

# Social Network Analysis

## Exam Example

(solutions in the pages at the end)

- 1) Which of the following is NOT a benefit of having clear inclusion/exclusion criteria in network analysis?
  - a) Improved replicability of results
  - b) Enhanced generalizability of findings
  - c) Increased network size
  - d) Better alignment between theory and empirical work
  
- 2) Which statement best describes the relationship between research questions and network indicators?
  - a) They are the same thing
  - b) Network indicators are derived from research questions
  - c) Research questions are derived from network indicators
  - d) There is no relationship between the two
  
- 3) Which of the following is a bipartite network?
  - a) A network of authors linked if they published with the same editor
  - b) A network of readers linked to the books they read
  - c) A network of books linked if they belong to the same genre
  - d) A network of readers linked if they read the same book
  
- 4) In terms of diversity, bonding social capital typically has:
  - a) High diversity
  - b) Little diversity
  - c) Moderate diversity
  - d) Fluctuating diversity
  
- 5) A link between individuals with very similar social backgrounds represents:
  - a) A Bonding Social Capital
  - b) A Bridging Social Capital
  - c) Is little diversified
  - d) Offers reliable emotional support
  
- 6) Entitativity can be captured through:
  - a) The number of entities in a network
  - b) The cohesion of a network
  - c) The size of a network
  - d) The age of a network
  
- 7) Consider a semantic network of hashtags that are connected if they appear in the same tweet. Which method would you use to identify the most trending hashtags?

- a) Closeness centrality
  - b) Pagerank centrality
  - c) Assortativity
  - d) Degree centrality
- 8) Consider a signed social network of people connected through friendship relations, with a signed weight. How can you infer who's the best friend of node #1, called Sue?
- a) You cannot infer this information
  - b) The friend of Sue with the highest negative in-degree value
  - c) The friend of Sue with the highest number of friends
  - d) The friend of Sue with the highest positive local PageRank weight
- 9) When planning an analysis of a network of people, when you select your sample:
- a) Natural network boundaries cannot be identified
  - b) Keep in mind that people are always aware of their connections
  - c) A random selection of individuals that belongs to the population is the best solution
  - d) A sample of individual respondents randomly selected from population is likely to be unconnected
- 10) In order to perform a network analysis on texts I always need to first clean the data. Which words can be safely removed as psychologically meaningless?
- a) Pronouns
  - b) Emoticons
  - c) Verbs
  - d) Auxiliary verbs
- 11) In a semantic network analysis on texts, the use of nouns (vs. adjectives) to indicate social membership is a signal of
- a) social inclusion
  - b) counter-stereotypic thinking
  - c) essentialization
  - d) divergent thinking
- 12) A study investigating political mobilization among 61 million Facebook users (Bond et al. 2012) showed that
- a) The interactions we have in Facebook are unrelated to the type of relation we have offline
  - b) Users can only be influenced by friends of close friends
  - c) Indirect social influence is detectable at two degrees of separation
  - d) Users are not affected by being exposed to behaviors of closer friends
- 13) Consider a semantic network of words that are connected if they appear in the same tweet. Which method would you use to identify the topics in the online discourse?
- a) Closeness centrality
  - b) Community detection
  - c) Pagerank centrality
  - d) Homophily measures

14) According to the Delage's CAN (causal attitude network) model of attitudes:

- a) Network centrality signals whether an attitude is positive or negative
- b) Different items of a scale are causally related
- c) Different items of a scale independently measure the latent construct
- d) Indicators of a scale are exchangeable

15) To measure the presence of echo chambers in online posts we need to

- a) Identify a controversial topic
- b) Identify the leaning of users with respect to the topic
- c) Identify the connections among users
- d) All of the above

16) In Gephi:

- a) PageRank centrality is not an available measure
- b) it is possible to control the nodes sizes according to their betweenness value
- c) The network layout is fixed
- d) Community detection outcomes must be imported from an external excel/csv file

# Social Network Analysis Solutions

- 1) Which of the following is NOT a benefit of having clear inclusion/exclusion criteria in network analysis?
  - a) Improved replicability of results
  - b) Enhanced generalizability of findings
  - c) **Increased network size**
  - d) Better alignment between theory and empirical work
  
- 2) Which statement best describes the relationship between research questions and network indicators?
  - a) They are the same thing
  - b) **Network indicators are derived from research questions**
  - c) Research questions are derived from network indicators
  - d) There is no relationship between the two
  
- 3) Which of the following is a bipartite network?
  - a) A network of authors linked if they published with the same editor
  - b) **A network of readers linked to the books they read**
  - c) A network of books linked if they belong to the same genre
  - d) A network of readers linked if they read the same book
  
- 4) In terms of diversity, bonding social capital typically has:
  - a) High diversity
  - b) **Little diversity**
  - c) Moderate diversity
  - d) Fluctuating diversity
  
- 5) A link between individuals with very similar social backgrounds represents:
  - a) **A Bonding Social Capital**
  - b) A Bridging Social Capital
  - c) Is little diversified
  - d) Offers reliable emotional support
  
- 6) Entitativity can be captured through:
  - a) The number of entities in a network
  - b) **The cohesion of a network**
  - c) The size of a network
  - d) The age of a network
  
- 7) Consider a semantic network of hashtags that are connected if they appear in the same tweet. Which method would you use to identify the most trending hashtags?

- a) Closeness centrality
  - b) Pagerank centrality**
  - c) Assortativity
  - d) Degree centrality
- 8) Consider a signed social network of people connected through friendship relations, with a signed weight. How can you infer who's the best friend of node #1, called Sue?
- a) You cannot infer this information
  - b) The friend of Sue with the highest negative in-degree value
  - c) The friend of Sue with the highest number of friends
  - d) The friend of Sue with the highest positive local PageRank weight**
- 9) When planning an analysis of a network of people, when you select your sample:
- a) Natural network boundaries cannot be identified
  - b) Keep in mind that people are always aware of their connections
  - c) A random selection of individuals that belongs to the population is the best solution
  - d) A sample of individual respondents randomly selected from population is likely to be unconnected**
- 10) In order to perform a network analysis on texts I always need to first clean the data. Which words can be safely removed as psychologically meaningless?
- a) Pronouns
  - b) Emoticons
  - c) Verbs
  - d) Auxiliary verbs**
- 11) In a semantic network analysis on texts, the use of nouns (vs. adjectives) to indicate social membership is a signal of
- a) social inclusion
  - b) counter-stereotypic thinking
  - c) essentialization**
  - d) divergent thinking
- 12) A study investigating political mobilization among 61 million Facebook users (Bond et al. 2012) showed that
- a) The interactions we have in Facebook are unrelated to the type of relation we have offline
  - b) Users can only be influenced by friends of close friends
  - c) Indirect social influence is detectable at two degrees of separation**
  - d) Users are not affected by being exposed to behaviors of closer friends
- 13) Consider a semantic network of words that are connected if they appear in the same tweet. Which method would you use to identify the topics in the online discourse?
- a) Closeness centrality
  - b) Community detection**
  - c) Pagerank centrality
  - d) Homophily measures

14) According to the Delage's CAN (causal attitude network) model of attitudes:

- a) Network centrality signals whether an attitude is positive or negative
- b) Different items of a scale are causally related**
- c) Different items of a scale independently measure the latent construct
- d) Indicators of a scale are exchangeable

15) To measure the presence of echo chambers in online posts we need to

- a) Identify a controversial topic
- b) Identify the leaning of users with respect to the topic
- c) Identify the connections among users
- d) All of the above**

16) In Gephi:

- a) PageRank centrality is not an available measure
- b) it is possible to control the nodes sizes according to their betweenness value**
- c) The network layout is fixed
- d) Community detection outcomes must be imported from an external excel/csv file