What is Treatment-Resistant Depression (TRD)?
How do its underlying factors influence each other?

**Background**
- There is no consistent definition of TRD in literature. [1]
- It is unclear what TRD is, or why it is so uniquely persistent. [2]
- Current approaches are insufficient in considering the inter-causal relationships among depressive factors. [3, 4]

**Methods**
Data was combined from two past studies, THREE-D [5] (n=414) and CARTBIND [6] (n=208) using self-report and clinical scale measures. Outlier data was excluded and remaining values were imputed (median/mode), transformed, and analyzed with network analysis. [7, 8]

**Limitations**
- Network analysis is an evolving method in psychological science; few standards for analysis and reporting exist. [9]
- Multivariate analysis requires large sample sizes.* [10]

**Future Directions**
- Interventions can aim to target factors that are most central in a network, or those most closely related.
- Guides future research questions, for instance:
  - How does the structure of a network change over time and across different treatments?
  - What are the item-level relationships within measures?
  - How is the network of treatment-resistance unique from its responsive counterpart?

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### Centrality Measures

**Expected Influence**
- BSI-A
- Age
- Length of current MDD episode
- Age of MDD onset
- Current employment
- ATHF
- Comorbidities
- Resting motor threshold
- HRSD
- Handedness
- SDS
- QLESO

**Strength**
- BSI-A
- Age
- Length of current MDD episode
- Age of MDD onset
- Current employment
- ATHF
- Comorbidities
- Resting motor threshold
- HRSD
- Handedness
- SDS
- QLESO

**Betweenness**
- BSI-A
- Age
- Length of current MDD episode
- Age of MDD onset
- Current employment
- ATHF
- Comorbidities
- Resting motor threshold
- HRSD
- Handedness
- SDS
- QLESO

**Closeness**
- BSI-A
- Age
- Length of current MDD episode
- Age of MDD onset
- Current employment
- ATHF
- Comorbidities
- Resting motor threshold
- HRSD
- Handedness
- SDS
- QLESO

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### Node Legend

#### Demographic Variables
- **(Age)** Age
- **(Work)** Current Employment
- **(Hand)** Handedness

#### Clinical Characteristics
- **(Age Onset)** Age of MDD onset
- **(Epsd Dur)** Length of MDD episode, in months
- **(ATHF)** Resting motor threshold
- **(CoDx)** Comorbidities

#### Symptom & QoL Scales
- **(HRSD)** Hamilton Rating Scale for Depression
- **(BSI-A)** Brief Symptom Inventory - Anxiety
- **(QLESO)** Quality of Life and Enjoyment Satisfaction Questionnaire
- **(SDS)** Sheehan Disability Scale
- **(ATHF)** Antidepressant Treatment History Form

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Differences between Male and Female networks were non-significant*, Network Invariance Test M = 0.15, p=0.815. Global Strength Invariance Test S = 0.267, p=0.598.