a focal individual (ego) that consists of the network members (alters) and the ties between the alters. In our application, we consider egocentric networks restricted to the first-order zone of ego’s nodes1 where all data about alters and their network ties rely on ego’s (proxy) information. Clearly—compared to complete networks—this kind of network data provides less reliable and less complete information. The quality of egos’ proxy information about their alters and their relationships may be low, although it can be expected that this is less problematic for “objective” or direct observable characteristics than for latent properties, such as values and attitudes of others (e.g., see Pfenning, Pfenning, & Mohler, 1991, for reliability problems with proxy information). Therefore, we expect lower reliability of proxy data compared to responses regarding respondents’ own properties. Additionally, if the responses are superposed by cognitive processes of projection (when the compliance with others is overestimated), validity of the proxy measurement will also be reduced. Conversely, however, one could argue that this is less problematic in research where the respondents’ perception of their networks is the phenomenon of interest instead of the objective structure.

A second limitation of ego-centered network data arises from the fact that nonestablished relationships (with ego) are excluded, which is equivalent to assuming that all geodesics2 between ego and alter are equal to 1. As a result, certain important network measures (e.g., closeness-based measures) for complete networks are uninformative for ego-centered networks (Marsden, 2002). A related limitation in comparison with complete networks is invoked through the fact that many types of possibly asymmetric relationships cannot be measured, since the data collection is one-sided. The question of friendship between ego and alter, for instance, is appropriate, but further directional information on this relation (e.g., whether the friendship is returned by alter) would be of doubtful use when ego is the only informant.

Ego-centered networks also have, however, important advantages compared to complete network data, one of which is that there is no need to a priori define the members of the network(s). The fact that not the researcher—as in complete network—but the respondents define relevant others3 is especially useful when the study focuses on significant others rather than on a specific social system. If we focus on the role of social networks of pupils in their substance use (e.g., cigarette smoking or use of alcohol), for example, a complete network design would choose the school as the system frame, but exclude relevant relationships to non-school-members.

Data Collection in Ego-Centered Networks

Compared to the collection of full network data, the collection of ego-centered data is easier: Traditional methods

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1 This means that nodes that are not directly tied to ego (but maybe to his or her alters) are excluded.
2 The geodesic is the shortest possible path between two nodes.
3 In some cases it may be possible to collect network members by means of a snowball sample. However, at the time of the collection of the network data, network members are yet to be established.
of data collection (e.g., a standardized questionnaire) as well as traditional sampling methods (for the focal individuals) can be applied. For the implementation, however, specific elements, such as name generators and name interpreters (Burt, 1984) are required. Name generators are questions that are designed to collect names of network persons based on a specific relationship. Depending on the operational definition of relationships (affective relations, role relations, exchange relations, interactive relations, or domain contacts) different methods for the delineation of networks can be distinguished (see van Gruenou and van Tilburg, 1996, for a detailed overview). The condensed form of such an instrument is the formulation of a single name generator, as proposed, for example, by Laumann (1973) and Burt (1984).4 Advantages of such a single-question name generator are that it is easy to use and that it requires little interview time; disadvantages are, however, that network relations are reduced to a single global relation with low accuracy, that the resulting network size is usually small with a high proportion of relatives, and that it does not provide information on multiplexity of network members, that is, on the fact that alters may maintain more than one type of relationship with ego.

An alternative is to use more than one name generator, mainly following the tradition of McCallister and Fischer (1978), who used eight different name generators. Van der Poel (1993) tried to determine the optimal number of name generators to be used for the delineation of personal support networks. He used an initial set of 10 name generators (partially borrowed from the instrument by McCallister and Fischer) and assumed that the resulting size of the network constitutes the total personal support network. He found that with five name generators about 80–85% of the variance and with three name generators about 55–60% of the variance in the total support-network size can be explained, which seem to be two local maxima. He concluded that the absolute minimum number of name generators for the delineation of support networks is three and the most economic number is five.

For our research, an instrument with five generators was also used. The selection of the five generators was based on a factor-analytic study of the Fischer generator by Schenk (1995), which was adapted for the specific population of university students. Schenk named three factors (intimacy, companionability, and support). We used two name generators for both intimacy and support and one for companionability.5 Schenk’s approach is very similar to the proposition of van der Poel (1993), whose initial set of 10 name generators covers three dimensions named as emotional support, instrumental support, and social companionhip.

After generating a list of network members, information about these alters (such as demographic and other properties) is collected by questions called name interpreters. Name interpreters are repeatedly presented to ego, separately for each network member. Next, to reproduce the network ties, all $k(k - 1)/2$ (with $k$ denoting the number of alters) combinations of network members are listed and ego has to specify how each pair of alters is related to each other.

It is clear that, although it is possible to collect ego-centered network data with traditional methods, a great effort is required of respondents (with self-administered questionnaires) or interviewers (with face-to-face interviews). The complexity is demonstrated by a self-administered questionnaire used by Burt (1998), in which respondents first name the different network persons (on different pages of the questionnaire), sort them in tables, and subsequently list them in a matrix form (Figure 1).

In face-to-face interviews, this work is done by the interviewer, which is more desirable and can be improved further with the help of paper assistance or computer-assisted personal-interview (CAPI) technology. However, face-to-face often is not the favored mode of data collection because of generally known problems, such as additional expense and possible interviewer bias, especially with sensitive questions (de Leeuw, Hox, & Kef, 2003; Sudman & Bradburn, 1974; Tourangeau & Smith, 1996). Moreover, particularly for ego-centered networks, van Tilburg (1998) showed in a study of elderly respondents that there are substantial correlations (intraclass correlation greater than 0.2) between interviewers and network size. This is explained by the more general interviewer effect regarding the numbers of different answers on open questions.6 As a solution, van Tilburg also considered mailed questionnaires and computer-assisted self-administered interview (CAI) methods, with rightful reservations about applying both these methods to the mostly elderly respondents in his study.

CASI Methods for the Collection of Data in Ego-Centered Networks

In recent years, the use of computers for data collection in empirical social research has increased rapidly. CAPI and computer-assisted telephone interviews (CATI) technologies are widespread and are common techniques for large survey investigations. Data collection through the Internet has become increasingly significant in both qualitative and quantitative research, and some of these techniques have demonstrated totally new possibilities. CASI implies that the computer is used not only by the interviewer or for the

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4 Laumann (1973, p. 264) used the following question: “Now, would you think of the three men who are your closest friends and whom you see most often. They can be relatives or non-relatives, as you wish.” Burt (1984, p. 314) used the question “From time to time, most people discuss important personal matters with other people. Looking back over the past six months—that would be back to last August—who are the people with whom you discuss an important personal matter?”

5 The generators ask about (a) persons to discuss personal matters with, (b) persons whose opinion is respected, (c) persons who help with household tasks, (d) persons who borrow money, and (e) persons to share social activities.

6 The computation of intraclass correlation was based on the analysis of variance as well as on multilevel analysis. Interviewers with higher education, “interviewers with less prior experience and also interviewers with a great deal of project experience generated relatively large networks” (van Tilburg, 1998, p. 323).
The effect size for CASI versus face-to-face as well as the effect size for CASI versus paper and pencil deviated significantly from zero, indicating increased self-disclosure with CASI. However, the effect size was smaller for the CASI versus paper and pencil comparison. The possibility to implement complex designs. Because many administrative aspects of data collection can be controlled by computer, there is a new horizon to implementing complex structures, even with self-administration. Experimental designs, such as item rotation, split designs, skip routines, and dynamic parts of questionnaires, may be introduced without additional work for respondents or interviewers (de Leeuw et al., 2003; Piazza & Sniderman, 1998, Sikkelen, 1998; Turner et al., 1998).

Reduced costs. To analyze the costs of CASI methods in comparison with paper-and-pencil or face-to-face methods, we have to differentiate between development and implementation costs. First of all, the development of a CASI instrument is more time consuming compared to traditional questionnaires. This is especially the case when standard CASI software is either not suitable or not available. Second, desktop or notebook computers and input devices (e.g., touch screens) may be needed for the fieldwork. These costs, however, are low when existing infrastructure can be used (e.g., computers in schools). Compared with traditional methods, savings due to reduced interviewer,
paper, printing, data-entry, and data-control costs are possible.

Inclusion of illiterate persons and persons with disabilities. A usual recommendation for self-administered questionnaires is that the respondents have sufficient ability to communicate in written language. Because of this requirement, as a rule, illiterate persons, young children, visually impaired persons, and—in some specific instances—hearing-impaired persons are excluded. With audio and video CASI and the utilization of touch screens and other devices, the inclusion of these groups is facilitated (Black & Ponirakis, 2000; de Leeuw et al., 1997; Gerich, Lehner, Fellinger, & Holzinger, 2003; Parsons, Baum, & Johnson, 2000; Schneider & Edwards 2000).

Limitations and Disadvantages of CASI Methods

A number of disadvantages and limitations of CASI methods have been reported. For instance, differences in the psychometric properties of CASI instruments may exist, compared to traditional modes, although most of the studies concerning the differences do not lead to uniform conclusions. Richman et al. (1999, p. 769) say of their meta-analysis, “we found that using a computer instrument per se has no consistent effect on distortion; the effect, if any, depends on what the instrument measures and on moderating factors such as whether respondents are tested alone or in presence of others.” Differences in the psychometric properties of questionnaires, however, may occur when multimedia elements are included in CASI (Weisband & Kiesler, 1996).

Further limitations of CASI methods concern questionnaire design. The most common technique of displaying only one item on one screen does not work with standardized questionnaires, where generally a whole set of questions is presented at once. When the main input device of the data administration is not the keyboard, problems may arise with open questions. As a rule, an open question requests entry via the keyboard (or a graphical representation of the keyboard), which may distort the initial reason for the use of CASI methods (e.g., with illiterate persons).

To summarize: Self-administered questionnaires have many advantages, especially with sensitive topics. In the special case of ego-centered network delineation, self-administration may help to overcome known problems with interviewer effects on the responses to name-generator questions. A clear drawback of self-administration is that only simple questionnaires can be used. CASI methods can sometimes combine the advantages of interviewer- and self-administered data collection, providing a high level of privacy and self-disclosure as well as options for high complexity. We will show how this goal was achieved in the measurement of ego-centered networks.

An Empirical Application

In a research project about the role of social networks in substance use and acceptance of substance use (alcohol, nicotine, cannabis, etc.), we tested a CASI instrument for the collection of ego-centered network data. The respondents were students of the University of Linz (Austria). We focused on network homogeneity concerning substance use and attitudes toward substance use on the one hand and on structural network differences of persons with higher and lower substance affinity on the other hand.

The effects of similarities of network members regarding substance-related variables are usually explained by mechanisms of mutual influence and selection (Kandel, 1996). Previous research has shown empirical evidence for this phenomenon, mostly in samples of schoolchildren (Browning, Dietz, & Feinberg, 2000; Bullers, Cooper, & Russell, 2001; Gaughan, 2003; Haynie, 2001; Leppin, 2000; Valente, 2003). Clearly, the cross-sectional design of our study is not suitable to differentiate between selection and influence processes. The article of Steglich, Snijders, and West (2006) in this issue covers this matter in more detail using longitudinal data.

Hypotheses about the association of substance affinity and social networks can be formulated on the basis of theories of social learning, social control, stress, and deviant behavior. For instance, it can be hypothesized that network structure is a relevant moderator of social learning in general and therefore also that network structure influences substance-related variables (Haynie, 2001; Rice, Donohew, & Clayton, 2003). Network influence and hence homophily regarding substance-related variables are expected to be higher in networks with higher density, stronger friendship relations, and higher multiplexity.

Theories of social control (Gottfredsen & Hirschi, 1990) argue that deviant and risk-oriented behavior are consequences of low social control and therefore associated with weaker tied networks, lower density, and lower multiplexity. Resources of social control (like the relationship to parents) are hypothesized to reduce the probability for risky behavior. Stress theory asserts that symptoms of stress and limited coping resources are known predictors for (especially instrumental types of) substance use (Budura, 1999; Leppin, 2000). As social networks are potential resources of support and protective factors for mental distress, it is expected that larger and stronger tied networks reduce symptoms of stress, enhance coping resources, and hence reduce the probability for substance use. The same hypothesis but with reversed sign follows from the theory of negative social capital as resources for criminal and illegal behavior (Browning, Dietz, & Feinberg, 2000), which would be plausible for illicit substance use. Further, as the causal direction is unknown, it may also be supposed that the use of substances itself has an integrating function (identity formation) and thus, for instance, provokes higher cohesion (Braun & Gauthsch, 1997).

8 In fact, due to the ego-centered design of the study, which has to rely on proxy information about network members, mechanisms of projection have to be considered in addition to influence and selection. Projection means the respondent’s overestimation of congruence with others. Mostly projection is seen as a “reporting bias” (Gaughan, 2003) or as “distortion” (Kandel, 1996) as it reflects only a measurement of respondents’ own characteristics.

9 For detailed results see Gerich and Lehner (2003, 2005).
Our pilot study was aimed at examining for which kind of associations supposed by these different theories empirical proof could be found. Dependent variables are quantity and frequency of substance use (distinguishing nicotine, various types of alcohol, cannabis, and other illicit substances), scales for instrumental use of alcohol, and attitudes toward substance use.10 Because an a priori definition of complete networks is clearly impossible, an ego-centered network approach was applied. We designed a CASI instrument with questions concerning personal characteristics, consumption of substances, personal attitude toward substance use, and demography, as well as indicators of social network attributes (relationships, friendships, consumption and other substance-related variables of network members, network composition, etc.). The structure of the CASI program11 is illustrated in Figure 2.

The questionnaire started with the first name generator (G1). The wording of this name generator was “Within the last three months - With whom did you undertake leisure activities (e.g. go out together, perform hobbies together, go to events together)?” Respondents were requested to write the names (forenames, nicknames, or other names with which they could identify such individuals again later on) of these persons into a text field one by one, as many as they liked. After respondents had completed the name inputs, the control routine started: A full list of the entered names was shown and respondents could erase or enter additional names to the list. The same procedure was repeated for the other four name generators. The control routines were essential because of the dynamic structure of the questionnaire, which required that each person could be clearly reidentified in later steps. Even though the persons were instructed to think of unique, identifiable names for their contacts, some of them did not understand this at first.

**Figure 2. Process of Data Collection**

10 Instrumental use of substances means that the person tends to consume the substance especially for some specific purposes (e.g., use of alcohol to achieve higher creativity, higher concentration, or a reduction of stress symptoms).

11 The program was developed as a prototype for MS Access. A more flexible stand-alone version is planned.
and had to learn this by doing, when names like “mum and dad” or “friend1” and “friend2” turned out not to work and they had to come up with better names. After the whole list was presented, they were able to correct their first attempts with the control routines. To enable multiplicity of the network members it was mentioned that the same person could be entered on different name generators.

To make the task easier and to avoid errors due to a different spelling of the same name, the text field was implemented as a drop-down menu. All names that were entered on earlier name generators could be selected from this list. After all name generators had been completed, the total list of entered names (without duplicates) was presented, where—again—incorrect names could be removed.

In the second section, the selection procedure started. If the respondents had entered more than eight different names, the complete name list was shown again and respondents were advised to select the eight persons most important to them. The decision to restrict the final number was not for technical purposes, but to limit the length of the interviews.

Section 3 contained the name interpreters, a collection of demographic variables, and specific questions about substance use for each alter. The questionnaire for an alter contained 16 questions that were presented on six screen pages (one screen, one topic) in an item/person fashion: Every page started with the message “Information about ...” followed by the name of the network member for whom the information was required. These six pages were shown repeatedly for all alters (a maximum of eight selected). Of course, different solutions for this dynamic section are possible. Fuchs (2000) specifies three main alternatives for the collection of alter-related attributes: the item/person method as described above; the item/topic version, where the item is presented for each alter; and a matrix organization of persons and items. The latter is limited by the numbers of alters and questions, as the space of the questionnaire is limited with paper-and-pencil methods, but also with CASI. In the decision between item/person and item/topic versions, Fuchs (2000) preferred the item/topic technique, where he observed “loop” effects and reduced length of time for the interviews. KogovSek, Ferligos, Coenders, and Saris (2002) compared both item/topic and item/person techniques with telephone interviews and reported slightly higher validity and reliability for the item/person version. In general, however, both techniques (item/person and item/topic) are possible, and the favorable version may well depend on the respondents and the types of questions.12

Subsequent to the name interpreters, in section 4 the network relations were defined. First, a list of all alters was shown and respondents were asked to specify their friendship relations to each of the persons with the help of a rating scale. Second, a list of all combinations of pairs of alters was shown. Again respondents were asked to estimate how well these persons knew each other on the basis of rating scales. In general, the list contains $k(k - 1)/2$ lines, with $k$ denoting the numbers of alters. To shorten the list and to avoid strange configurations (like “do mum and dad know each other?”), pairs of persons with a family relationship were not shown—this information is available from section 3.13

The last section contained the ego questionnaire, a simple questionnaire with questions concerning only the focal individual. This part was also designed as one screen—one topic, which means that some questions were shown together on one screen but scrolling was not necessary. Here, too, some advantages of CASI methods, such as automated branches and filters, were used.

The fieldwork was carried out in summer 2001. The sample of the study consisted of 302 university students in Linz (Austria) selected through simple quota sampling (by sex and field of study). Most of the interviews were conducted on desktop computers in a computer laboratory situated in the center of the university campus near the leisure rooms. A few of the interviews were conducted on laptop computers on the campus. The advantage of this situation was that it was possible to carry out up to 20 interviews at one time. Altogether, five interviewers were involved.14

The abort rate of the interviews was 1.3% ($n = 4$), which appears to be low compared to Web and touch-screen interviews, where rates between 13% and 65% are reported (Weichbold, 2002). We attribute this to the more controlled situation compared to Web or touch-screen interviews and to the specific population and their high familiarity with computers.

The resulting structure of the data consists of three relational tables. The first table contains the variables of the 298 ego persons who completed the questionnaire. These 298 focal individuals entered 4,811 names on the five name generators, where duplicates are included because of multiplexity. Filtering out the duplicates reduces the number to 2,065 alters. Identification keys and variables that concern these 2,065 network members are stored in the second data table. Each ego’s network size can be computed from these data. Because some of the egos (28%) entered more than eight persons, the data table is incomplete. Reducing the table to alters for whom full information (variables of the name interpreters) is available leads to a total of 1,728 network members. A third table contains the relational data for all $n(n - 1)/2$ combinations of pairs of alters per network (reduced by relations of persons with family relationship). This table contains 4,533 relations. To illustrate the network structure, we present some descriptive indicators in Table 1.

The average of the total number of entered names was

12 It seems to be a function of the information process for the response: If the cognition is more task oriented (e.g., “which of my network members meet a certain attribute?”) the item/topic version will perform better, and if the cognition is more person oriented (e.g., “what are the typical attributes of a certain individual?”) the item/person technique is likely to be the appropriate method.

13 However, the disadvantage of this is that the degree of the affiliation for relatives (which of course may vary) was not observed. For the computation of structural parameters like network density, it was assumed that relatives (parents and siblings) know each other well.

14 At least one interviewer was present in the laboratory to give advice when necessary and to monitor the interview situations. The other interviewer(s) contacted respondents in accordance with the defined quota and provided basic instructions.
In general, most of the network variables are computed by aggregation, and therefore small numbers of network persons would lead to networks with more than two persons. Therefore, the loss such as density can only be computed meaningfully for network size larger than two, because some parameters specific population. It is, however, desirable to obtain a maximum of 13 alters), which would be a notable addition. Hence, the limitation of name interpreters shows a substantial decline in the frequency for sizes of 13 and more alters. Hence, the limitation of name interpreters to a maximum of 13 (instead of 8) alters would have covered about 94% of all elicited network persons. However, the number of resulting tie combinations would have increased from 28 (with a maximum of 8 alters) to 78 (with a maximum of 13 alters), which would be a notable additional effort for the respondents.

Only 5% of the networks in our sample have a network size smaller than three, whereas Pfennig and Pfennig (1987) report proportions of 58% for the Burt instrument and 32% for the Fischer instrument, probably due to the specific population. It is, however, desirable to obtain a network size larger than two, because some parameters such as density can only be computed meaningfully for networks with more than two persons. Therefore, the loss of data for the network parameters was low in our research. Probably also due to our specific population (university students), on average, about 18% of the network members have a family relationship with the focal individual (compared to 39% for the large Fischer instrument and 49% for the Burt instrument reported by Pfennig and Pfennig, 1987). Similarly, only 15% of the network members live in the same household with the focal individual.

The relations between egos and alters are characterized as strong. The average friendship between egos and their alters was rated 4.35 on a scale between 1 and 5, with 5 indicating strong friendship. Egos reported contact several times per week with about three quarters of their network members. The relative high strength and frequency indicate that the name generators used mainly cover strong network ties.

To characterize the network structure, range parameters (Burt, 1983), such as density, multiplexity, and homogeneity, are used. The kind of closeness—measured by the density indicator—can be varied by the operational definition of the relation. A weak definition (persons know each other, regardless of how well, is coded as 1) leads to an average density of 0.75, which means that about three quarters of the possible network relations are established. A stronger definition leads to a density of 0.52, indicating that about the half of the possible network relations are established as close acquaintances (knowing each other “well” or “very well”’ is coded as 1).

The multiplexity of a network member is defined by the number of different relationships between ego and alter, computed as the number of name generators on which alter is named by ego. To compute the proportion of multiplex alters within an ego network, a threshold for multiplexity has to be defined. In Table 1, the threshold is three, which means that an alter is defined as multiplex when named in three or more (out of five) name generators. As the indicator shows, on average about 40% of the alters of an ego network are multiplex according to this definition. Consequently, many network partners are not bound to an exclusive relationship, but are rather multifunctional instead. This again can serve as an indicator of strongly tied networks. We have to note, however, that the high rate of network multiplexity may also be explained by a possible mode effect: The use of drop-down menus for the selection of names that were already entered on earlier name generators may lead to systematic overreporting.

Parameters for homophily indicate the similarity of ego and his or her alters with respect to the corresponding property. Table 1 shows the homophily of gender. As can be seen, on average, nearly 70% of the network partners have the same gender as ego, indicating that students tend to affiliate with persons of the same gender.

As the article focuses on data collection, we provide only a partial description of the results concerning the substance-related aspects of the study (for more details, see Gerich & Lehner, 2003, 2005). The study confirmed results of previous research that network homogeneity is related to substance use. Ego’s consumption of cannabis and nicotine and ego’s attitudes toward substance use were highly associated with alters’ consumption and attitudes. The results of the second part of the study showed that higher network density is associated with higher rates of consumption and higher acceptance of consumption of all substances, which is consistent with theories of negative social capital and identity formation through substance use. Moreover, a moderating association between density and homophily and the use and acceptance of cannabis was observed (higher homophily with higher density), which supports aspects of social-learning theory. Higher proportions of parents compared to the total size of the network were associated with lower consumption (regardless of substance), which is consistent with theory of social control and stress theory. Higher partial network sizes on the name generators for companionship were associated with higher general acceptance of substance use. Multiplexity was only associated with the use of cannabis and other illegal substances, which

Table 1. Descriptives of the network structure (n = 298).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of entered names</td>
<td>16.13</td>
<td>8.45</td>
</tr>
<tr>
<td>Network size</td>
<td>6.93</td>
<td>3.83</td>
</tr>
<tr>
<td>Average friendship</td>
<td>4.35</td>
<td>0.54</td>
</tr>
<tr>
<td>Density (strong)</td>
<td>0.52</td>
<td>0.27</td>
</tr>
<tr>
<td>Density (weak)</td>
<td>0.75</td>
<td>0.23</td>
</tr>
<tr>
<td>Multiplexity (m = 3)</td>
<td>0.43</td>
<td>0.25</td>
</tr>
<tr>
<td>Homophily of gender</td>
<td>0.68</td>
<td>0.23</td>
</tr>
<tr>
<td>No family relationship</td>
<td>0.82</td>
<td>0.20</td>
</tr>
<tr>
<td>Same household</td>
<td>0.15</td>
<td>0.18</td>
</tr>
<tr>
<td>Contact several times per week</td>
<td>0.76</td>
<td>0.23</td>
</tr>
</tbody>
</table>

15 In general, most of the network variables are computed by aggregation, and therefore small numbers of network persons would lead to extreme values or outliers.

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is consistent with the theory of negative social capital and identity formation.

Conclusions

For most purposes in (quantitative) empirical social research, traditional methods such as paper-and-pencil questionnaires or face-to-face interviews provide well-tested and efficient instruments. Because different research findings concerning CASI methods (especially with multimedia elements) do not lead to uniform conclusions as to whether there are mode effects of computer-based compared to traditional methods, traditional methods remain the first choice from our point of view. Moreover, because of assumed higher variation in the familiarity with computers than with paper questionnaires, the former will possibly lead to more heterogeneity in measurement reliability.

It is also clear, however, that there are some special applications for which computer-based methods provide strong advantages, one of which is the implementation of more complex designs. The application to ego-centered network data collection, presented in this article, is an excellent example of the advantages and feasibility of these methods.

The application demonstrated that CASI methods reduce the complexity of self-administered ego-centered network data collection and simultaneously avoid interviewer effects on sensitive questions and network size. Although it was established by means of several network parameters that ego-centered networks can be successfully obtained with CASI methods, some limitations come to mind easily. First, the instrument may not be suitable for all populations. While it has been shown for other CASI methods (e.g., Fellinger et al., 2005) that they are applicable for the elderly and for handicapped persons, this is probably not the case for the network application. Even if the complexity of data collection is reduced, some basic computer skills are still required. Although additional graphic improvements are possible, the task of direct text input, for instance, is essential for ego-centered networks. Whereas in our study the CASI approach reduced the costs and duration of the fieldwork—we had the disposal of a computer laboratory for the interviews—the situation will be different if interviews have to be conducted on single laptop computers.

A limitation of the reported research is that—due to its nonexperimental design—we are not able not provide final conclusions about the impact of CASI methods for ego-centered network collection. More systematic experimental research is needed on specific mode differences.

References


Joachim Gerich

Johannes Kepler University
Linz Faculty of Social Sciences, Economics and Business
Department of Sociology, Empirical Social Research
Altenbergerstrasse 69
A-4040 Linz
Austria
Tel. +43 732 2468 8292
Fax +43 732 2468 8561
E-mail Joachim.Gerich@jku.at

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