

Parents' Networks: Egocentric Networks and Unique and Shared Sources of Social Support

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Abstract

Egocentric social network instruments typically require independently sampled respondents to identify up to five social network alters. When collecting egocentric data from dyads (e.g., mothers and fathers), shared and unique network alters can be identified. The present manuscript describes a new way of using egocentric data collected from related pairs using Multilevel Modeling (MLM). As a case study, the egocentric social support networks of twenty pairs of parents of children with cancer ($N = 40$) will be analyzed to illustrate how this technique can be used to model the characteristics of each network alter and to answer research questions regarding sex differences in received social support networks.

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INTRODUCTION

Social network analysis (SNA) can document, illustrate, and identify how individuals' networks function and how members of a network interact with one another (Wasserman & Faust, 1994). Egocentric networks are formed when independently sampled individuals are asked to describe their immediate social network (Marsden, 1990). However, these data can pose difficulties for social network researchers because respondents are typically unassociated, so complete social networks cannot be constructed. This manuscript describes a new way of using egocentric data collected from dyads using Multilevel Modeling (MLM). Challenges of using egocentric data gathered from relational dyads, the utility of differentiating shared and unique alters, and the use of MLM to analyze data using the one-with-many design are explored (Kenny, Kashy, & Cook, 2006). As a case study, the social support networks of twenty pairs of parents of children with cancer ($N = 40$) will be analyzed to illustrate how this technique can be used to test theoretically-informed research questions.

Egocentric Data

Egocentric methods have a long history in SNA (Marsden, 1987, 1990). For over 25 years, the General Social Survey has used egocentric network methods to ask respondents with whom they have discussed important matters (Marsden, 1987). These data describe the number, the heterogeneity (i.e., age, education, sex), and the composition of network alters (i.e., kin vs. non-kin) (Burt, 1984; Marsden, 1987), and usefully describe social trends in the nature and composition of Americans' social networks (Marsden, 1987). Egocentric network methods have also been employed widely in received social support research (Wellman & Hiscott, 1985).

The difference between received and perceived social support is both a theoretical and methodological question. Perceived social support is defined as the perceived availability

of support if it were needed (Cutrona, 1996). Received social support is defined as tangible, measurable, and enumerable sources of various types of social support (i.e., instrumental, material, informational) (Cutrona, 1996). Received social support is often measured using egocentric network methods (Marsden, 1990; Wills & Shinar, 2000). Many received social support instruments, such as the UCLA Social Support Interview (Wills & Shinar, 2000), ask respondents to identify up to five sources of social support. In comparison to perceived social support, SNA offers unique advantages in identifying the source of support, the type of support, and the quality of support from each source (Brissette, Cohen, & Seeman, 2000; Wills & Shinar, 2000), allowing researchers to identify what types and sources of social support are most effective (Wellman & Hiscott, 1985). However, researchers often reduce the amount of variance available when using egocentric networks by combining all sources of social support into a single measure of received support (see Bissette et al., 2000). MLM offers researchers the opportunity to analyze egocentric data while preserving the unique variance of each network alter.

One-With-Many Design

Analysis of egocentric SNA data can be greatly improved by utilizing MLM. Although combining data from alters can produce useful information regarding network composition, including heterogeneity and size (see Burt, 1984; Marsden, 1987), it is not always appropriate to calculate a mean score for all alters in a social support network. A respondent with moderate or weak support across all members will have the same mean support as a respondent with a few very good quality and a few very poor quality sources of support. Every member of a support network is not equally valuable or equally supportive (Thoits, 1995), and for researchers, knowing the particular characteristics that make a source valuable is desirable. For example, to test hypotheses regarding how the quality or type of support is related to alters'

characteristics, the relative value of each alter must be tested individually rather than summed. Kenny, Kashy, and Cook (2006) identify the one-perceiver many-targets design as the most common one-with-many design. This research design asks respondents to evaluate other members of a social network, often using egocentric methods. This poses unique analysis challenges because the data are non-independent in that they share a common fate -- the relationship with the ego (Kenny et al., 2006). This design is best served by MLM in that the shared variance of the ego is modeled by treating each ego as a Level 2 predictor and network members as Level 1 observations (Kenny et al., 2006). This controls for non-independence of egocentric networks. Additionally, the unique qualities of each alter can be tested in relation to outcomes associated with the relationship with the ego. For example, this method allows for the qualities of alters (e.g., kin v. non-kin, demographic characteristics) to be estimated in relation to the outcomes of each tie (e.g., overall quality of support).

Dyadic Egocentric Data

The use of dyadic data-- that is data collected from a non-independent pair of individuals --has grown substantially in social science research (Kenny et al., 2006). In fact, some research traditions are fundamentally concerned with relationships between individuals. For example, family communication emphasizes a systems theory approach, which asserts that all family members influence one another (Segrin & Flora, 2005; Street, 2003). The theoretical emphasis and growing interest in exploring how individuals within a couple influence one another has only increased interest in collecting dyadic data. Although research has begun to illustrate the highly interconnected nature of social support for couples (e.g., Widmer, 2006), there are still many questions about how and for whom support is provided (Cutrona, 1996). Identifying characteristics about the source of support helps to overcome a gap in research on received support and can help researchers to

better understand how support can be marshaled and utilized (Thoits, 1995). Although dyadic data poses particular analytic challenges, when collecting dyadic data using egocentric network methods, there are also valuable opportunities.

When a SNA is performed on a bounded group and the identities of all network members are known, identifying shared versus unique alters is easy and is an important part of describing network characteristics (Scott, 1991). However, when collecting egocentric data from a dyad, the identity of unique versus shared sources of support can be particularly valuable both theoretically and empirically. When respondents complete an egocentric instrument, they are often asked to both provide identifying information about each network alter (e.g., name, initials) as well as information about each alter, such as sex, their relationship to the ego (e.g., step-mother), and sometimes other characteristics as well (Burt, 1984). When this information is gathered from both individuals in a dyad, their responses can be linked, and alters can be identified as shared or unique. The utility of exploring egocentric network characteristics and shared and unique sources of social support is discussed in the following case study.

Case Study: Parents' Social Support Networks

Clinical research on parents of children with cancer has revealed that social support is an important predictor of parents' health. However, Hoekstra-Weebers and colleagues consistently demonstrate that there are different social support predictors of long-term health for fathers and mothers (Hoekstra-Weebers, Jaspers, Kamps, & Klip, 1998; Hoekstra-Weebers, Jaspers, Kamps, & Klip, 2001). The differences between fathers and mothers are partly explainable by the differences in social support they receive. Fathers often lack a means to obtain the desired amount of social support, both in quality and in quantity (Hoekstra-Weebers, Jaspers, Kamps, & Klip, 1999; Hoekstra-Weebers, Jaspers, & Kamps, 2000; Sloper, 2000). There are several explanations regarding

men's lack of ability to obtain the desired, high quality support.

Differences in support network composition offer one explanation for the lack of quality and quantity of men's received support. In comparison to men, women have more sources of social support from friends and kin (Stevens & Westerhof, 2006). In the context of pediatric cancer, even when fathers have broad social support networks, they are often dissatisfied with the quality of received support (Hoekstra-Weebers et al., 2000; Hoekstra-Weebers et al., 2001). Men have fewer sources of social support and the sources they do have are not of sufficient quality. Additionally, the sex composition of parents' support networks may explain these differences. Burleson and Kunkel (2006) suggest that women are more likely than men to provide quality emotional support, and women are often more active support network members (Widmer, 2006). Clinical research has suggested that if a man has a male-dominated social support system, he may be able to draw only limited support (Hoekstra-Weebers et al., 2001). A second explanation for men's lack of quality support suggests that family members provide different types of support to mothers and fathers. During a child's treatment for cancer, mothers often serve as the primary caretaker, and as such is the focal person for family-initiated support (Sloper, 2000). Other research in non-clinical environments demonstrates that mothers often receive more support from family members than fathers (Stevens & Westerhof, 2006). In light of these research findings, there are three possible explanations for fathers' lack of support. It is possible that shared sources of support are adequately supporting mothers but fail to support fathers. On the other hand, family members may provide high quality support to both parents, but mothers have additional sources of support that fathers do not share. Additionally, it is possible that fathers and mothers are receiving different types of support that differ in relation to overall support quality. All three research questions will be answered by differentiating shared v. unique network alters for parents and by using MLM.

METHODS

Recruitment Procedure

In coordination with Childrens Hospital in a major metropolitan area in the Western US, surveys were administered in both Spanish ($N = 11$) and English ($N = 29$) during an annual survivorship festival. Participants were parents of a child who had undergone or was currently undergoing cancer treatment and were either married or living together at the time of their child's treatment. Parents who met the criteria were consented and completed the survey instrument separately. Twenty father-mother pairs participated ($N = 40$).

Participants

Fathers were 41 years old on average ($SD = 7.86$, range 31-56), and 95% were employed full time. Nineteen percent of fathers had some high school education, 14% had a high school diploma or equivalent, 33% had some college, and 23% had a 4-year college degree or more. Fathers were 55% Latino, 31% White, 9% Black, and 5% other. Thirty-two percent were foreign born. Mothers were 39 years old on average ($SD = 7.24$, range 26-54), and 50% were not employed, 15% were part-time employed, and 35% full time employed. Thirty-six percent of mothers had some high school education, 20% had a high school diploma or equivalent, 20% had some college, and 23% had a 4-year college degree or more. Mothers were 65% Latina, 22% White, 6% Black, and 6% other, and 53% were foreign born. The ethnic and racial composition of the sample was reflective of the patient population at this Childrens Hospital as well as the surrounding urban area.

Measures

Received Social Support

Received social support was measured using the UCLA Social Support Interview (Wills & Shinar, 2000). Parents individually identified "the first names of the five most helpful people

during [their] son or daughter's treatment." Respondents could identify as few as zero helpful individuals or as many as five and could indicate anyone as a possible source of support (i.e., parents were not limited to choosing from a pre-existing list of possible sources of support). One-hundred and forty-nine social support sources were identified for 40 parents.

Respondents were only asked for the first name or initials of each alter, but most identified the source of support by full name and relationship (e.g., my mother, my aunt). To be conservative in identifying a shared source of support, when both names and relationships matched, the source was considered shared (e.g., mother's mother Maria and father's mother-in-law Maria). Non-matching members of parents' received support networks were considered unique. This technique may have underestimated the number of shared sources of support.

Type of Social Support Received

For each source of support identified, respondents were asked to identify the type and quality of support received. Using Wills and Shinar's (2000) definitions of instrumental, emotional, and informational support, descriptions of each type of support accompanied each item. Respondents were asked to identify the amount of instrumental support received with a single item, "How often did this person provide help by taking care of other children, offer transportation or money?" the amount of emotional support received with a single item, "How often did this person listen to your concerns or talk about how you were feeling?" and received information support with single item, "How often did this person provide information about health care or health insurance or types of cancer treatment?" All three items were measured on a five-point scale (0 = None, 4 = A lot). For each person identified, respondents were also asked to evaluate the overall quality of the support received from that person on a single semantic-differential scale (1 = Not Good, 7 = Very Good) (see Table 1).

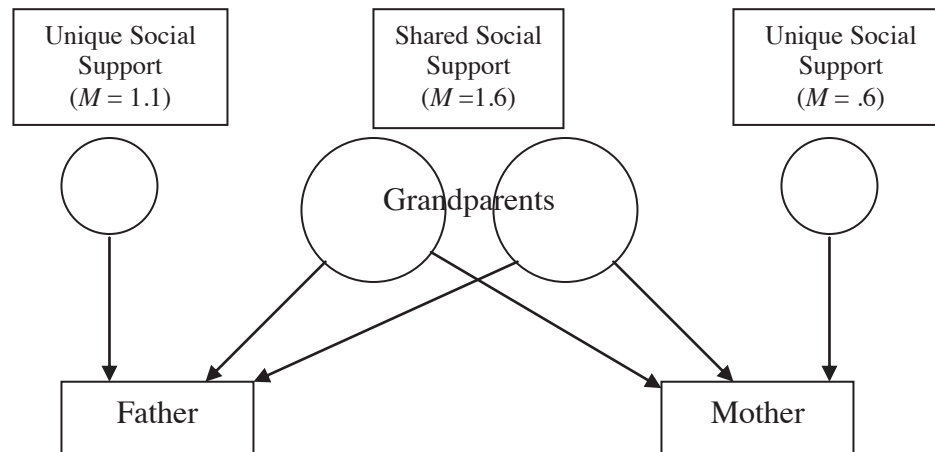
Using MLM, each of the social support sources were treated as Level 1 observations, and parents were treated as Level 2 predictors. This method controls for the dependence of the alters on the ego by treating alters as a consequence of the ego (for more MLM details see Kenny et al., 2006). The data were analyzed using LISREL 8.8 (Jöreskog, & Sörbom, 1996).

RESULTS

Analysis of support sources revealed that on average parents identified three people from whom they received social support ($M = 3.40$, $SD = 1.69$, $mdn = 4$, $mode = 5$, range 1 to 5). Most of this support came from family (63%), primarily participants' parents (i.e., the child's grandparents). Most sources of social support were women (69%), indicating that women were more often providers of social support. Less than half of social support members (1.60 of 3.40) were shared by both parents, and shared support sources were often family members. See Figure 1 for "average" family sociogram. Comparisons of fathers' and mothers' social support showed that parents received support from a similar number of sources ($M_{father} = 3.77$, $SD = 1.45$, $M_{mother} = 3.13$, $SD = 1.81$), $t(38) = 1.40$, $p = ns$.

To explore which characteristics of network alters predicts the overall quality of social support, the overall quality of the support was treated as a Level 1 dependent variable and the three types of social support (i.e., instrumental, emotional, informational), the sex of the source, the sex of the parent, whether the support was from a family member, and whether the support source was shared with the spouse were treated as Level 1 fixed effects. Multilevel modeling is concerned with model fit as well as the parameter estimates (Roberts, 2004). The best fitting model only included instrumental and emotional support amounts and family membership as fixed effects. The results indicated that amount of instrumental support ($\beta = .21$, $SE = .06$, $WALD = 3.76$, $p < .001$), emotional support ($\beta = .45$, $SE = .08$, $WALD = 5.50$, $p < .001$), and being a family member ($\beta = .20$, $SE = .11$, $WALD = 1.89$, $p < .05$) were

Figure 1. “Typical” Family Sociogram



related to overall support quality. To explore whether the overall quality of the source of social support was moderated by parent sex, several interaction terms were created: (1) being a shared source of support and sex of parent and (2) type of support (instrumental, emotional, health information) and sex of parent. None of the interaction terms were significant. For both mothers and fathers, more emotional and instrumental support received from family members increased overall support quality, and this relationship was not moderated by parent sex.

To answer questions regarding fathers’ inability to receive support, the differences between mothers and fathers in unique social support were explored using four paired samples *t* tests. Therefore, only parents’ unique sources of social support were included in this analysis ($N = 68$). In comparison to fathers ($M = 2.08, SD = 1.07$), mothers received more instrumental support from unique sources of social support ($M = 2.57, SD = .93$), $t(66) = 2.00, p < .05, d = .49$. From their unique sources of social support, the overall quality of social support for fathers ($M = 6.40, SD = .90$) was significantly less than the support mothers received ($M = 6.80, SD = .37$), $t(66) = 2.17, p < .05, d = .58$.

Table 1. All Means And Standard Deviations By Sex Of Respondent

	Mean		Standard Deviation		Sample Size	
	Men	Women	Men	Women	Men	Women
No. Sources of Support	3.77	3.13	1.45	1.81	20	20
Emotional Support	2.13	2.09	.85	1.08	20	20
Instrumental Support	2.36	2.39	.92	.97	20	20
Health Care Support	1.07	1.20	.97	1.14	20	20
Overall Social Support	6.23	6.11	1.17	1.80	20	20
% Sources Female	64	73			80	69
% Sources Family	63	63			80	69

DISCUSSION

Most researchers using egocentric network methods aggregate scores from multiple sources of support and do not explore the identities or unique qualities of these sources (Bissette et al., 2000). This case study demonstrated the value of treating each support source uniquely. By linking parents' received support networks into a common network for the couple all sources could be identified then as either shared--identified by both parents -- or unique--identified by only one parent. Linking the identities of network members to create a sociogram is a common technique in SNA (Wasserman & Faust, 1994) and past research has demonstrated the interdependence of spousal support networks (Widmer, 2006), but this case study demonstrates that linking couples' support networks increases the utility of egocentric data.

Sex Differences in Social Support

To answer the research questions in the case study, results suggest that sex differences in social support depend upon whether the network alter is shared or unique. Past research has documented fathers' lack of social support, both in quality and in quantity (Hoekstra-Weebers et al., 1999; Hoekstra-Weebers et al., 2000; Hoekstra-Weebers et al., 2001; Sloper, 2000). However, in this case study men and women received equivalent support in both quantity and quality. The results also failed to demonstrate the value of support provided by a female alter, but demonstrated the value of support provided by family members. In the context of childhood cancer, the familial relationship rather than the sex of the support source is associated with higher quality support. In addition, the interaction analyses demonstrated that it is not the case that shared sources of support are providing more support for mothers in comparison to fathers. Instead, emotional and instrumental support provided by family members is equally predictive of support quality for both parents. The differences between parents emerged only when separating unique from shared support sources. When considering

unique sources, mothers received more instrumental support of higher quality. The medium effect sizes suggest that the differences in support shown in past research may have resulted from unique, not shared sources of support. This offers support to Hoekstra-Weebers and colleagues' suggestion (2001) that men's lack of support may be a result of a less capable support network. The results of this study further refines this explanation by demonstrating that the lack of capability resides in the unique sources of support. Shared sources of support appear to be providing quality support to both mothers and fathers.

Directions, Applications, and Extensions

In addition to exploring social support, there are many applications of shared versus unique network alters. Egocentric data could be collected from many types of couples (e.g., friends, business colleagues, advisor-advisee). In addition to retaining the unique variance of each network alter, the methods described here can demonstrate how dyadic relationships affect network alters. For example, sharing a friend with a spouse may directly impact the friendship itself. Alters may be treated differently precisely because of their unique v. shared status in terms of the type, depth, and breadth of information shared. The consequences of making a unique source into a shared source (e.g., gaining in-laws) or developing a unique relationship with a previously shared source (e.g., during divorce) could provide some useful micro-level analyses of network level changes in connectedness. Other concepts, such as network density, may also be modeled as a Level 2 predictor. Although this study did not explore the interconnections between the sources of social support, past research has advocated asking whether and how network alters are associated to one another (Burt, 1984). In the case of social support for families, if shared sources of support are tightly connected, they may diffuse responsibility and support the family more effectively (Street, 2003). If sources of support are disconnected, supporters might not be able to

accurately assess what support is needed or provide targeted support.

Researchers using traditional SNA, but working with a large amount of missing data, may also find value in MLM. This would likely be most attractive for researchers who have collected information beyond network ties, such as attributes about the ego and evaluations of the alters or ties by the ego. If overlap existed among ego-networks, shared and unique ties might also be identified.

The methods used in this case study can be improved in future investigations. Although asking dyad members to complete surveys in isolation from each other helps to reduce dyad members' influence on one another during data collection, once surveys are complete, researchers may want to ask dyads to identify their network alters as shared or unique. Researcher-matched alters, such as those in this case study, may be subject to errors of identification, especially if few or no details are offered about an alter (e.g., only initials, missing data). Furthermore, future work should increase the sample size to increase the possibility of exploring interaction effects and improve the ability to detect small effect sizes.

Hopefully, the methods and procedures described here will provide some useful guidance and be a source of fruitful application for researchers using egocentric data from couples. As interest in dyadic data grows, social network researchers can provide key insights into the ways couples behave within their social environments.

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