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What is a 'resilient' symptom network? Assessing multiple response trajectories to stressful events using network theory

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Testing the network theory of psychopathology: How connected are resilient symptom networks?

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Abstract

The network theory of psychopathology proposes that individuals demonstrating resilient responses to adverse events are characterized by symptom networks with low connectivity, indicating that symptoms do not easily co-occur despite facing stressful events. We investigated this hypothesis using the US Health & Retirement Study, a nationally representative longitudinal survey monitoring older adults' physical and mental health. We included 7023 older adults, who experienced severely stressful events, including cancer diagnoses, bereavement or divorce. Using Growth Mixture Modeling, we identified four response trajectories before, during, and after the event, consistent with response patterns found across many studies. We then estimated Ising model networks of depressive symptoms within each time point and response trajectory class. Contrary to expectations from the network theory of psychopathology, symptom networks from the resilient trajectory class were characterized by high connectivity. However, threshold parameters in this group were high, indicating low likelihood of symptom activation. Furthermore, we estimated stability landscapes for all networks. Stability landscapes summarize the most likely symptom dynamics given network parameters, quantifying the stability of symptom states. We found that the stability landscapes for the resilient networks aligned with the response trajectories observed in the data. This alignment suggests that the combination of high connectivity and high thresholds reflects a resilient state characterized by a low probability of symptom activation. We conclude that resilient responses to adverse events can be characterized by different combinations of network connectivity and threshold parameters. Studies using symptom networks should consider both type of parameters to interpret their results.

Keywords

complex systems; network theory; resilience

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