Social Anxiety Disorder as a Densely Interconnected Symptom Network

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Social Anxiety Disorder

12%  
(Kessler et al., 2003; 2005; Schneier et al., 1994)

Fear and avoidance of evaluative and interpersonal situations  
(DSM-5, APA, 2013; ICD-10; WHO, 1992)
Social Anxiety Disorder

Even people without SAD sometimes fear and avoid certain social situations

e.g., Wakefield, Horwitz, & Schmitz, 2005
How do fear and avoidance of distinct social situations organize differently in people with and without SAD?
The research questions

Network approaches to psychopathology

1. Network estimation
2. Node importance
3. Network modularity
4. Network comparison
Methods
Absence of DSM-IV-TR criteria for SAD


Criteria for SAD: Mini-International Neuropsychiatric Interview

Participants

- 238 DSM-IV-TR SAD patients
- 232 healthy comparison subjects

Source

Absence of DSM-IV-TR criteria for SAD
Liebowitz Social Anxiety Scale (Liebowitz, 1987)

**Fear and avoidance of social situations**

- 24 social and performance situations
- e.g., *returning goods to a store; going to a party; taking a test*
- 4-point Likert-type 24-item scale: once for the intensity of fear and once for frequency of avoidance of the situation
- Validated French self-report version (Heeren et al., 2012)
Data analytic procedure

Network estimation and visualization

- Regularized partial polychoric correlation network
- R package \textit{qgraph} (Epskamp et al., 2012)
- Graphical LASSO (Friedman, Hastie, & Tibshirani, 2008)
- $\gamma$ was set to 0.5 to be confident that our edges are genuine

Centrality analysis

- R package \textit{qgraph} (Epskamp et al., 2012)
- Betweenness, Closeness, & Strength (Freeman, 1978/1979; Opsahl et al., 2010)
- z-scored metrics
Data analytic procedure

**Network modularity-based community detection**

- R package *igraph* (Csardi & Nepusz, 2006)
- Spin glass algorithm (Reichardt & Bornholdt, 2006)
- \( \gamma = 1, \) start temperature = 1, stop temperature = .01, cooling factor = .99, spins = 48

**Network Comparison Test**

- R package *NCT* (van Borkulo et al., 2015)
- Global network strength
Results
Network estimation

Looking at people you don’t know very well

Participating in small groups

Talking to strangers
Centrality analysis
Looking at people you don't know very well in the eyes
Expressing a disagreement to strangers
Speak up at a meeting
Talking to people in authority
Participating in small groups
Meeting strangers
Network modularity

Single community structure
Network comparison

SAD global strength = 26.9
control global strength = 19.3

$p = .008$
Comparison group

<table>
<thead>
<tr>
<th>Betweenness</th>
<th>Closeness</th>
<th>Strength</th>
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Graphs showing the comparison group with metrics for Betweenness, Closeness, and Strength.
Discussion
The implications for Social Anxiety Disorder

1. Network theory (Borsboom, 2017)

2. Implications (van Borkulo et al., 2015)

3. Novel social situations (Kagan et al., 2014)

4. Next steps
Acknowledgements
Funding from fnrs, Feel inspired, Wallonia.be, and HELAERS Foundation.
Thank you for your attention

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