SOCIAL NETWORK ANALYTICS

Egocentric Network Analysis:

E-Net Data formats and
Egocentric Network Analysis using E-Net Tool

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Egocentric Network Analysis

➢**E-NET**

  ▪ **E-Net is Windows software for analyzing ego network data.**

  ▪ It is a free software package for egocentric network analysis and

    visualization.

  ▪ E-Net is created by the developers of UCINET.

Egocentric Network Analysis

➤ **E-Net Analytical Features**

- Composition of networks in terms of alter attributes
- Indices of heterogeneity & homophily
- Structural holes
- Crosstabs of ego versus alter characteristics
- Visualizing individual ego-networks

➤ **Usability Features**

- **SQL filtering** (e.g., select egos where age > 20 and numjobs+numschools < 3)
- **Multiple data formats**
- Ability to handle UCINET whole network data
- Cut and paste to and from Excel

Egocentric Network Analysis - Data Formats

➢**Personal network data can be imported into E-NET in two formats:**

- ▪ **Row-wise**, and

- ▪ **Column-wise**.

➢E-NET also reads full network data in UCINET format.

Egocentric Network Analysis - Data Formats
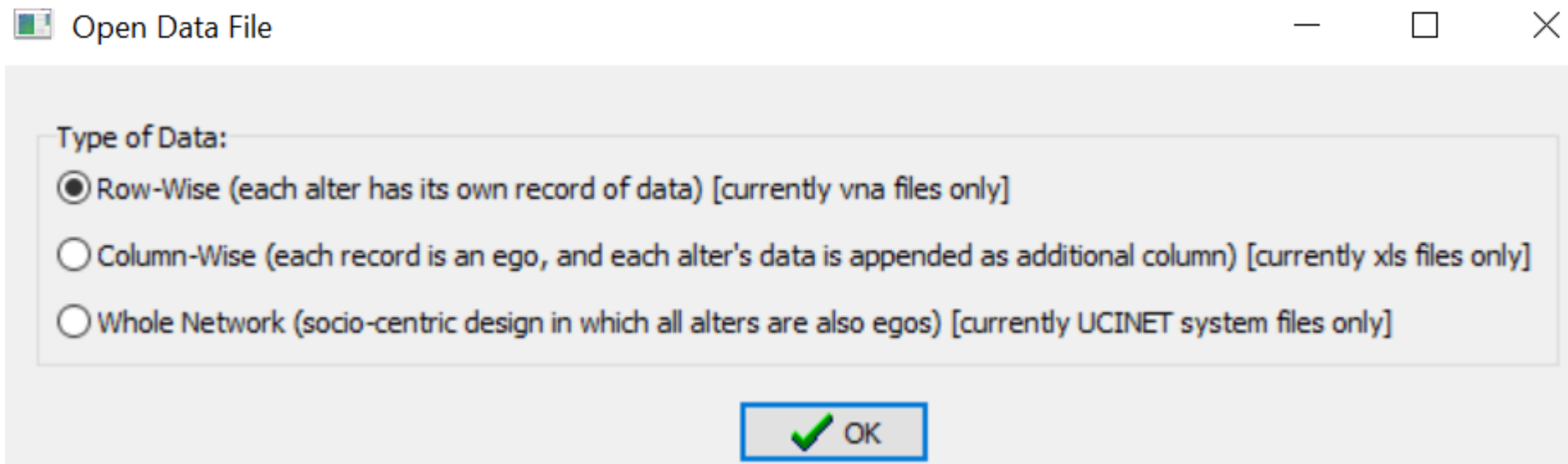
Row-wise format

➤ **In the row-wise format, personal network data are recorded as three matrices** corresponding to

    1. **ego,**

    2. **ego-alter relationships**, and

    3. **alter-alter relationships**.

➤ The users should first create three matrices in Excel and then compile into one vna file as shown.

➤ In the VNA file the three kinds of data are identified by an asterisk and matrix title.

```
*ego data
ID       Age      Sex          Income
1        21       Male         18000
2        30       Female       85000
3        45       Female       32000

*alter data
From     To       Friends  Mentor  Age   Sex
1        1_1      1        1       20    Female
1        1_2      1        0       33    Male
1        1_3      0        1       24    Female
2        2_1      0        1       63    Male
3        3_1      1        1       43    Female
3        3_2      1        1       21    Female

*alter-alter data
From     To       Knows
1_1      1_2      1
1_1      1_3      1
```

Figure 1. Row-based VNA file format

Egocentric Network Analysis - Data Formats

Row-wise format

```
*ego data
ID      Age      Sex         Income
1       21       Male        18000
2       30       Female      85000
3       45       Female      32000


*alter data
From    To       Friends   Mentor  Age    Sex
1       1_1      1         1       20     Female
1       1_2      1         0       33     Male
1       1_3      0         1       24     Female
2       2_1      0         1       63     Male
3       3_1      1         1       43     Female
3       3_2      1         1       21     Female


*alter-alter data
From    To       Knows
1_1     1_2      1
1_1     1_3      1
```

Figure 1. Row-based VNA file format

Egocentric Network Analysis - Data Formats

Row-wise format

➢ **The first matrix** in the row-wise format **contains the collected attributes about each ego surveyed.**

➢ **The rows correspond to egos** and **the columns correspond to collected attributes about each ego.**

```
*ego data
ID      Age     Sex         Income
1       21      Male        18000
2       30      Female      85000
3       45      Female      32000
```

Egocentric Network Analysis - Data Formats

Row-wise format

➢ **The second matrix** of the row-based format **contains information about ego-alter relationships.** These data include attributes of ego's relationship(s) with each alter.

➢ **Each row of the matrix corresponds to ego's relationship with a unique alter.** Egos with multiple alters will have multiple rows of data. The first column of data is ego ID.

➢ For organizational purposes, the **alters are labelled in a systematic way** such as **EgoID_AlterID.** The alter data matrix also includes the attributes of each alter.

*alter data

From	To	Friends	Mentor	Age	Sex
1	1_1	1	1	20	Female
1	1_2	1	0	33	Male
1	1_3	0	1	24	Female
2	2_1	0	1	63	Male
3	3_1	1	1	43	Female
3	3_2	1	1	21	Female

Row-wise format

➢ **The third matrix** of the row-based format **contains information about alter-alter relationships.**

```
*alter-alter data
From      To        Knows
1_1       1_2       1
1_1       1_3       1
```

• When ready for import into ENET, the user compiles the three matrices into a single text file using the VNA format.

Egocentric Network Analysis - Data Formats

Column-wise format

➢ E-NET also reads personal network data in *column-wise format*.
E-NET currently accepts column-wise data in the form of an Excel file.

➢ In this approach, the data are organized in one matrix such that

- **Each row corresponds to a specific ego (respondent)** and

- **Columns correspond to**

  1. ego attributes,

  2. alter attributes

  3. ego-alter ties and perceptions, and

  4. alter-alter relationships.

ego attributes			alter attributes						ego-alter ties and perceptions			alter-alter relationships
Age	Sex	Income	A1Age	A2Age	A3Age	A1Sex	A2Sex	A3Sex	A1Friend	A2Friend	A3Friend	knows1-2
21	Female	18000	20	33	24	Female	Male	Female	1	1	1	1
30	Male	85000	63			Male			0			0
45	Female	32000	43	21		Female	Female		1	0		1

Figure 2. Column-wise data format

Egocentric Network Analysis - Data Formats

Column-wise format

Age	Sex	Income	A1Age	A2Age	A3Age	A1Sex	A2Sex	A3Sex	A1Friend	A2Friend	A3Friend	knows1-2
21	Female	18000	20	33	24	Female	Male	Female	1	1	1	1
30	Male	85000	63			Male			0			0
45	Female	32000	43	21		Female	Female		1	0		1

Figure 2. Column-wise data format

➢ Note that the **alter variables**(i.e., age, sex ...) across the columns are repeated for each alter and labeled such that either the variable name is **preceded by the alter number** (e.g., **A1**Age, **A2**Age, **A3**Age, **A1**Sex, **A2**Sex, **A3**Sex)

alter number   alter variable

A1Age,   A2Sex

Egocentric Network Analysis - Data Formats

Column-wise format

Age	Sex	Income	A1Age	A2Age	A3Age	A1Sex	A2Sex	A3Sex	A1Friend	A2Friend	A3Friend	knows1-2
21	Female	18000	20	33	24	Female	Male	Female	1	1	1	1
30	Male	85000	63			Male			0			0
45	Female	32000	43	21		Female	Female		1	0		1

Figure 2. Column-wise data format

➢ **Variables capturing ties among alters** are named using the following format:
"**<variable name> <alter number> - <alter number>**"
(e.g., "**knows1-2**" indicates that **alter1 knows alter2**).

➢ This naming convention enables E-NET to automatically identify ego variables, ego-alter ties and perceptions, and alter-alter ties.

Egocentric Network Analysis

Assignment:

➢**Egocentric Network Analysis using E-NET Software.**

➢https://sites.google.com/site/enetsoftware1/

References

➢ Social Network Analysis: **Lada Adamic,** University of Michigan.

➢ https://sites.google.com/site/enetsoftware1/documentation

➢ An Introduction to Personal Network Analysis and Tie Churn Statistics using E-NET - Daniel S. Halgin & Stephen P. Borgatti

THANK YOU

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