Data Collection & Social Cognition

Terence Meehan and Ning Sa
Agenda

• What are social network data
• Boundary specification and sampling
  – Laumann, Marsden, and Prensky (1989)
• Types of network
• Network data, measurement and collection
  – Calloway et al. (1993)
  – Marsden (2005)
• Individual vs. Structure reprise
  – Kilduff and Krackhardt (1994)
Wasserman and Faust

• Social network data
  – Structural variable
    • Measure ties of the actors
  – Composition variable
    • Measure attributes of the actors
  – Mode
    • Distinct sets of actors
Wasserman and Faust

• Boundary specification and sampling
  – Population
    • Who are the relevant actors
    • Assumption
  – Sampling
    • When it is “not possible to take measurement on all the actors”
    • Representative
Laumann, Marsden, and Prensky

• Issue under study
  – the problem of specifying system boundaries
  – The selection of actors or nodes for the network
  – The choice of types of relationships among the actors
  – The selection of events/activities
Laumann, Marsden, and Prensky

• Two basic approaches to boundary specification
  – Realist approach:
    • setting network boundaries by definition
  – Nominalist approach:
    • the investigator draws the boundary for his/her own purposes
Laumann, Marsden, and Prensky

• Definitional foci for the inclusion of actors
  – Attribute based
  – Relationship based
  – Event/activity based
  – Multiple foci
Laumann, Marsden, and Prensky

- Illustrative boundary specification strategies

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<th>Attribute</th>
<th>Relation</th>
<th>Event</th>
<th>Multi foci</th>
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<td>Realist</td>
<td>I</td>
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<td>Nominalist</td>
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- Inclusion rules for relations
- Boundary specification for activities
Wasserman and Faust

• Types of network
  – One-mode network
    • A single set of actors
  – Two-mode network
    • Dyadic two-mode network
      – Two sets of actors
    • Affiliation network
      – One set of actors and one set of events
  – Ego-centered and special dyadic networks
Wasserman and Faust

• Network data, measurement and collection
  – Measurement
    • Unit of observation
      – actor/dyad/triad/subset of actors/network
    • Modeling unit
      – actor/dyad/triad/subset of actors/network
    • Relational quantification
      – directional vs. non-directional; dichotomous vs. valued
Wasserman and Faust

• Network data, measurement and collection
  – Collection
    • Questionnaire
    • Interview
    • Observation
    • Archival
    • Other
      – Cognitive social structure; Experimental; Ego-centered; Small world; Diary
Wasserman and Faust

- Network data, measurement and collection
  - Longitudinal data collection
  - Measurement validity, reliability, accuracy, error
    - Accuracy
    - Validity
    - Reliability
    - Measurement error
Wasserman and Faust

• Data sets found in these pages
  – Krackhardt’s High-tech Managers  
    • one-mode (21 actors); three relations; four attributes;
  – Padgett’s Florentine Families  
    • one-mode (16 actors); two relations; three attributes;
  – Freeman’s EIES Network  
    • one-mode (32 actors); two relations; two attributes;
  – Countries Trade Data  
    • one-mode (24 actors); five relations; four attributes;
  – Galaskiewicz’s CEOs and Clubs Network  
    • two-mode affiliation network (26 CEOs-15 events); several attributes;
Reliability

- Repeated measurements give same results
- Calloway et al. (1993)
- Reliability of self-reported data
- Used secondary data (original study used questionnaire)
Reliability

• 31-44 mental health service providers
• Key informant interviewed, then filled out questionnaire
• 2 questions – Likert scale (0-4)
  – “To what extent does your agency receive information . . . from this agency?”
  – “How well coordinated are the activities of your agency with those of this other agency?”
Reliability

• 70% of relationships confirmed (symmetric)
• Stronger relationships more likely to be confirmed
• Is symmetry a valid assumption?
Measurement Lit Review

• Marsden (2005)
• Global questions – like “who is in your network” – are not good.
• Recognition is better than recall
• Position generators
• Resource generator
Measurement Lit Review

• People tend to remember others in clusters of social relations. Try it.
• Test-retest problematic
• Interpretation of relations may vary
• Name interpreters: respondents often get bored, so questions must be limited
Measurement Lit Review

• Other Data Collection
  – Observation
  – Archival network data
    • Strengths and limitations

• How to collect network data on organizations of the conservative movement?
  – Heritage Foundation, ALEC, Koch Family Foundations, Tea Party Express
Individual vs. Structure

• Kilduff (1994)
• Traditional social science approach vs. network approach
• Structural analysis can be improved by bringing in individual perception
• Structure (to some extent) is in the eye of the beholder
Individual vs. Structure

• Data Collection:
  – Cognitive social structure design (perceptions)
  – Questionnaire
  – 36 employees (92%) of a small firm
  – All employees saw each other regularly

• “Market” for individual reputation

• Balance theory
Individual vs. Structure

• Actual network structure found
• Friend’s prominence matrix
• Multiple Regression Quadratic Assignment Procedure (magic?)
Individual vs. Structure

- Being perceived as having a prominent friend boosted an individual’s reputation as a high performer.
- Actually having such a friend had no significant effect.
- Actually being a high performer also helped.
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