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# Commentary: How to do personal network surveys: from name generators to statistical modeling

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## Abstract

The book “Conducting Personal Network Research” is a conceptual and methodological introduction to the structural study of personal networks. It is part of a series of recent monographs that have begun to systematize the knowledge generated in this area in recent decades (Crossley et al., 2015; McCarty et al., 2019; Perry et al., 2018). In this case, the authors have dedicated a large part of their career to the empirical investigation of the interpersonal relationships, interaction contexts, and social integration processes of immigrants, along with other groups in vulnerable situations. With this publication, all this experience is now reflected in a clear and comprehensive introductory text. This book explains how to integrate relational data collection and analysis with survey research. It systematically presents the strategies to estimate the size of personal networks. Finally, it describes how to fit statistical analysis to relational data, including regression models, multi-level models, and longitudinal models.

## Keywords

Personal Networks, Name generators, Statistical modelling, Network surveys, Ethics in research.

The first time I showed the visualization of the personal network to a respondent I had the feeling of being in front of a tool with enormous potential. It was a case of a student who had just adopted a metropolitan lifestyle, moving almost daily between the city where she lived and the capital where she was studying at the university. The analysis of the structural properties of her personal network was a good way to describe the distribution of her relationships (and her life) between different socio-geographic spaces. On the other hand, by presenting the graph of her personal network, the respondent showed some surprise when she discovered some unknown structural properties of her own personal network. The visualization made her aware of some characteristics of her social world, although it had been designed based on the information she had provided. Besides, the graphic representation naturally prompted a biographical discourse, providing

explanations that helped to understand the contexts of interaction and the life events that had shaped her personal network.

Many of the potentials in those first experiences that research has subsequently developed were still at an early stage: the statistical analysis of the structural properties, the development of mixed methods strategies, the incorporation of the study of individual differences, the formulation of personal networks typologies, etc.

The book *Conducting Personal Network Research* is a conceptual and methodological introduction to the structural study of personal networks. It forms part of a series of three new monographs aimed at systematizing the knowledge produced in this area in recent decades (Crossley et al., 2015; McCarty et al., 2019; Perry et al., 2018). In this case, the authors dedicated a large part of their career to empirical research on interpersonal relationships, contexts

of interaction, and social integration processes of immigrants, along with other groups in situations of vulnerability. In this publication, all this experience is now reflected in a clear and comprehensive introductory text.

One part of the book combines survey methodology with the study of personal networks. Accordingly, it presents some basic notions about conducting sampling, how to ask questions, or which type of statistical analysis can be used at different levels of measurement. This type of content is clearly relevant for conducting surveys in general, and not only to those in which samples of personal networks are obtained. However, they help to understand the integration of personal network modules into surveys.

As we will describe below, the main contribution of the book is the systematization of existing knowledge about the collection, analysis, and visualization of personal networks. This book review and commentary is a brief personal assessment of two methodological strategies that have emerged in recent decades as an effective way of analyzing personal networks, in part with the outstanding contribution of the authors of the book. The first of these strategies is the design of a pragmatic procedure to efficiently capture the diversity of personal networks, especially, if we consider the time-consuming nature of handling this type of relational data in surveys. The second is the statistical summary of the structural properties of personal network samples. Among other reasons, because it is common to subsequently use these indicators in statistical analyzes with samples of respondents. Anyway, before going into these two central contributions of the book, I will first provide a short reading guide to the introduction to personal network analysis.

## A reading guide on personal networks

The three books on the study of personal networks previously mentioned have a similar structure. They begin with the description of relational data collection procedures. Next, they present the analysis and visualization strategies of personal network data. Finally, they dedicate several chapters to statistical analysis models. However, as we will do next, we can also highlight some unique characteristics of each of them.

*Social Network Analysis for Ego-Nets* (Crossley et al., 2015) places the study of personal networks in the context of mixed methods and brings it into relation with social theory. It starts with a general introduction to network analysis and explains how ego-networks can also be extracted from whole social networks. Following

the tradition of the Manchester School, it presents how to integrate personal network data with qualitative information or with ethnographic strategies. Based on scientific evidence, it presents interesting reflections on the nature of relationships and their mutual dependence on interaction contexts. The section on “narratives, typologies and case studies” is especially suggestive on the very concept of social relationship, as well as its variability depending on the contexts of interaction. Finally, in the chapters on statistical analysis, it follows a formal mathematical approach.

*Egocentric Network Analysis* (Perry et al., 2018) is a book with an eminently pragmatic approach. Sometimes it even goes down to the instrumental level, with instructions on how to carry out the analyzes, or even providing some lines of programming code. It presents the concepts very clearly and illustrates them with a magnificent selection of some of the best studies done in this area. This book clarifies the different analysis strategies to combine egocentric and sociocentric data. It shows with a sociological approach, how personal networks can serve to characterize different types of sociability and different forms of community life. It also describes how short-term, casual, serial relationships with low levels of interpersonal commitment predominate in the contemporary world.

*Conducting Personal Network Research* (McCarty et al., 2019) is an introductory book on personal network analysis that explains how to integrate relational data collection and analysis with survey research. It systematically presents the strategies to estimate the size of personal networks. Finally, it describes how to fit statistical analysis to relational data, including regression models, multi-level models, and longitudinal models. Consequently, these are three books that complement each other. With these three volumes, the reader can have a comprehensive and updated overview of the study of the structure of personal networks. Below we focus on evaluating two of the fundamental contributions of the book by McCarty et al. (2019) that we anticipated before.

## Name generators and relations generators

The handbook defines itself as “A practical guide.” In that sense, two sections that best respond to the book’s subtitle are focused on “delineating personal networks” (Chapter 6) and “collecting data about ties between alters” (Chapter 8). These are two central methodological strategies in the collection of relational data. Furthermore, both name generators and relationship generators have important substantive

implications, since they refer to the types of social contexts in which the individual is involved, as well as to the nature of the relationships. On the one hand, defining the boundaries of the network impacts the types of social contexts and the types of personal contacts on which we obtain information. On the other hand, for the structure finally observed (and, consequently, for information flows and social support, or social control processes) the type of links is a decisive factor.

The work provides a comprehensive classification of the types of name generators. Similarly, it systematically reviews the questions about alters and the relationships among them. The reading shows that this is an area where there is now potential for greater (both conceptual and methodological) systematization regarding data collection. For example, it is common to differentiate whole networks from personal networks (e.g., indicating that the former refers to a bounded group in a predefined context, while the latter covers all the contexts, social circles, and social settings in which the individual participates) Hâncean et al. (2016). On paper, however, nothing is preventing the analysis of whole networks from being applied to two different contexts (e.g. a neighborhood and a workplace simultaneously). The personal network approach can also be adopted in the systematic study of a single interaction context. As an example, we can describe the personal networks of a sample of fishermen limited to their relationships in the fishing port (Maya-Jariego et al., 2016). It is a matter of design. Therefore, taking into account these (less frequent) possibilities can help to specify which elements define (and which do not) the differentiation between the two basic approaches to network analysis.

Something similar happens with name generators. It has normally been distinguished between (i) obtaining information about a previously defined list of alters and (ii) obtaining names without any previous suggestion. The originality of the name generator proposed by McCarty (2002) is based on the free recall of respondents, but at the same time requesting a fixed number of alters. It is a rare combination since traditionally free recalling entailed not imposing limits on the number of alters that could be mentioned (Maya-Jariego, 2018).

The nature of social relations occupies a central space throughout this process. In practice, the definition of the edge is determinant of the structure of the network. Normally, any subsequent analysis is based on the perception of alter-alter relationships by respondents. Although informants tend to be relatively unreliable when describing social interaction, in the case of personal networks, such accuracy generally

increases, partly because these are routine ties with which “ego” has a direct relationship. Additionally, perceived relationships have value in themselves, to the extent that they condition individual behavior.

## Innovations in the analysis and visualization of personal networks

Christopher McCarty published in 2002 an article on the structure of personal networks that established a kind of standard in analysis and visualization strategies, consisting of (i) collecting information on a fixed number of alters, along with the relations that they maintain between them, (ii) disregarding the Ego, and (iii) applying to personal networks the same type of structural analysis that previously was applied to complete social networks (McCarty, 2002). In a way, the book can be read as a compendium of the innovations that have been produced over almost two decades following this scheme. Next, we mention some of the most prominent and promising novelties.

### Reducing information, cohesive subgroups, and visualization

One of the factors that have contributed to the dissemination of this approach among social science researchers is the facility to integrate analysis of personal network samples with traditional statistical analysis models and strategies. Therefore, a large part of the effort has focused on identifying the type of indicators that provide an adequate summary of the structural properties and composition of the network. Both the structural cohesion of the whole and the organization into defined subgroups are two key dimensions.

The personal network has proved to be a space that “captures the context” of the respondents (Luke, 2005). On the one hand, it represents the articulation of the social circles in which the individual participates. On the other hand, it indirectly reflects the relationships between the groups that compose this personal environment. Finally, personal networks also have the potential to explore inter-individual differences, through the construction of typologies among other methodological options.

In this context, visualization strategies are useful both for collecting personal network data and for developing qualitative interviews, often with a biographical component. They also allow the comparison of personal networks (e.g., through a standardized scheme of clustered graphs). The book has a section of color graphic representations that illustrates the structural and compositional properties

of personal networks with a fixed number of 30 or more alters. This section shows that visualization is not only a strategy for communicating research results but can easily be combined with qualitative strategies to deepen in Ego's point of view on relationships.

## Accuracy, reliability, and statistical models

For the rest, some of the classic themes in the study of structural properties are especially well treated, such as the accuracy and reliability of the information obtained, the estimation of the size of personal networks, or the ethics of network research. This is perhaps not surprising, as some of the authors have been especially active in those areas of research. To reduce the respondent burden, empirically validated recommendations are also provided.

The book ends with the presentation of the most advanced models of multilevel analysis, which have revolutionized the possibilities of studying personal networks, combining many factors, and allowing the contrast of more complex hypotheses (Snijders et al., 1995; Wellman and Frank, 2001). This section explains how to deal with multicollinearity problems when using multiple regression analysis. This is very practical for some areas of the social sciences where it remains one of the most widely used statistical models. Among others, the relevance of principal component analysis and cluster analysis is reviewed. Finally, the use of Exponential Random Graph Models (ERGMs) and Stochastic Actor-Oriented Models (SAOMs) to examining the formation of alter-alter ties are presented.

The book is written in a clear and accessible way. On the one hand, it is suitable for an introductory level, as it presents the concepts from scratch, explains the most common mistakes, and illustrates the contents with examples based on experience. On the other hand, in each chapter, several boxes are included with a selection of particularly relevant research cases in the personal network literature. The latter not only makes reading more entertaining but also offers an enriching picture of some of the most significant findings of recent decades. Among other cases, some studies are presented illustrating how to reach hard-to-reach populations, how to generate networks from a personal diary or from the phone contacts, how to estimate whole networks from personal networks, or how to build typologies.

## Conclusion

The book *Conducting Personal Network Research* is specially designed for those who approach the

study of personal networks for the first time, starting from scratch. However, I think it will also be useful for researchers in the area, allowing them to reflect on how a valuable body of knowledge has been constituted on the structural properties of the social contexts where the individual is integrated.

The recent publication of three manuals on the analysis of personal networks (Crossley et al., 2015; McCarty et al., 2019; Perry et al., 2018) involves the consolidation of a collection of methodological innovations that have reinforced the structural approach in the study of personal communities. Without a doubt, this systematization effort will inspire future research. The structure of the personal network is a space in which the relations between groups converge and it comprehensively captures the set of interaction contexts in which the individual participates. As this book shows, the last two decades have served to build a series of models, strategies, and research instruments that will multiply the productivity of this area of study in the coming years.

When I come across some of the visualizations that we did in our first studies, now I can only look at them with new eyes. Now we not only have a better understanding of the structure of personal networks but also the research questions have changed. The construction of typologies, the use of hybrid designs (combining personal networks and complete networks), and the improvement of multilevel analysis models are some of the steps that are already guessed along the way.

Reviewed by Isidro Maya Jariego, Social Psychology Department, Universidad de Sevilla, Spain

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