

Texts for Learning about Social Network Analysis

- Christakis, N. A., & Fowler, J. H. (2009). *Connected: The surprising power of our social networks and how they shape our lives*. NY: Little, Brown and Company.
- Granovetter, M. S. (1973). The strength of weak ties. *American Journal of Sociology*, 78, 1360-1380.
- Hanneman, R., & Riddle, M. (2005). *Introduction to social network methods* (free introductory textbook on social network analysis). Accessible at:
http://faculty.ucr.edu/~hanneman/nettext/Introduction_to_Social_Network_Methods.pdf
- Maguire, L. (1983). *Understanding social networks*. Beverly Hills, CA: Sage.
- Marsden, P. V. & Lin, N. (Eds.) (1982). *Social structure and network analysis*. Beverly Hills, CA: Sage.
- Murty, S. A. (1998). Network analysis as a research method for community practice. In R. McNair, (Ed.), *Research strategies for community practice* (pp. 21-46). Binghamton, NY: Haworth Press.
- Murty, S. (1999). Setting the boundary of an inter-organizational network: An application. *Journal of Social Service Research*, 24 (3-4), 67-82.
- Murty, S. A., & Gillespie, D. F. (1995). Introducing network analysis into the social work curriculum. *Journal of Applied Social Sciences*, 19(2), 107-119.
- Rogers, E. N. (1995). *Diffusion of innovations* (4th ed.). NY: Free Press.
- Scott, J. (1991). *Social network analysis: A handbook*. Newbury Park, CA: Sage.
- Streeter, C., & Gillespie, D. F. (1992), Social network analysis. In D. F. Gillispie & C. Glisson (Eds.), *Quantitative methods in social work: State of the art* (pp. 201-222). NY: Haworth. Also published as the *Journal of Social Service Research*, 16(1/2).
- Valente, T. W. (1995). *Network models of the diffusion of innovations*. Cresskill, NJ: Hampton Press.
- Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. NY: Cambridge University Press.
- Wasserman, S., & Galaskiewicz, J. (Eds.)(1994). *Advances in social network analysis*. Thousand Oaks, CA: Sage.
- Wellman, B., & Berkowitz, S. D. (1988). *Social structures: A network approach*. NY: Cambridge University Press.

Articles Illustrating Social Network Analysis

Public Health: Obesity

Christakis, N.A. & Fowler, J. H. (2007). The spread of obesity in a large social network over 32 years. *New England Journal of Medicine*, 357(4), 370-379. See also supplementary material available with the full text version of the article at www.nejm.org.

Methods: Study of a complete network, principal components analysis of cohesion. Comparison of network over time.

Results: Individuals close to others who were obese were more likely to become obese over time. Implications: Interventions to reduce obesity must involve social network members and consider the location of individuals in the larger social network.

Gerontology and Social Support

Girona, M., Lubben, J. E., & Atchison, K. A. (1999). Social networks of elders without children. *Journal of Gerontological Social Work*, 31(1/2), 63-84.

Uses the Lubben Social Network Scale to gather data on social network attributes which are used in standard data analysis. Gerontology. Social network characteristics of elders without children compared with elders with children.

Results: Elders without children are disadvantaged in social support, less financially secure and are in poorer health. and need to be screened for social isolation.

Implications for screening elders living in the community for social isolation.

Coming Out Process for Gay Men and Lesbians. Individual Level.

Beals, K. P., & Peplau, L. A. (2006). Disclosure patterns within social networks of gay men and lesbians. *Journal of Homosexuality*, 51(2), 101-119.

Uses egonetwork data and a new scale on disclosure to individuals in the egonetwork.

Results: Relationship quality was better with those who the person disclosed to. There is a variety of patterns of disclosure. Disclosure more frequent to heterosexual friends than to family members and were more likely to disclose to females than to males. Most of the participants had accepting and supportive networks.

Implications: Information about social support and disclosure networks will be helpful in assessment.

Disaster Preparedness

Murty, S. A. (2000) When prophecy fails: Public hysteria and apathy in a disaster preparedness network. *Tulane Studies in Social Welfare*, Volume XXI/XXII, 11-24.

Methods: Inter-organizational networks, data gathered on complete network, change over time.

Results: Levels of connection among inter-organizational preparedness network declined after a predicted earthquake failed to occur.

Implications: suggestions for maintaining levels of preparedness during times when disasters have low salience.

Diffusion of Innovations

Public Health: Identification and screening for HIV.

Kimbrough, L. W., Fisher, H. E., Johnson, W., Thadiparthi, S., & Dooley, S. (2009). Accessing social networks with high rates of undiagnosed HIV infection: The Social Networks Demonstration Project. *American Journal of Public Health, 99*(6), 1093-1099.

Evaluation of an intervention to identify HIV positive individuals by encouraging them to be tested.

Methods: Individual level: Recruiters identified individuals from their own social networks and persuaded them to be tested.

Results: Case finding yield was higher than using other methods and facilitated linkage to medical care and health information and counseling.

Diffusion of Innovations

Inter-Organizational, Substance abuse prevention:

Valente, T. W., Chou, C. P., & Pentz, M. A. (2007). Community coalitions as a system: Effects of network change on adoption of evidence-based substance abuse prevention. *American Journal of Public Health, 97*(5), 880-886.

Methods: Complete network, analysis of network density and degree centrality.

Results: Lower density of coalition networks was associated with increased adoption of a new evidence-based approach to substance abuse prevention.

Implications: Information about new approaches should be disseminated to a wider audience rather than restricted to the organizations that are in closest contact in the network.

Instruments for measuring social support as individual level variables.

LUBBEN SOCIAL NETWORK SCALE—6-Item Version
LSNS-6

FAMILY: *Considering the people to whom you are related either by birth or marriage . . .*

1. How many relatives do you see or hear from at least once a month?
0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more
2. How many relatives do you feel close to such that you could call on them for help?
0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more
3. How many relatives do you feel at ease with that you can talk about private matters?
0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more

FRIENDSHIPS: *Considering all of your friends including those who live in your neighborhood...*

4. How many of your friends do you see or hear from at least once a month?
0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more
5. How many friends do you feel close to such that you could call on them for help?
0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more
6. How many friends do you feel at ease with that you can talk about private matters?
0 = none 1 = one 2 = two 3 = three or four 4 = five thru eight 5 = nine or more

LSNS-6 total score is an equally weighted sum of these six items. Scores range from 0 to 30.

Family and Friend Subscales are an equally weighted sum of their three items respectively.

Subscales scores range from 0 to 15.

Source:

Lubben, J., Blozik, E., Gillmann, G., Iliffe, S., Wolfgang von Renteln Kruse, W., Beck, J. C., & Stuck, A. E. (2006). Performance of an abbreviated version of the Lubben Social Network Scale among three European community-dwelling older adult populations. *The Gerontologist, 46*(4), 503–513. Information on the scale in Appendix, p. 513.

Practical and Emotional Support Scale for use with IV Drug Users

Eight dichotomous variables (yes or no) were used to assess social support among drug injectors in the questionnaire, which were adapted from a scale previously used with drug users (Rhoads, 1983). Based on the results of a principal components analysis with the study's data, two scales that measure practical and emotional support were developed from these individual items.

The practical support scale includes three items to assess whether or not participants perceived having the following types of support in the past 30 days:

1. someone who would have bailed them out if they got arrested;
2. someone who would have paid for their burial if they passed away;
3. someone they could have asked if they needed to borrow a few or several hundred dollars from. (The latter question is based on two individual items that were highly related and thus were combined [i.e., borrow a few dollars and borrow several hundred dollars]; the new item indicates an affirmative response to either question.)

A total practical support score was computed based on the sum of the three items, with a scale range of 0 to 3. The scale's internal consistency was moderately high ($\alpha = .64$).

The emotional support scale includes four items to assess whether or not participants perceived having the following types of support in the previous 30 days:

1. someone who would have helped take care of them if they were ill and had to stay in bed for several weeks;
2. someone to listen to them if they were upset, nervous or depressed;
3. someone to confide in or to talk to about themselves and their problems if they would have wanted to;
4. someone they could have talked to if they were worried about the AIDS virus.

A total scale score, with a possible range of 0 to 4, was computed based on the sum of these items and had high internal constancy ($\alpha = .8$).

Source:

Mino, M., Deren, S., & Yeon-Kang, S. (2006). Social support and HIV-related injection risk among Puerto Rican migrant and nonmigrant injection drug users recruited in New York City. *AIDS Education and Prevention, 18*(1), 81–90. Information on the scale on page 83.

Rhoads, D. (1983). A longitudinal study of life stress and social support among drug abusers. *International Journal of the Addictions, 18* (2), 195–222.

MOS-SSS Items

2. Someone to help you if you were confined to bed (T)
3. Someone you can count on to listen to you when you need to talk (EI)
4. Someone to give you good advice about a crisis (EI)
5. Someone to take you to the doctor if you needed it (T)
6. Someone to show you love and affection (A)
7. Someone to have a good time with (P)
8. Someone to give you information to help you understand a situation (EI)
9. Someone to confide in or talk to about yourself or your problems (EI)
10. Someone who hugs you (A)
11. Someone to get together with for relaxation (P)
12. Someone to prepare your meals if you were unable to do it yourself (T)
13. Someone whose advice you really want (EI)
15. Someone to help with daily chores if you were sick (T)^a
16. Someone to share your most private worries and fears with (EI)
17. Someone to turn to for suggestions about how to deal with a personal problem (EI)^a
18. Someone to do something enjoyable with (P)^a
19. Someone who understands your problems (EI)
20. Someone to love and make you feel wanted (A)^a

Items are rated between 1 (*none of the time*) to 5 (*all of the time*)

NOTE: T = tangible support; EI = emotional-informational support; A = affectionate support; P = positive social interaction support.

^a indicates 4-item version.

Source:

Gjesfjeld, C. D., Greeno, C. G., & Kim, K. H. (2008). A Confirmatory Factor Analysis of an abbreviated social support instrument: The MOS-SSS. *Research on Social Work Practice*, 18(3), 231-237. Information on scale p. 233.

Other examples of social support measurement instruments

Lovell, A., Barrow, S., & Hammer, M. (1984). *Social support and social network interview*. NY: Epidemiology of Mental Disorders Research Department, New York Psychiatric Institute.

Exercise 2: Example of Interview Protocol to Gather Egonetwork Data
General Social Survey used 1987 and 2004

Step 1: From time to time, most people discuss *important matters* with other people. Looking back over the last six months—who are the *people* with whom you discussed matters important to you? Just tell me their first names or initials.

IF LESS THAN 5 NAMES MENTIONED, PROBE: Anyone else?

1. Name or initials: _____ Step 2: People in the network this person is close to: _____
Step 3: Type of relationship: _____

2. Name or initials: _____ Step 2: People in the network this person is close to: _____
Step 3: Type of relationship: _____

3. Name or initials: _____ Step 2: People in the network this person is close to: _____
Step 3: Type of relationship: _____

4. Name or initials: _____ Step 2: People in the network this person is close to: _____
Step 3: Type of relationship: _____

5. Name or initials: _____ Step 2: People in the network this person is close to: _____
Step 3: Type of relationship: _____

6. Name or initials: _____ Step 2: People in the network this person is close to: _____
Step 3: Type of relationship: _____

Note: list additional members of egonetwork on back of page if needed)

Step 2: Please think about the relations between the people you just mentioned. Some of them may be total strangers in the sense that they wouldn't recognize each other if they bumped into each other on the street. Others may be especially close, as close or closer to each other as they are to you. Are they especially close?
PROBE: As close or closer to each other as they are to you?

(Optional: The survey then asked about demographic characteristics of the discussion partner: whether the partner was male or female, his or her race, his or her education and age, and some aspects of the respondents' relationship with the discussion partner.)

Step 3: Then, the interviewer asked more about the character of the relationship: "Here is a list of some of the ways in which people are connected to each other. Some people can be connected to you in more than one way. For example, a man could be your brother and he may belong to your church and be your lawyer. When I read you a name, please tell me all of the ways that person is connected to you." "How is (NAME) connected to you?" PROBE: "What other ways?"

(The options were presented on a card: Spouse, Parent, Sibling, Child, Other

family, Co-worker, Member of group, Neighbor, Friend, Advisor, Other).

Reference: McPherson, M., Smith-Lovin, L., & Brashears, M.E. (2006). Social isolation in America: Changes in core discussion networks over two decades. *American Sociological Review*, 71, 353-375.

Software for Network Analysis

UCINET

Borgatti, S.P., Everett, M.G. and Freeman, L.C. 2002. Ucinet for Windows: Software for Social Network Analysis. Harvard, MA: Analytic Technologies.

Comes with Netdraw, Mage and Pajek network visualization programs.

For information and orders visit: <http://www.analytictech.com/>

KrackPlot

Krackhardt, Lundberg, and O'Rourke, 1993

Draws and prints sociograms. Runs on DOS. Distributed by

Analytic Technologies, <http://www.analytictech.com/>

STRUCTURE

Runs on DOS.

For information contact:

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Dept. of Sociology

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Chicago, IL 60637

Ronald Burt's homepage

<http://gsb.uchicago.edu/fac/ronald.burt>

ANTHROPAC

Menu-driven DOS program for collecting and analyzing data on cultural domains. Distributed by

Analytic Technologies, <http://www.analytictech.com/>

NEGOPY, FATCAT, MULTINET, AND PSPAR

William D. Richards and Andrew J. Seary

Visit <http://www.sfu.ca/personal/archives/richards/>

SNAP (Social Network Analysis Procedures)

for GAUSS Version 2.5*

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Visit Aptech Systems, Inc.

Maple Valley, WA 98038

<http://www.aptech.com/>

StOCNET and BLOCKS

Visit social network home page of Tom A.B. Snijders, Professor of Statistics in the Social Sciences at the University of Oxford, and Professor of Methodology and Statistics in the Faculty of Behavioral and Social Sciences at the University of Groningen

<http://stat.gamma.rug.nl/index.html>

Fill in Your Number Here: _____

1	Rating	0	1	2	3	4	5	6	7	8	9	10
2	Rating	0	1	2	3	4	5	6	7	8	9	10
3	Rating	0	1	2	3	4	5	6	7	8	9	10
4	Rating	0	1	2	3	4	5	6	7	8	9	10
5	Rating	0	1	2	3	4	5	6	7	8	9	10
6	Rating	0	1	2	3	4	5	6	7	8	9	10
7	Rating	0	1	2	3	4	5	6	7	8	9	10
8	Rating	0	1	2	3	4	5	6	7	8	9	10
9	Rating	0	1	2	3	4	5	6	7	8	9	10
10	Rating	0	1	2	3	4	5	6	7	8	9	10
11	Rating	0	1	2	3	4	5	6	7	8	9	10
12	Rating	0	1	2	3	4	5	6	7	8	9	10
13	Rating	0	1	2	3	4	5	6	7	8	9	10
14	Rating	0	1	2	3	4	5	6	7	8	9	10
15	Rating	0	1	2	3	4	5	6	7	8	9	10
16	Rating	0	1	2	3	4	5	6	7	8	9	10
17	Rating	0	1	2	3	4	5	6	7	8	9	10
18	Rating	0	1	2	3	4	5	6	7	8	9	10
19	Rating	0	1	2	3	4	5	6	7	8	9	10
20	Rating	0	1	2	3	4	5	6	7	8	9	10
21	Rating	0	1	2	3	4	5	6	7	8	9	10
22	Rating	0	1	2	3	4	5	6	7	8	9	10
23	Rating	0	1	2	3	4	5	6	7	8	9	10
24	Rating	0	1	2	3	4	5	6	7	8	9	10
25	Rating	0	1	2	3	4	5	6	7	8	9	10
26	Rating	0	1	2	3	4	5	6	7	8	9	10
27	Rating	0	1	2	3	4	5	6	7	8	9	10
28	Rating	0	1	2	3	4	5	6	7	8	9	10
29	Rating	0	1	2	3	4	5	6	7	8	9	10
30	Rating	0	1	2	3	4	5	6	7	8	9	10
31	Rating	0	1	2	3	4	5	6	7	8	9	10
32	Rating	0	1	2	3	4	5	6	7	8	9	10
33	Rating	0	1	2	3	4	5	6	7	8	9	10
34	Rating	0	1	2	3	4	5	6	7	8	9	10
35	Rating	0	1	2	3	4	5	6	7	8	9	10
36	Rating	0	1	2	3	4	5	6	7	8	9	10
37	Rating	0	1	2	3	4	5	6	7	8	9	10
38	Rating	0	1	2	3	4	5	6	7	8	9	10
39	Rating	0	1	2	3	4	5	6	7	8	9	10
40	Rating	0	1	2	3	4	5	6	7	8	9	10
41	Rating	0	1	2	3	4	5	6	7	8	9	10
42	Rating	0	1	2	3	4	5	6	7	8	9	10
43	Rating	0	1	2	3	4	5	6	7	8	9	10
44	Rating	0	1	2	3	4	5	6	7	8	9	10
45	Rating	0	1	2	3	4	5	6	7	8	9	10

46	Rating	0	1	2	3	4	5	6	7	8	9	10
47	Rating	0	1	2	3	4	5	6	7	8	9	10
48	Rating	0	1	2	3	4	5	6	7	8	9	10