Uncovering the Role of Structural Properties in Food Association Networks

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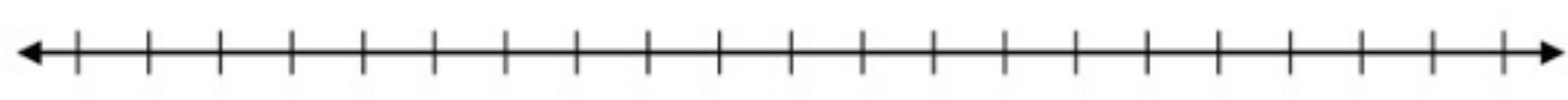**How do people choose between menus, like when choosing which restaurant to dine in?**

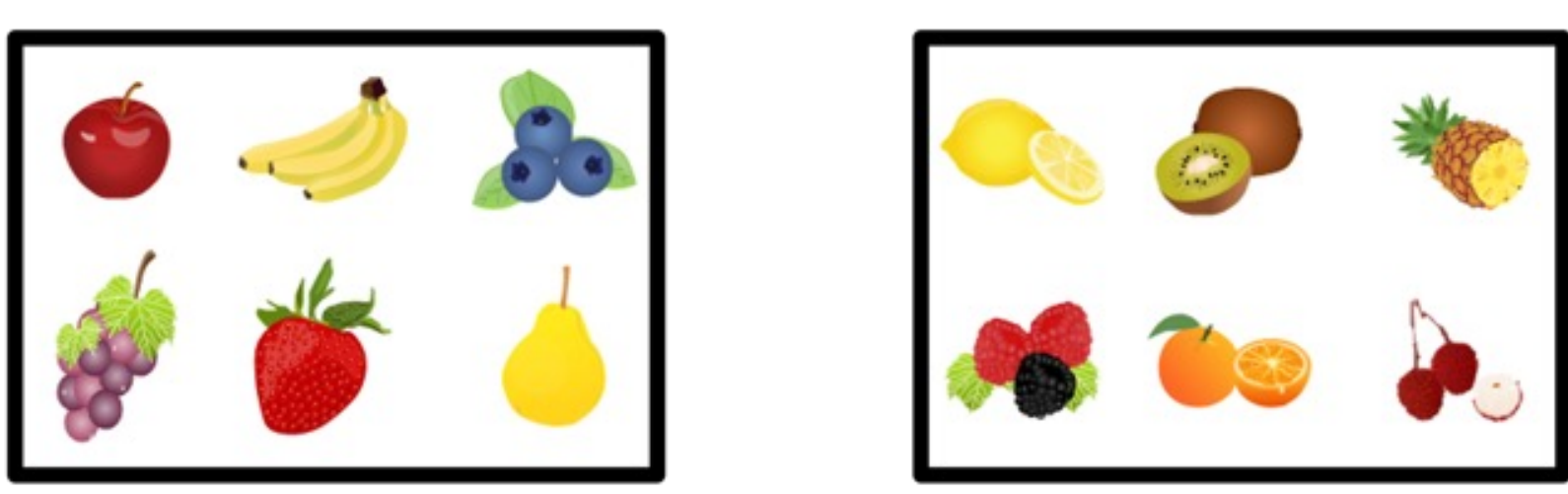**Similar items, defined here as having associations between them, are liked more.[1,4,5]**

Do people prefer sets that contain well-connected items?

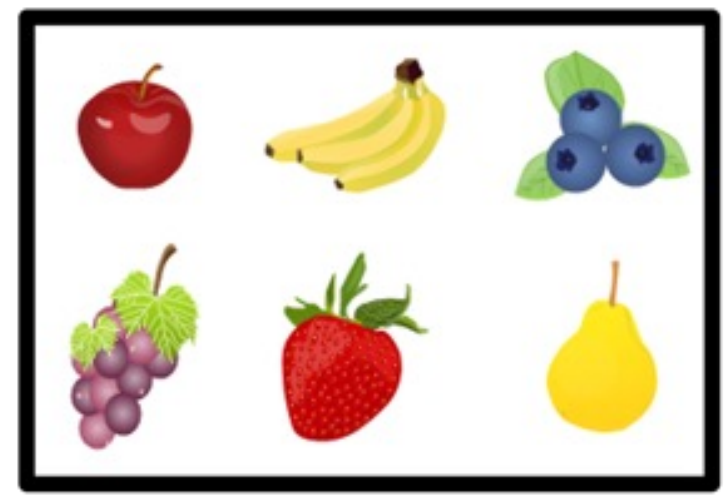### Experimental Design

Rating _How much would you like to eat this food now?_

Choice _Choose which group of foods you would prefer to eat_
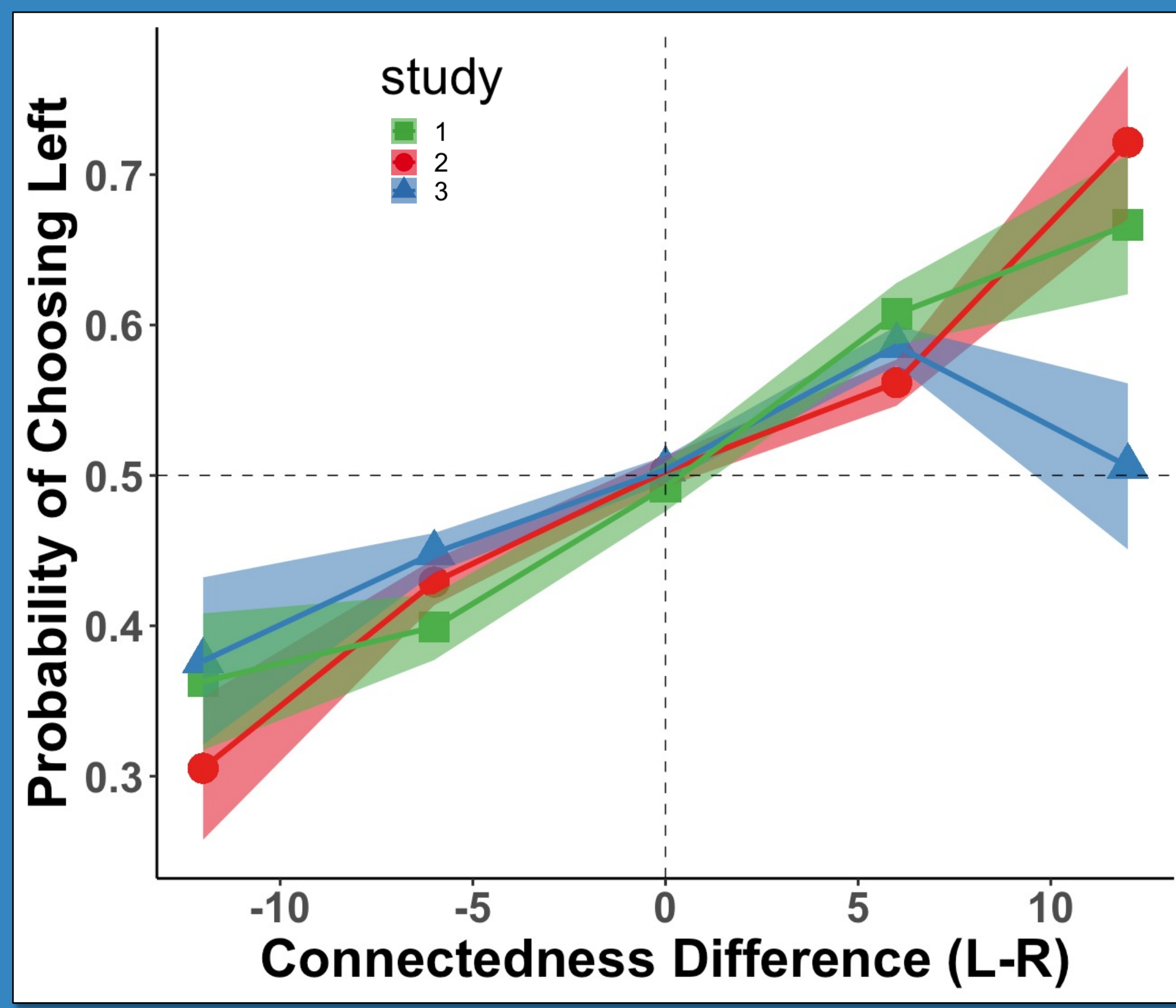
Similarity _If a person likes one of these foods, how likely is it that they similarly like the others?_

Study one; N = 30
A 60 food items
B 99 trials

Study two; N = 75
A 60 food items
B 100 trials
C 100 sets

Study three; N = 79
A 60 food items
**B** 100 trials
C 100 sets

Relations affect people's choices between sets – people prefer sets with more well-connected items

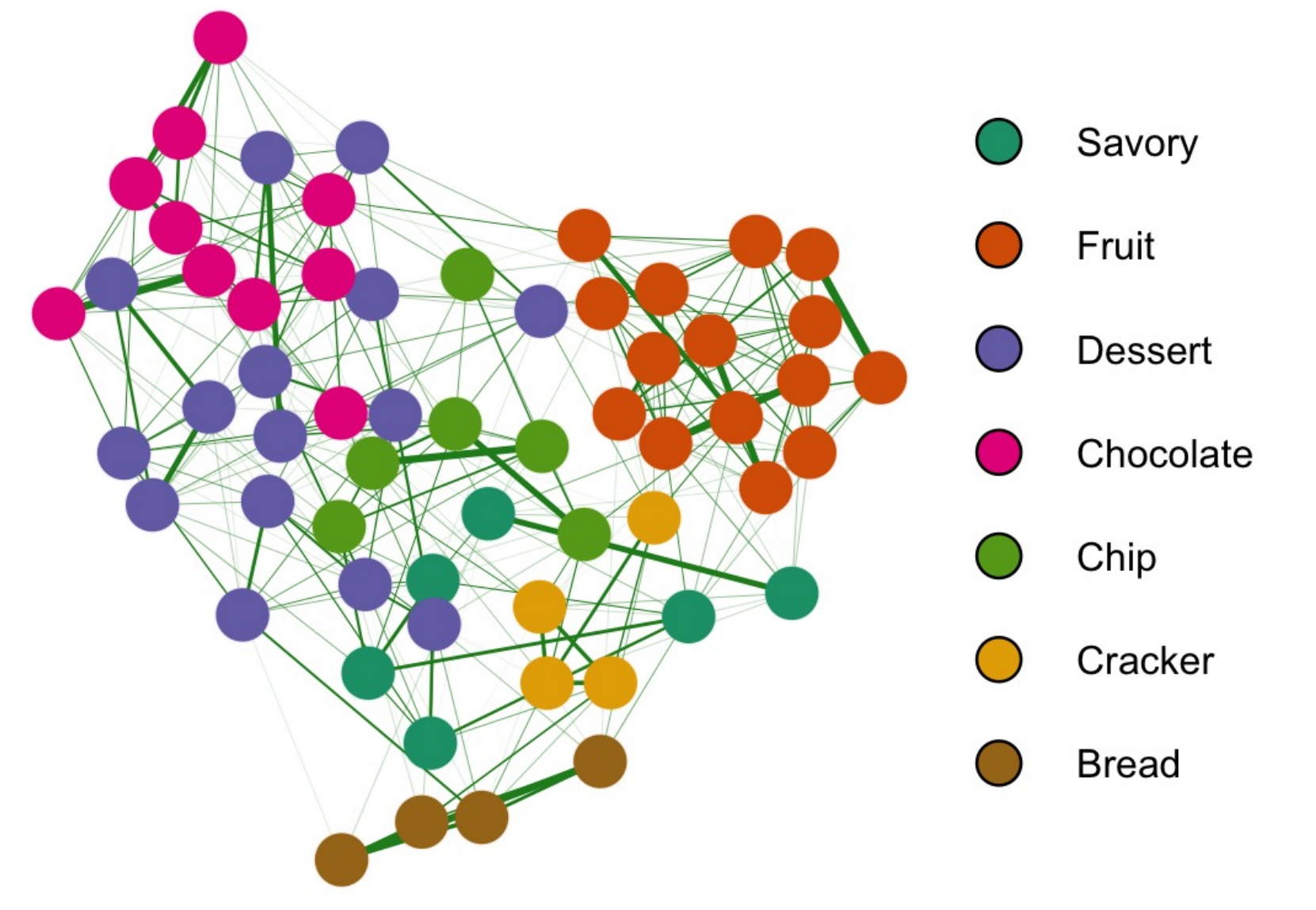**Relational representations derived from preference data align well with subjective similarity**

Spearman's rho = 0.32, p < 0.001
Spearman's rho = 0.51, p < 0.001
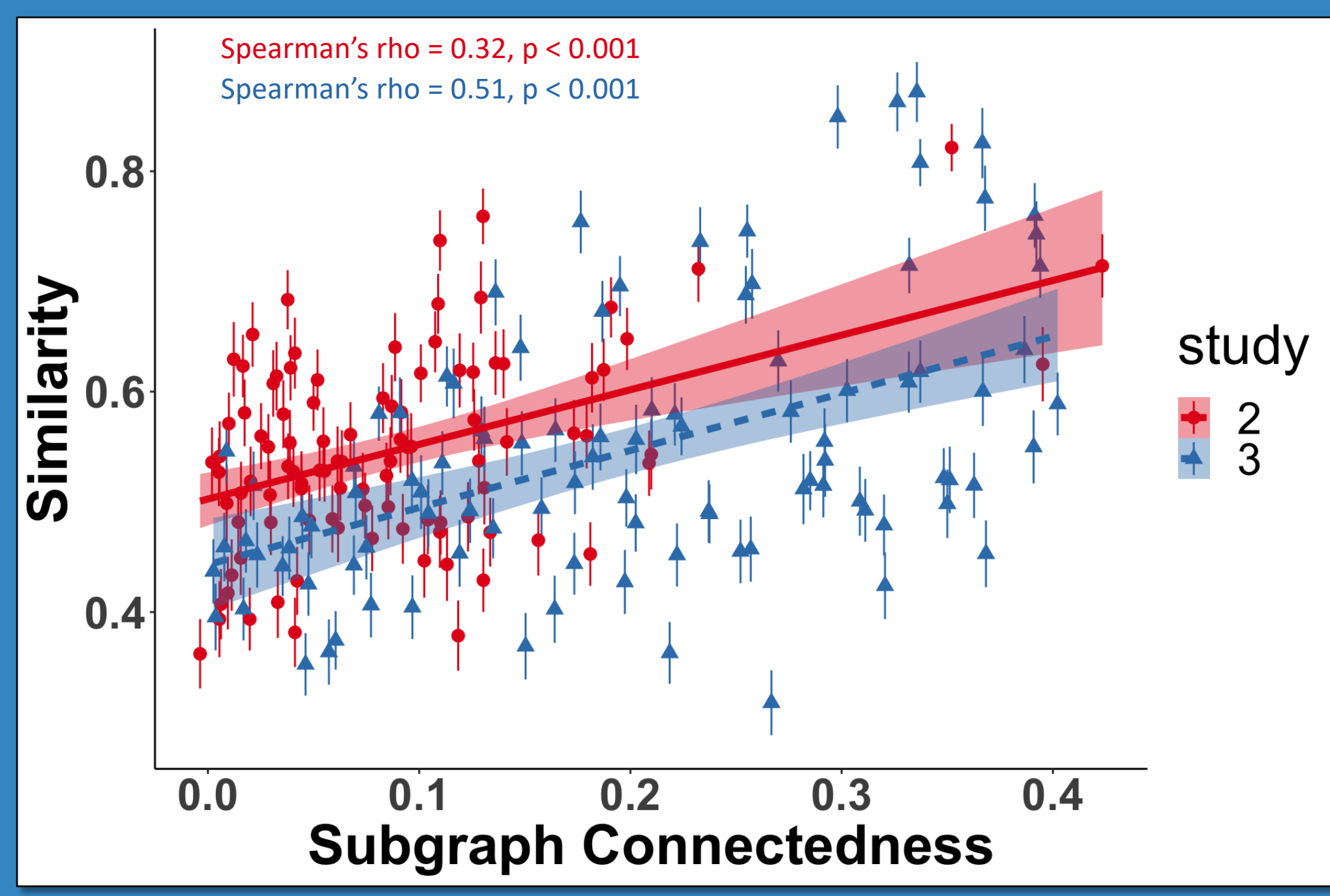
Network science allows us to assess preferences-based connectivity. [3,6]

Extract _connectedness_ scores for each item

| 40 | 30 | 60 |
| 44 | 10 | 2 |

$$G = \sum_{i}^{6} score_i$$
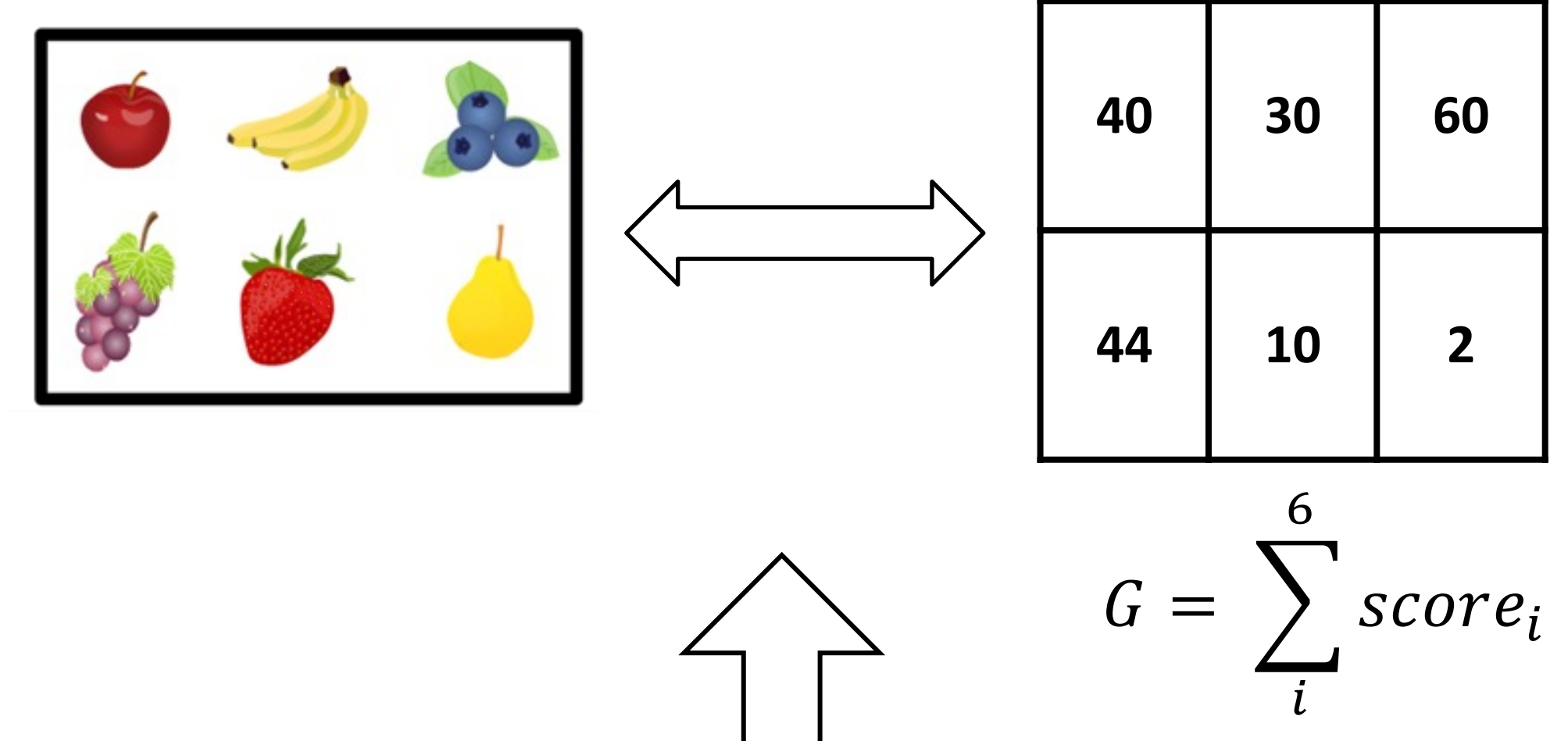
Food Preference Association Network
(estimated from Lee & Holyoak, 2021)

- Savory
- Fruit
- Dessert
- Chocolate
- Chip
- Cracker
- Bread

Extract _subgraphs_ for sets of items

Poorly-connected set   **Well-connected set**