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Beyond interviewer effects in the standardized measurement of ego-centric networks

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ABSTRACT

The effects which interviewers exert on the collection of ego-centric networks have recently come into the focus of methodological considerations. Studies consistently show that the size of networks varies depending on the interviewer. We would like to expand on this research strand by pointing to different aspects which have so far gone unremarked in the discussion. First, size is mainly analysed as a network measure which is influenced during data collection, while other common measures such as network density or composition have not received sufficient consideration. Second, large-scale surveys using face-to-face interviews usually allocate interviewers to a single sampling point. Differences between sampling points (locality effects) are attributed to interviewer effects. Hence, we disentangle the effects of the locality and interviewer. Third, the discussion on interviewer effects often follows an "actor-oriented" consideration of how data collection situations are structured by interviewers. Expanding this approach from a relational perspective, we consider the relationship between the interviewers and respondents and whether this relationship influences the collection of network data. To test our hypotheses about the influence of interviewers, the locality and the interviewer-respondent relationship on different network measures, we use data from the 2010 German General Social Survey (n = 2827 respondents, n = 220 interviewers). The multilevel analyses show that the relationship between the interviewer and the respondent is not very relevant. Furthermore, the analyses show that interviewers have an influence on the network size but not on measures of their composition. However, evidence on the prevalence of locality or interviewer effects is mixed. Finally, homophilous interviewer-respondent relationships have very little effect on network characteristics. We find evidence of training and fatigue effects on network size. However, much of the variation in network size caused by the interviewer still remains unexplained. We draw conclusions on how to organize interview situations in surveys.

1. Introduction: beyond the exclusive accountability of interviewers in ego-centric network data

The measurement of ego-centric networks in surveys is highly developed. Several large-scale surveys, such as the US General Social Survey (GSS) or the International Social Survey Programme (ISSP), use standardized instruments to measure the size, density and composition of personal networks. So far, extensive efforts have been made to develop standardized measurement instruments, i.e. valid, objective and reliable instruments to meet high standards for data quality. Standardized measurement instruments of high data quality are designed to reduce interviewer influence to a minimum.

However, interviewer effects on ego-centric networks in face-to-face interviews have been much debated in recent years. The criticism is mainly focused on network size. The problem is discussed in the literature on social isolation (Paik and Sanchagrin, 2013) as well as in the methodology on panel data (Brüderl et al., 2013). The results of these analyses show that network size is strongly affected by interviewers' behaviour. Multilevel analyses of respondents nested in interviewers reveal that up to a quarter of the variation in network size is due to the interviewers (Paik and Sanchagrin 2013; Wolf 2006). Moreover, differences in network size over time – either in trend analysis of cross-sectional data or in panel analyses of longitudinal data – are not real changes but rather artefacts. It seems that even standardized instruments for

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measuring ego-centric networks are prone to failure related to the interviewer.

Several reasons for interviewer effects are discussed in the literature. The subject most prominently discussed is interviewers' motivation and rational behaviour. While rational interviewers try to shorten interviews, diligent interviewers uphold commitments made by researchers e.g. to probe for names in name generator questions. The two motivations are contradictory and result in uneven prompting by interviewers (Bearman and Parigi 2004; Brüderl et al., 2013 on diligent versus rational interviewers). Furthermore, some interviewers may not be adept at motivating respondents to provide accurate estimates of their discussion networks (Fowler and Mangione, 1990). Paik and Sanchagrin (2013, p.342) attribute interviewer effects to the interviewers' professional experience or fatigue, and training/learning effects.

We take up the debate and try to solve three issues that have been neglected so far. Firstly, we investigate the effects which interviewers have on certain characteristics of ego-centric networks that go beyond size – such as network density, network composition and network homophily – and have not received sufficient consideration. While interviewer effects are the domain of survey methodology experts, social network researchers should be concerned with the problems of measuring multiple network characteristics. A second issue is the design of large-scale studies, and specifically the process of allocating interviewers to the addresses of potential respondents. While previous studies do not discuss this allocation process, variations between interviewers and interviewer effects might misattribute locality effects, e.g. when interviewers are not randomly distributed across the sample. Thirdly, most previous studies have ignored the fact that interviewers are not just a source of failure in measuring networks but that the interactional character of the interview can also be relevant for the collection of network data. While a great deal of work focuses exclusively on how ego-centric name generators may produce measurement error related to respondents (Bailey and Marsden, 1999; Bearman and Parigi, 2004; Brewer, 2000; Marin, 2004; Straits, 2000) and other studies primarily focus on interviewers as a source of error solely affecting network size (Brüderl et al., 2013; Paik and Sanchagrin, 2013; van Tilburg, 1998), our approach is also to discuss the relationship between the interviewer and the respondent (Marsden, 2003) involved in different means of measuring ego-centric networks.

In this paper we address three gaps in the current literature on network data collection: Do interviewers affect other network characteristics than the much-debated network size? How does a non-random allocation of interviewers to respondents affect network measurement? And does the interaction between the interviewer and respondent elicit specific networks? To answer these questions, we use data from the 2010 German General Social Survey (2010 GGSS), where the sample is based on the adult population in Germany. The 2010 GGSS is a high-profile survey and one of the best-documented general surveys in Germany. The 2827 face-to-face interviews reported in 2010 GGSS were conducted by 220 interviewers.

2. Theoretical background and hypotheses

Surveying ego-centric networks is a complex task. For both the interviewer and the respondent, using name generator and name interpreter items is demanding (Marsden, 2003; McCarty et al., 2007). Most commonly, three steps are used to collect ego-centric network data. In the first step, in a single or multi-item question, the respondents (egos) are asked by the interviewers to list reference persons (alters). This part of the instrument is called the "name generator" and is used to derive the network size. In this step, respondents have to interpret the question and choose alters who fit the criteria in the name generator items. The interviewer has to check and document the interviewee's answers. Sometimes the first step encompasses probing if a specific number of alters has not yet been reached. In the second step, respondents are asked to answer questions about alters and the relation between ego and alters via so-called "name interpreters". Usually, these questions are highly standardized and are repeatedly asked per listed name. Because this second step is repetitive for each alter/item, these questions may cause boredom and reduce motivation. Measures of the network composition, such as the share of relatives, and of network homophily, such as the similarity in educational levels among alters, are derived from name interpreters. Finally, a multi-item question asks about the links between pairs of alters. This third part of the network measurement instrument – the network matrix – serves as a means of measuring the network structure, such as the network density.

While a great deal of work focuses exclusively on how ego-centric name generators may produce measurement error related to respondents (Bailey and Marsden, 1999; Bearman and Parigi, 2004; Brewer, 2000; Marin, 2004; Straits, 2000), interviewer-related variation in the network size as a measurement error has become the focus of scientific interest in the last 20 years. Previous studies examining interviewer effects in the collection of ego-centric networks found systematic variation in network size associated with interviewers (Brüderl et al., 2013; Eagle and Proeschold-Bell, 2015; Fischer, 1982; Paik and Sanchagrin, 2013; van Tilburg, 1998). The intra-class correlation coefficient (ICC) which is usually reported displays the proportional variation in the network size according to the interviewer, with a high ICC implying that answers from respondents are more similar when they are interviewed by the same interviewer. In previous studies on network size, ICCs have ranged from 7 to 40%. For panel data on a longitudinal study of the health of United Methodist (UM) clergy in North Carolina, Eagle and Proeschold-Bell (2015) find a zero-order ICC of 0.071, which indicates that about 7 per cent of the variance in the reported "important matter" network size is attributable to interviewers (Eagle and Proeschold-Bell, 2015, p. 78). Marsden (2003) finds strong evidence for variations in the network size of respondents interviewed in the 1998 US General Social Survey. For the one-item Burt name generator he reports an ICC of 0.153. van Tilburg (1998) also studies interviewer effects on network size in a study of elderly Dutch respondents. Using seven name generator items, he finds an ICC of 0.252 for the empty model (van Tilburg, 1998, p. 315) and a value of 0.147 in the final model (van Tilburg, 1998, p. 322). Wolf (2006) presents results for five studies in Germany with ICCs for network size ranging between 0.05 and 0.28. Paik and Sanchagrin (2013) also study the effects which interviewers have on the network size. They report ICCs for the 2004 and 2010 GSS and for comparable samples which also employed a representative, face-to-face design (CHSLS 1995, NSHAP 2005). For the 2010 GSS, the ICC is 0.1 and the NSHAP is around 0.12, while for the 2004 GSS it is around 0.26 and for the 1995 CHSLS it is around 0.27 (Paik and Sanchagrin, 2013, p. 347). Brüderl et al. (2013) study interviewer effects on network size in the data of the German Family Panel (pairfam) and find an ICC of around 0.4 (Brüderl et al., 2013, p. 153). All presented ICC values are substantially higher than the average intra-class correlation of 0.03 found for many survey questions, while Groves (1989) defined interviewer effects as being large if the ICC was about 0.20 and small if the ICC was smaller than 0.02. This collection of studies shows that researchers have most often analysed reliability and tested interviewer effects based solely on network size. Marsden (1993) and Eagle and Proeschold-Bell (2015) go beyond this: Marsden (1993) performs constructed reliability estimates for measurements of composition and shows that ethnoreligious composition, density,