

# Cognition Networks in Collaborative Learning among Japanese Youngsters and Elders

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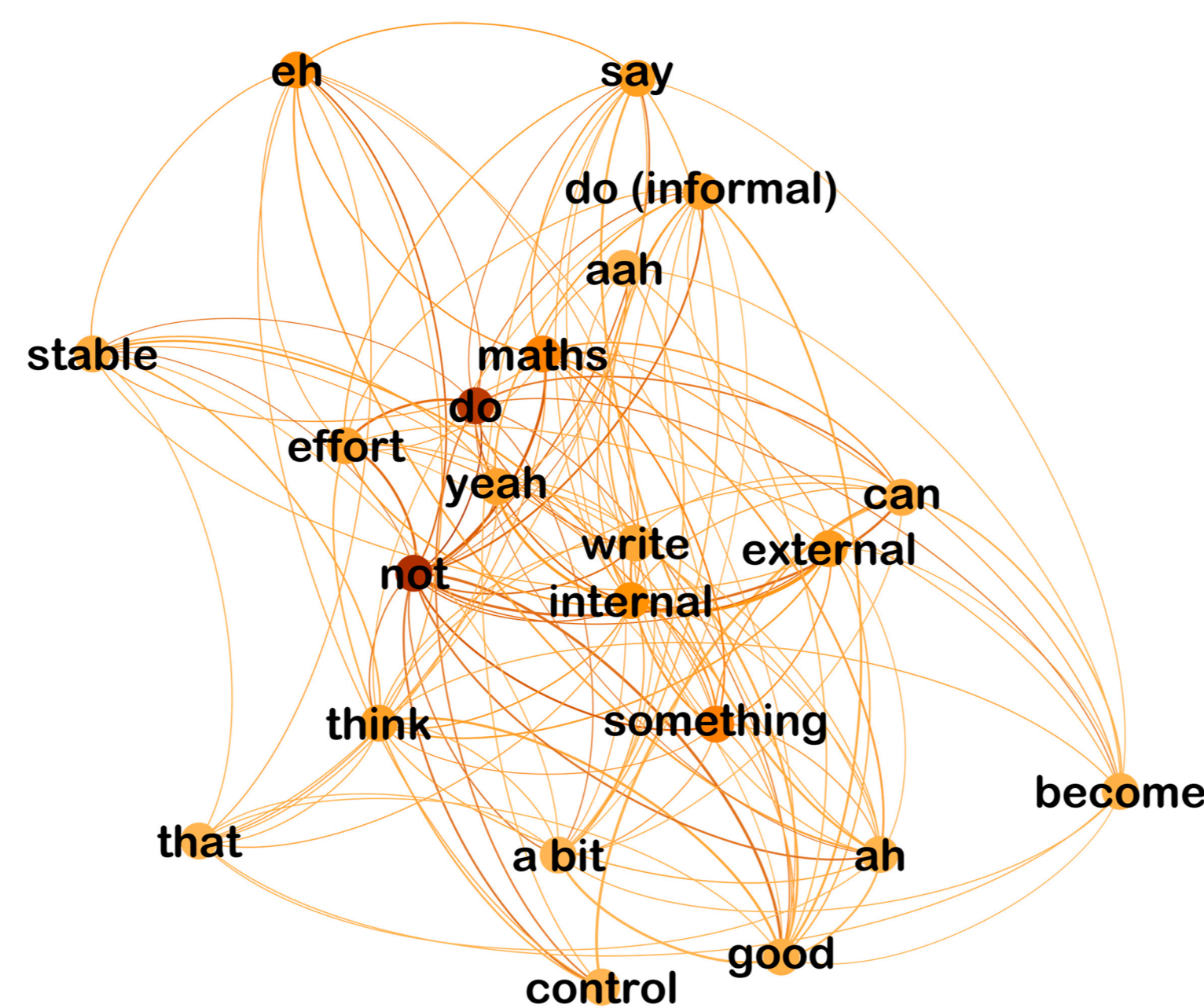
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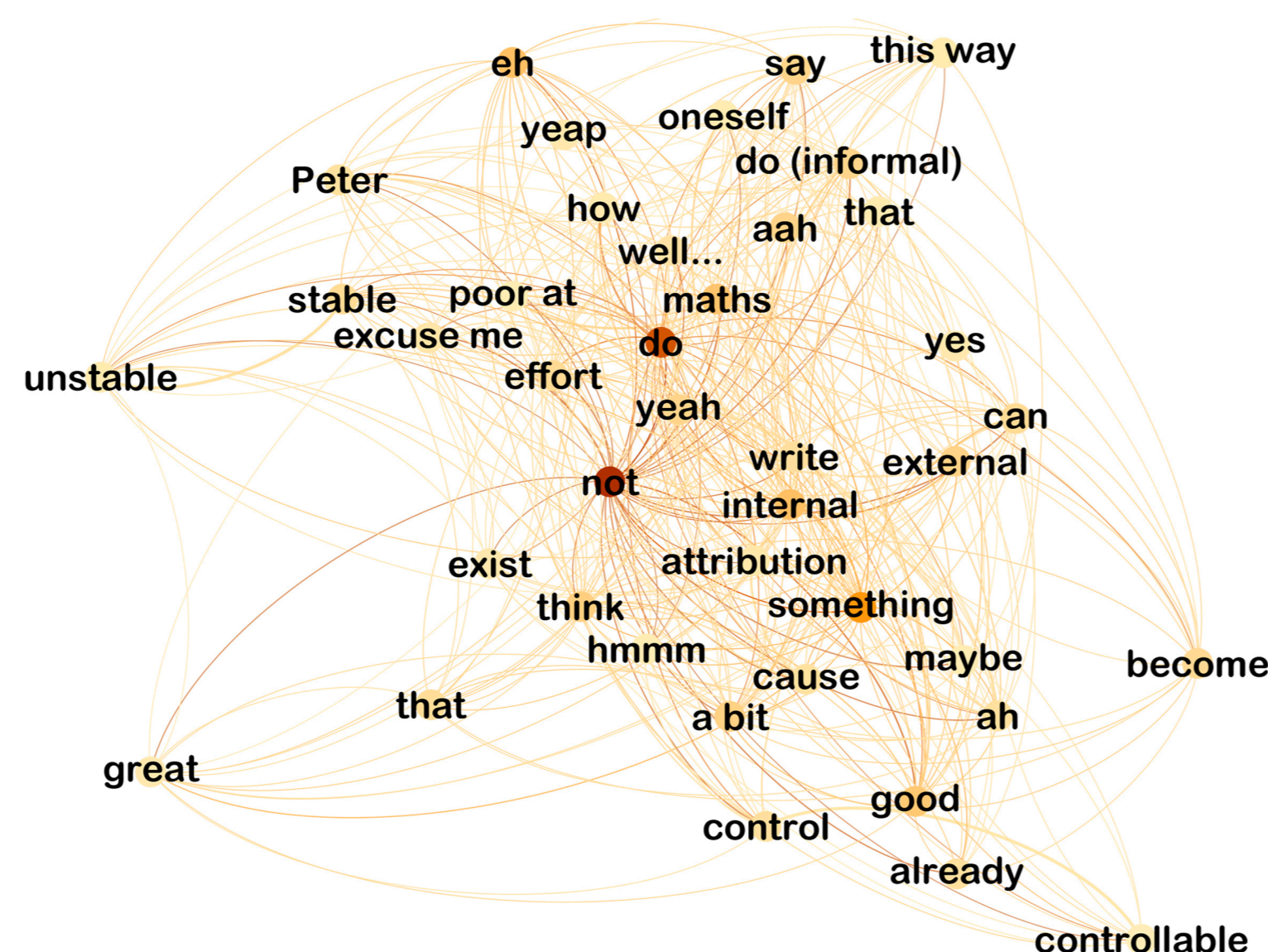
**Abstract**—In Japan, life and health expectancies are high while elderly population is expected to increase. Continuous activity and participation from such communities is estimated, included lifelong learning. Network science explores how network structure and the processes operating on it interact to generate behaviors, potentially providing a framework to model structural changes in cognitive systems. Therefore, the objective of this study was to provide a quantitative and qualitative comparison of Japanese youngsters and seniors cognitive networks. Key similarities and differences across Japanese and International literature were identified, providing insights for the design of assisted collaborative learning applications.

## YOUNGSTERS

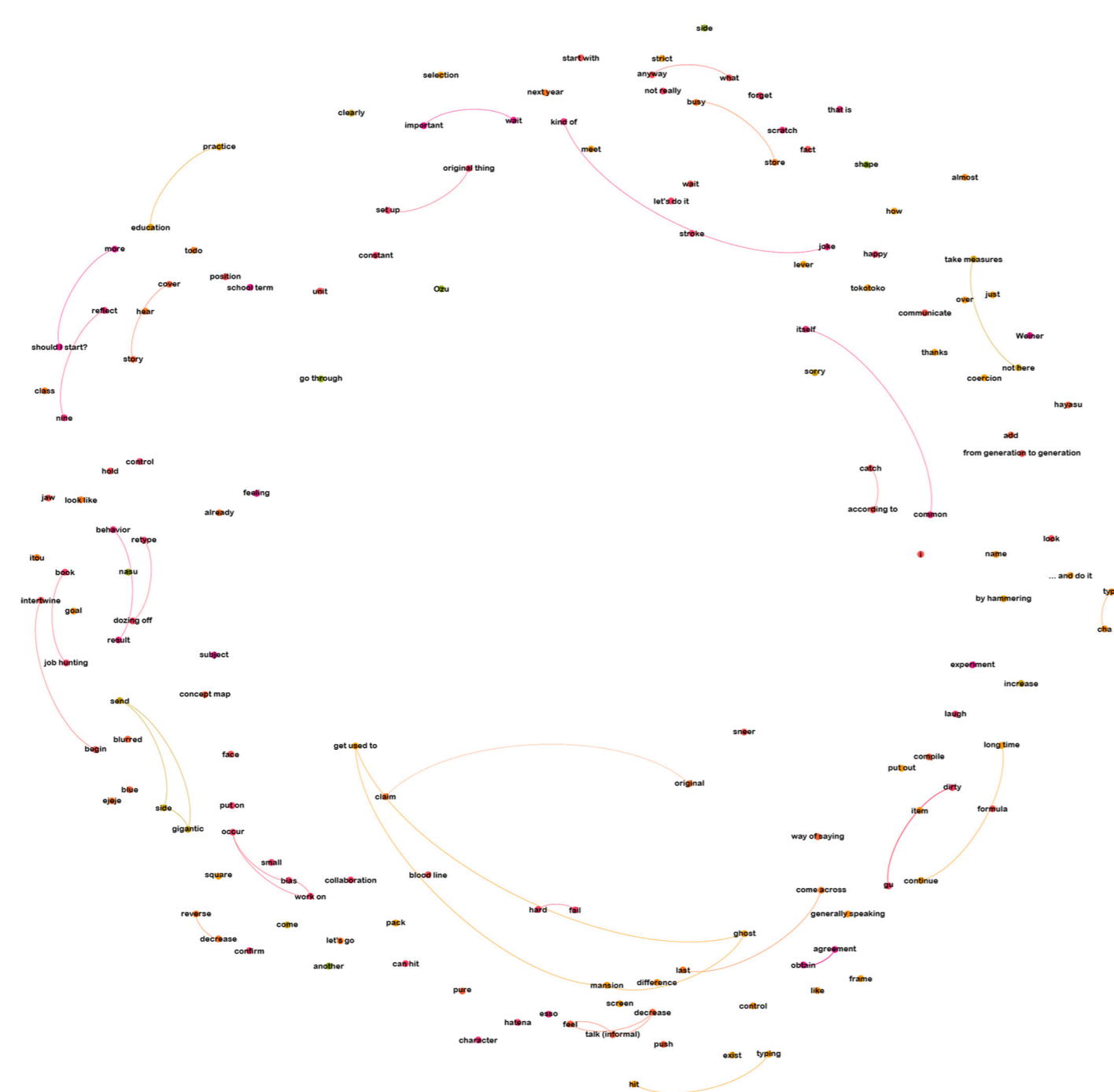
a) ICAP 1, 11 & 12  
(degree $\geq$ 10, closeness $\geq$ 0.04,  
betweenness $\geq$ 0.02, edge  
weight 0.5 - 6, color = degree)



b) ICAP 3  
(betweenness $\geq$ 0.01, edge  
weight 0.5 - 13.5, color =  
betweenness)

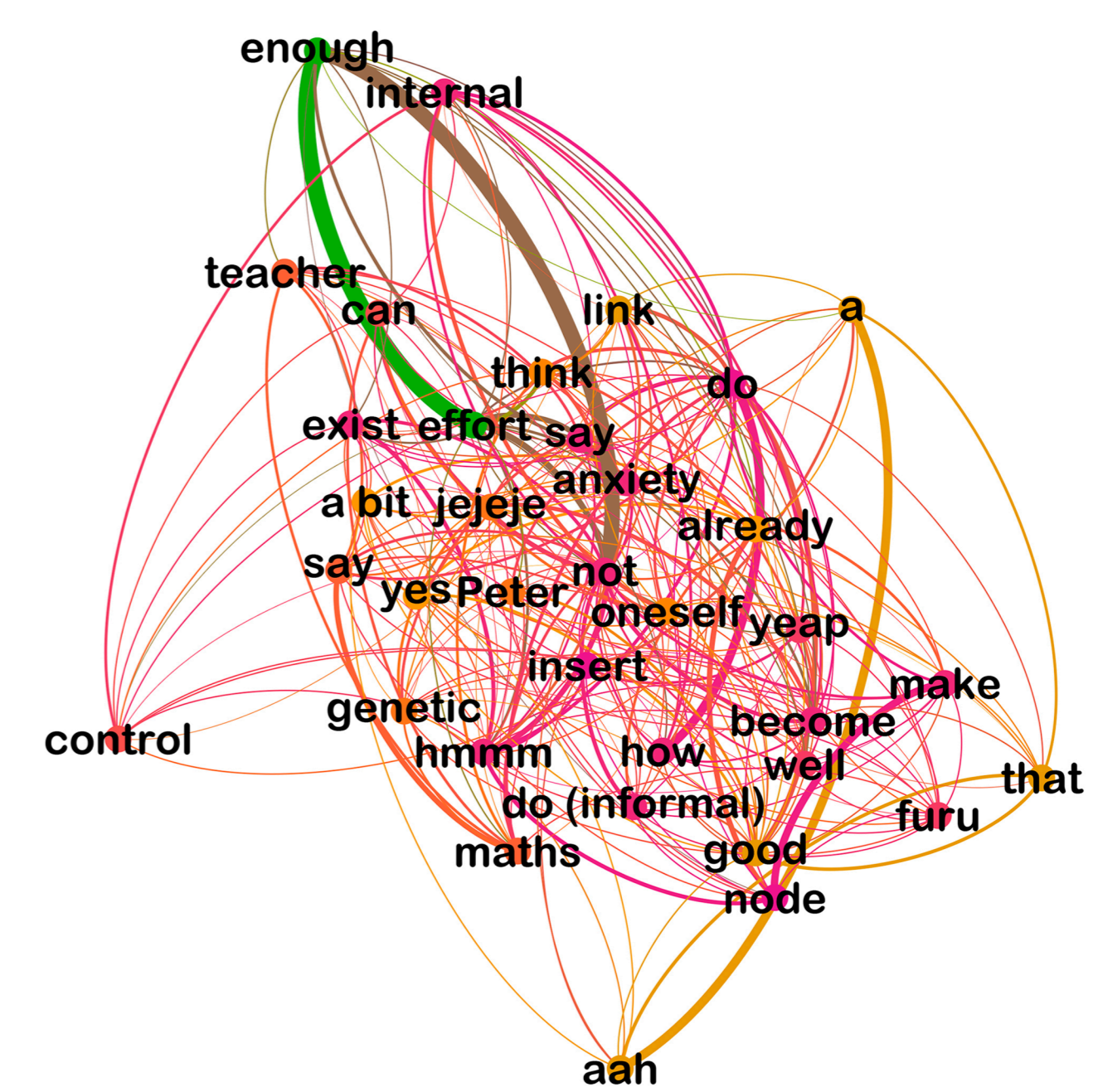


c) ICAP 7  
(clustering coefficient $\geq$ 0.9,  
edge weight 0.5 - 2, color =  
clustering coefficient)

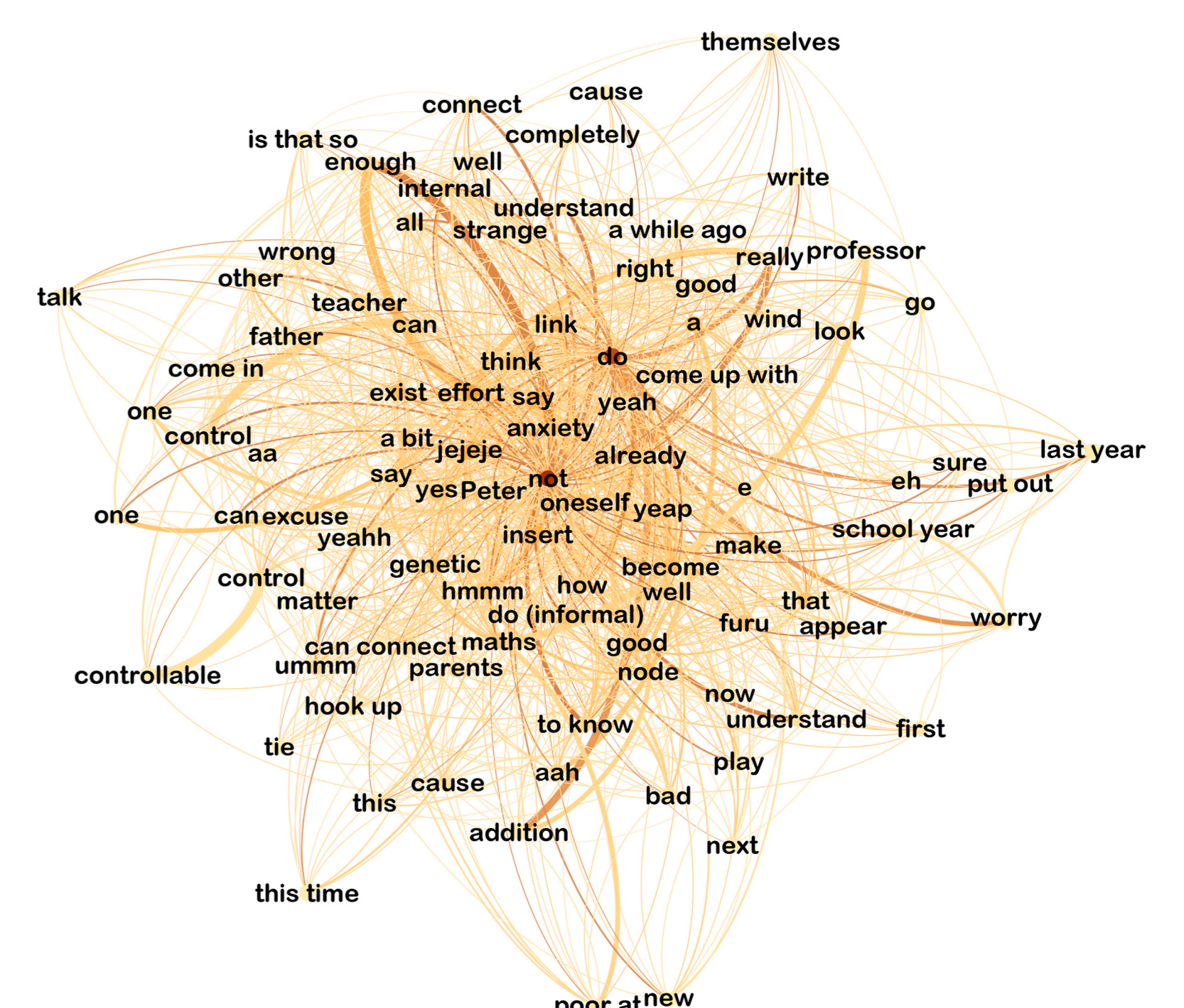


## ELDERS

a) ICAP 3  
(degree $\geq$ 50, edge weight 0.25 -  
12.5, color = modularity)



b) ICAP 4  
(degree $\geq$ 20, closeness $\geq$ 0.45,  
edge weight 0.25 - 12.5,  
color = degree)



c) ICAP 5  
(degree $\geq$ 0.9, edge weight 3 -  
12.5, color = degree)

