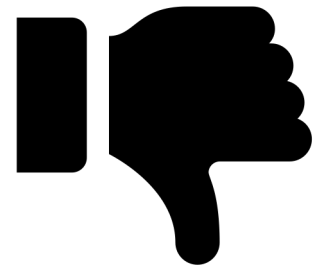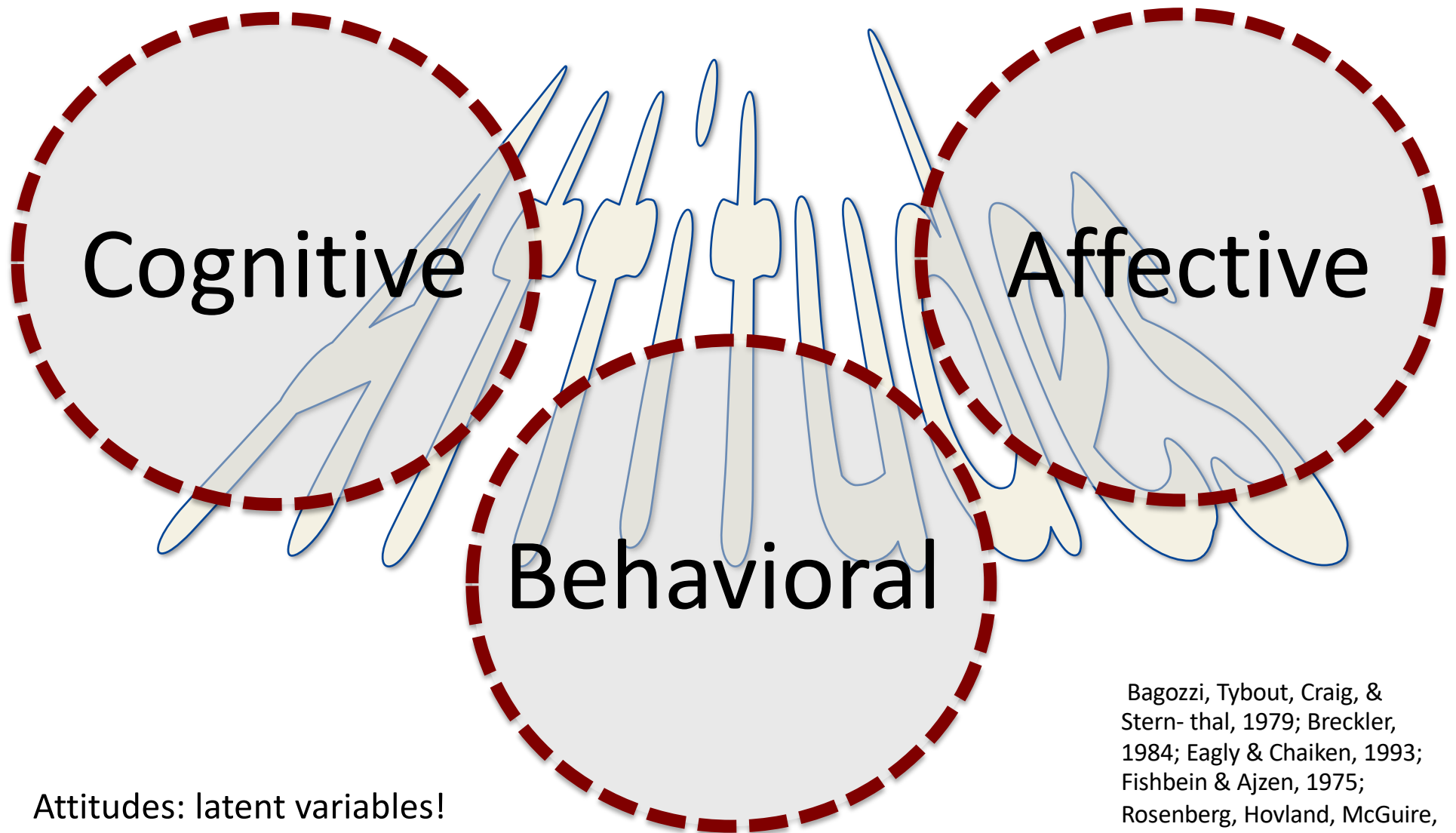# Attitudes

A set of emotions, beliefs, and behaviors toward a particular object, person, thing, or event

EVALUTIVE COMPONENT

- approve/like/approach: POS
- ATTITIDES!
- disapprove/dislike/avoid: NEG ATTITUDES!

The tripartite Model:
attitudes consists of 3 components

Cognitive

Affective

Behavioral

Attitudes: latent variables!
unobservable common causes of observable variables

Bagozzi, Tybout, Craig, & Stern- thal, 1979; Breckler, 1984; Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975; Rosenberg, Hovland, McGuire, Abelson, & Brehm, 1960

2 assumptions of the tripartire model

- *Local independence*: Indicators measuring the same latent variable have no direct causal influence on each other

- *Exchangeability*: adding indicators only increases reliability but does not add substantial information

From description → to explanation

✅ The tripartite Model well <u>describes</u> the co-occurence of the three components

✅ It is easy to fit with <u>common measures</u>

❌ It does not explain the formation and dinamism of attitudes formation and change

❌ Does not explain inconsistencies btw attitudes & bahavior if behavior is one component of attitude

Connectionist models of attitudes

- Connectionism is an approach to cognitive modeling that uses linked networks of concepts to represent cognitive structures
- various beliefs related to an attitude are connected to each other in a network fashion
- activation captures salience or awareness.

" mental representation, concepts, associations" = social cognition
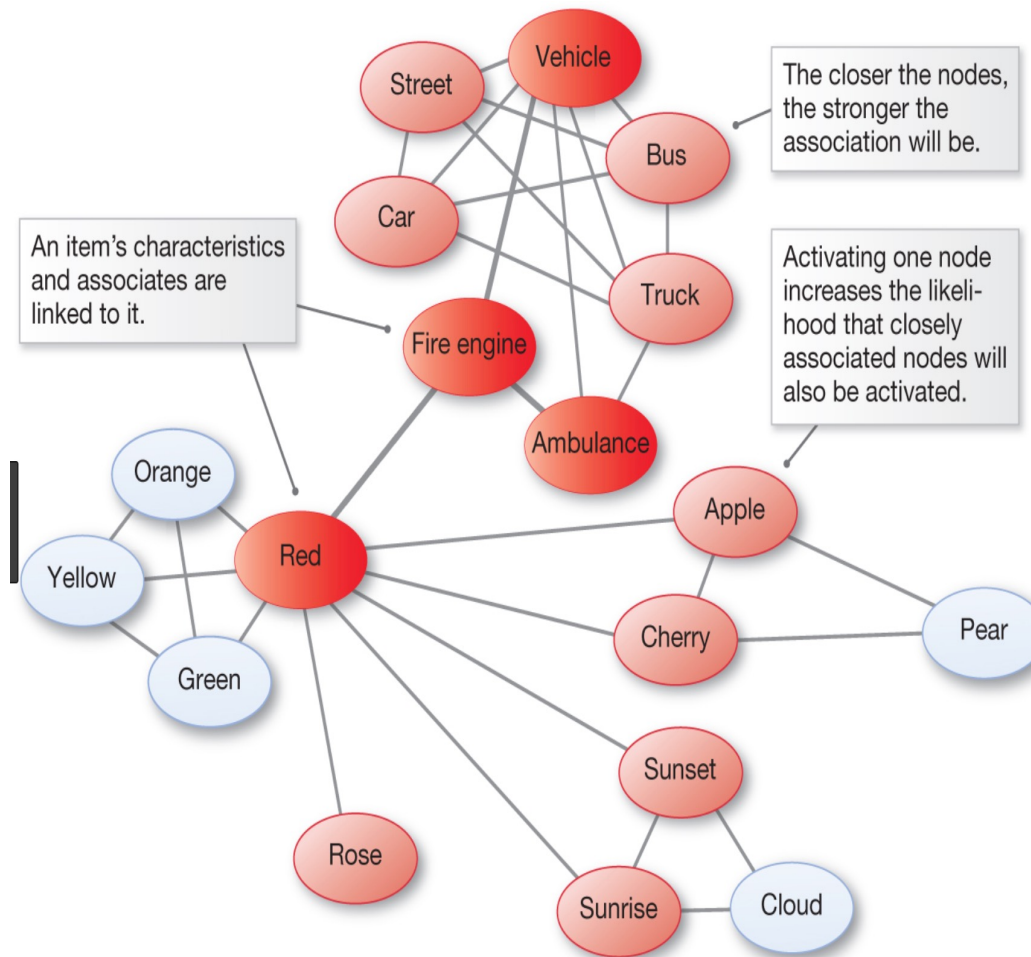
Concepts=> ANYTHING! attribute, propositions, memories, personal goals

Connectionist models of attitudes

- attitudes form and change as a result of the interplay between evaluative reactions that concern the attitude object
- Attitude results from a network of inter-related reactions to the attitude object
- BUT Without empirical evidence: typical measures of attitudes do not provide network data!!!
- It is just a metaphorical description

Toward a Formalized Account of Attitudes:
The Causal Attitude Network (CAN) Model

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Denny Borsboom and Frenk van Harreveld
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Mark Conner
University of Leeds
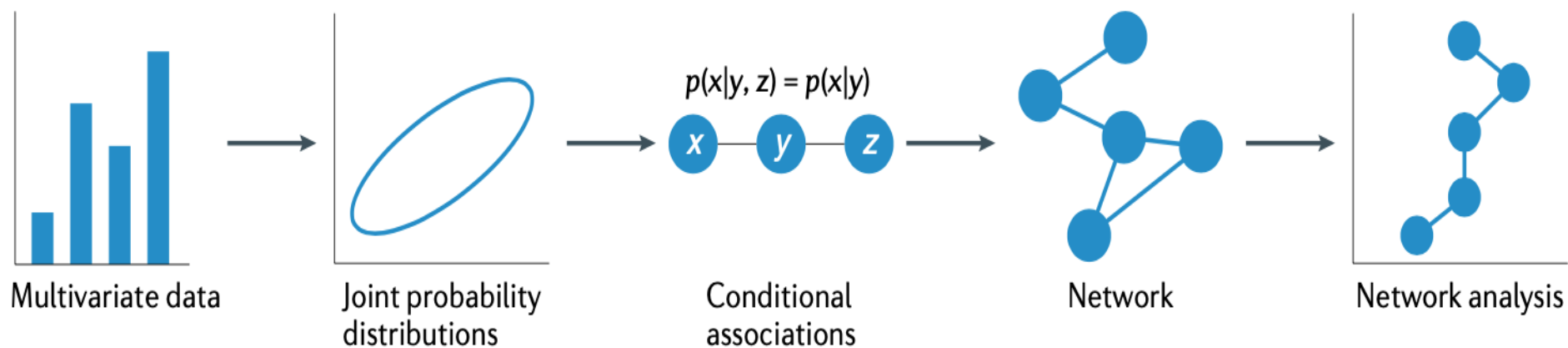
Han L. J. van der Maas
University of Amsterdam

Fig. 1 | **Structure of psychometric network analysis.** Joint probability distribution of multivariate data characterized in terms of conditional associations and independencies. Conditional independencies translate into disconnected nodes; conditional associations translate into links between nodes, typically weighted by the strength of the association. The resulting structure is subsequently described and analysed as a network.

CAN: Causal Attitude Network model

- Attitudes as networks that consist of **evaluative reactions and interactions** between these reactions.
- Relevant reactions include **beliefs, feelings, and behaviors** toward an attitude object
- attitude networks -> **small-world** structure
- allows for the application of *empirical* network models
- Nodes are **<u>causally</u>** related

Cognitive consistency

- humans have a basic need for consistency between their cognitions (e.g., Heider's balance theory; Festinger's Consistency theory; Rosenberg's affective-cognitive consistency)
- people are motivated to reduce inconsistencies within their attitudes (e.g., van Harreveld et al., 2009)
- evaluative reactions have a tendency to align with each other.
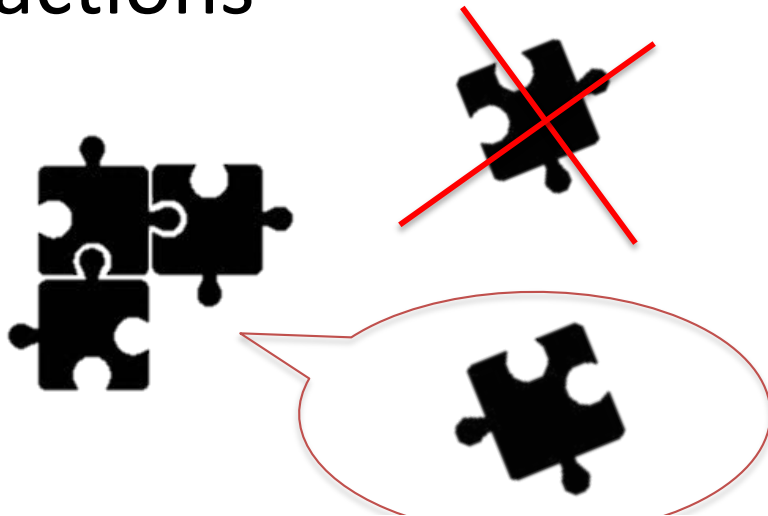
Accuracy

- Sometimes people need to make correct decision

- Accuracy motivation lowers preference for information that supports previous attitudes (Hart et al., 2009).

Consistency vs Accuracy

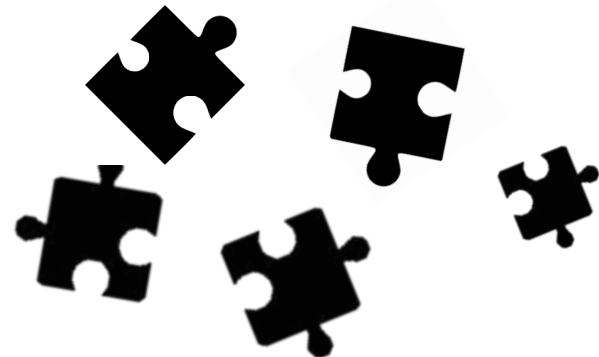- striving only for consistency would lead to perfectly aligned evaluative reactions

- striving only for accuracy can, in some instances, lead to completely unaligned evaluative reactions.

Accuracy as Clustering

- Clustering allows for
  - <u>energy reduction</u> within clusters
    - e.g. all evaluative reactions toward a person that pertain to the dimension of warmth are highly aligned
  - <u>accuracy</u> by having unaligned or even misaligned clusters that do not cost much energy
    - e.g. the evaluative reactions that pertain to the dimension of warmth are not highly aligned to the evaluative reactions that pertain to the dimension of competence

Consistency as Preferential attachment

- **nodes are more likely to connect to popular nodes**

-> evaluative reactions that already have many connections are more likely to lead to the activation of additional evaluative reactions

WHY?

-> evaluative reactions that are strongly connected already **have proven to be predictive in the _past_**, which makes such evaluative reactions more likely to cause readiness of other evaluative reactions in the _present_.

Attitudes as small-worlds!!!

- attitude networks are expected to show
  - **high clustering**, in which these clusters are connected through shortcuts
  - **high connectivity:** Through these shortcuts, attitude networks have high global connectivity (i.e., all nodes on average are closely connected to each other)

- The combination of high clustering and high connectivity is known as a small-world structure

(Albert & Barabási, 2002; Watts & Strogatz, 1998).

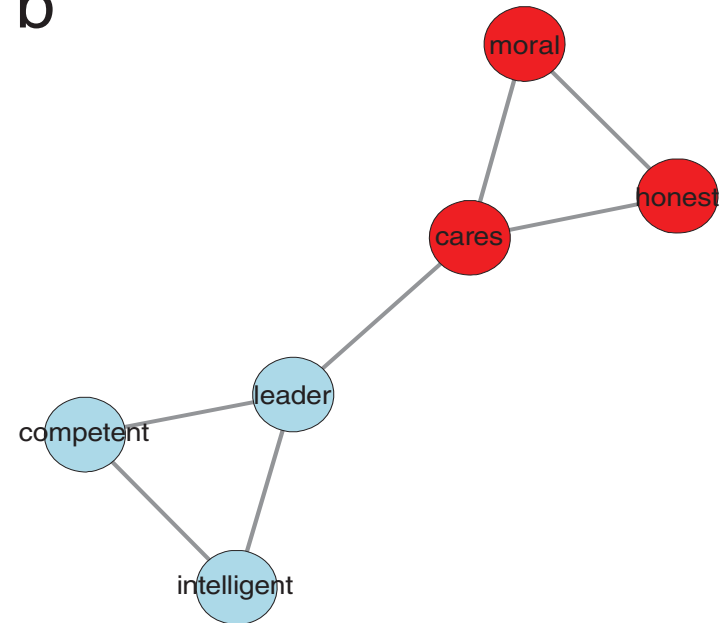# Hypothetical attitude network at four points in time
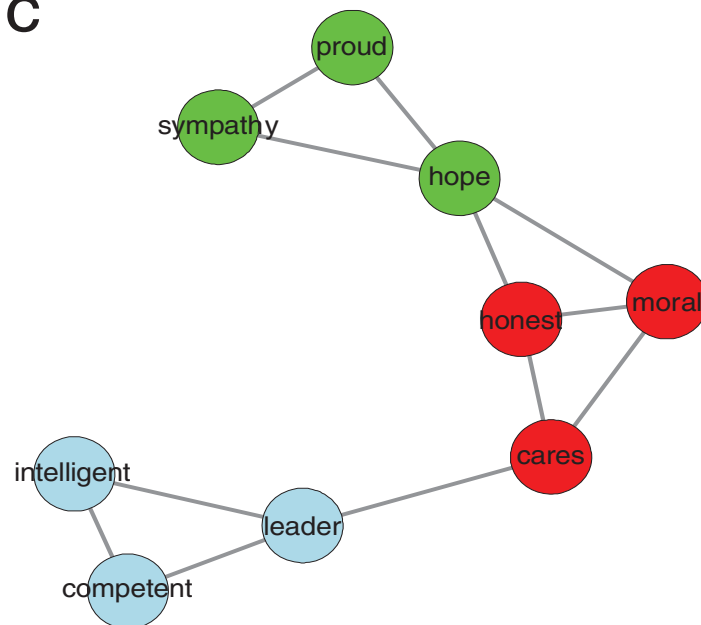

a

b
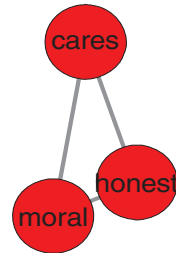
Nodes=evaluative reactions

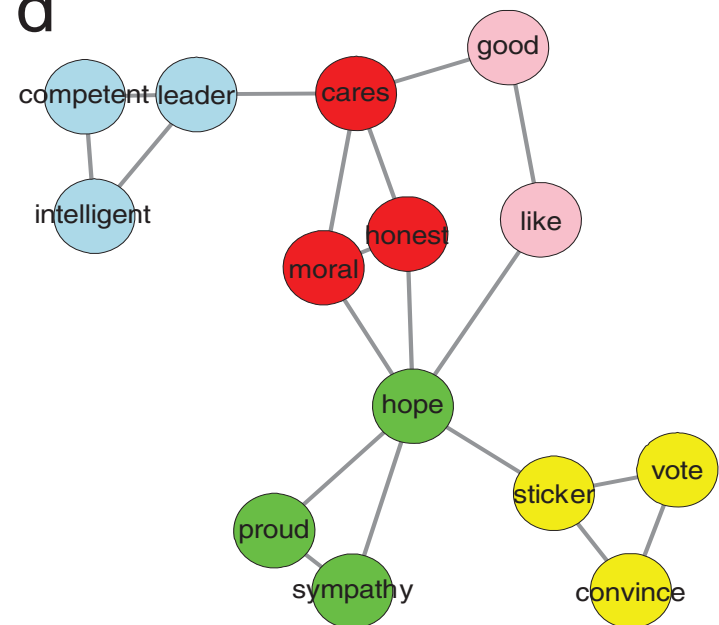Edges =causal influence between the evaluative reactions.

c

d

DATA

- American National Election Study (ANES) of 1984
- N= 2,257
- Participants were asked whether or not they attributed several positive characteristics to each candidate (e.g., whether the candidate is a decent, intelligent or a moral person) and whether they had ever had positive or negative feelings toward each candidate (e.g., feelings of hope or anger).
- participants' responses toward these evaluative reactions -> attitude networks for the attitudes toward each presidential candidate
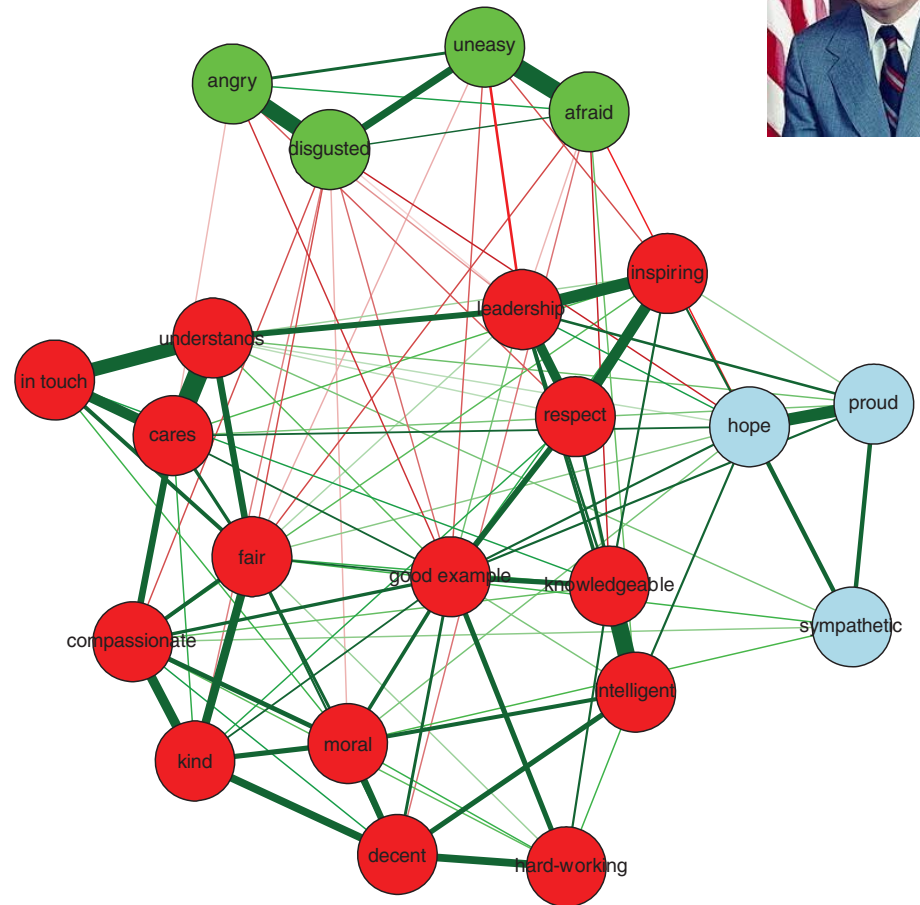
Both networks thus had a small-world structure

Ronald Reagan
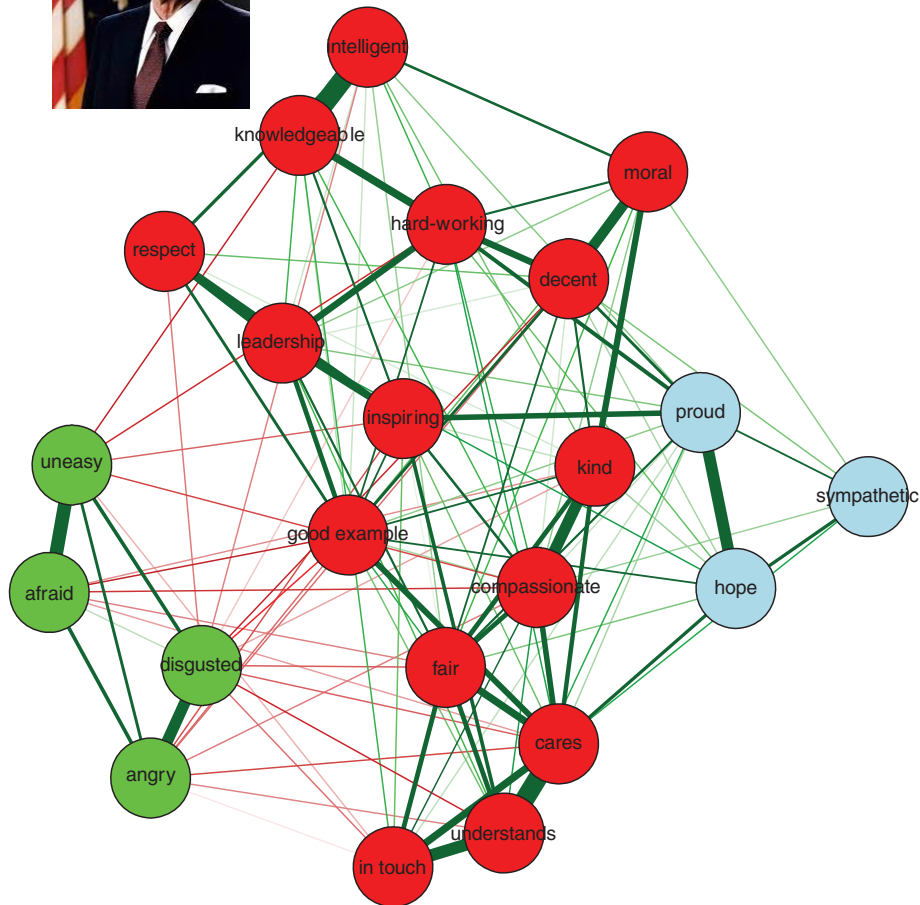
Walter Mondale

Nodes   red = positive judgements
               blue = positive feelings

               green = negative feelings
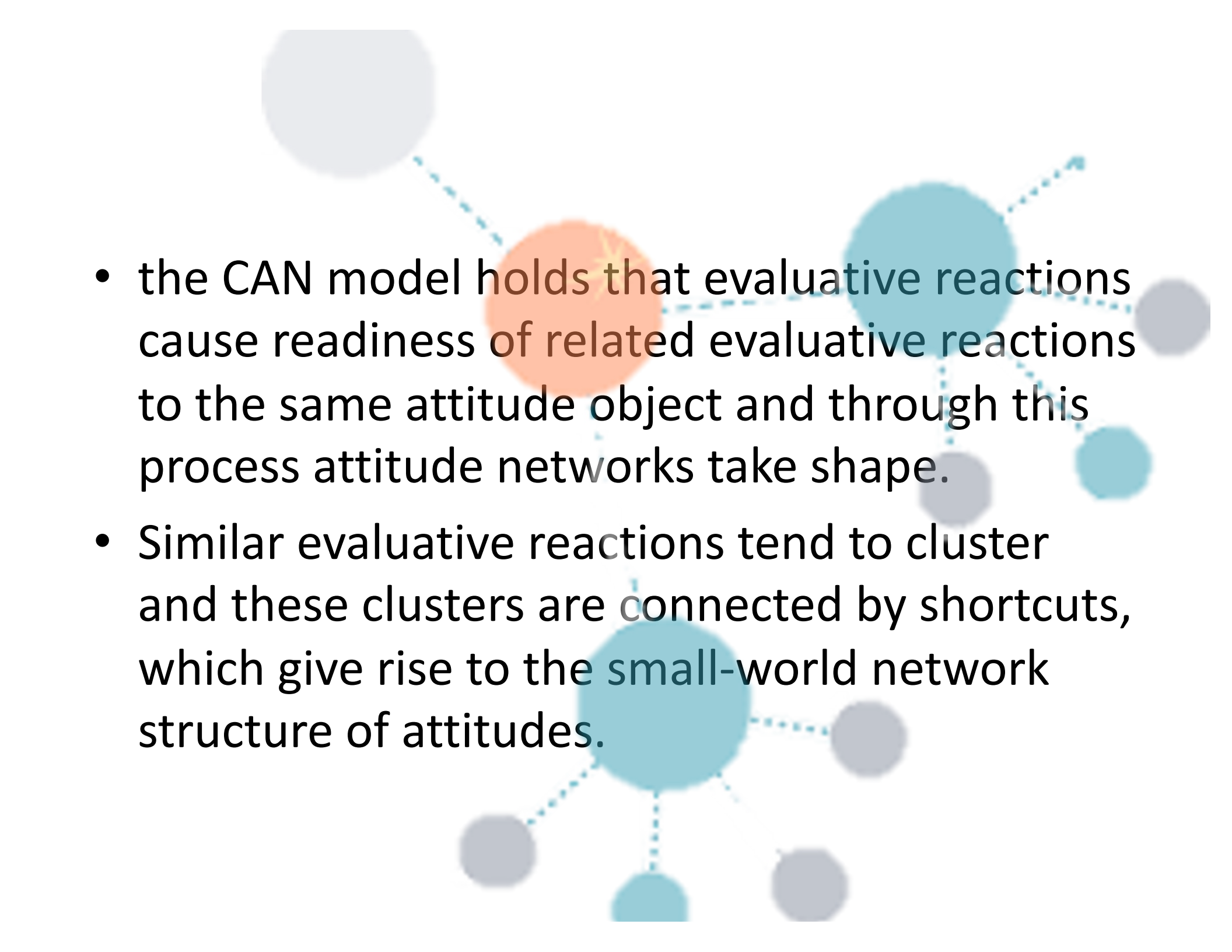
Edges   green = excitatory influence
               red = inhibitory

Thicker edges represent higher weights of the edges

- the CAN model holds that evaluative reactions cause readiness of related evaluative reactions to the same attitude object and through this process attitude networks take shape.

- Similar evaluative reactions tend to cluster and these clusters are connected by shortcuts, which give rise to the small-world network structure of attitudes.

Attitude Change

Attitudes can be changed via a plethora of different processes as each node in the attitude network can serve as a gateway to instigate change in the network
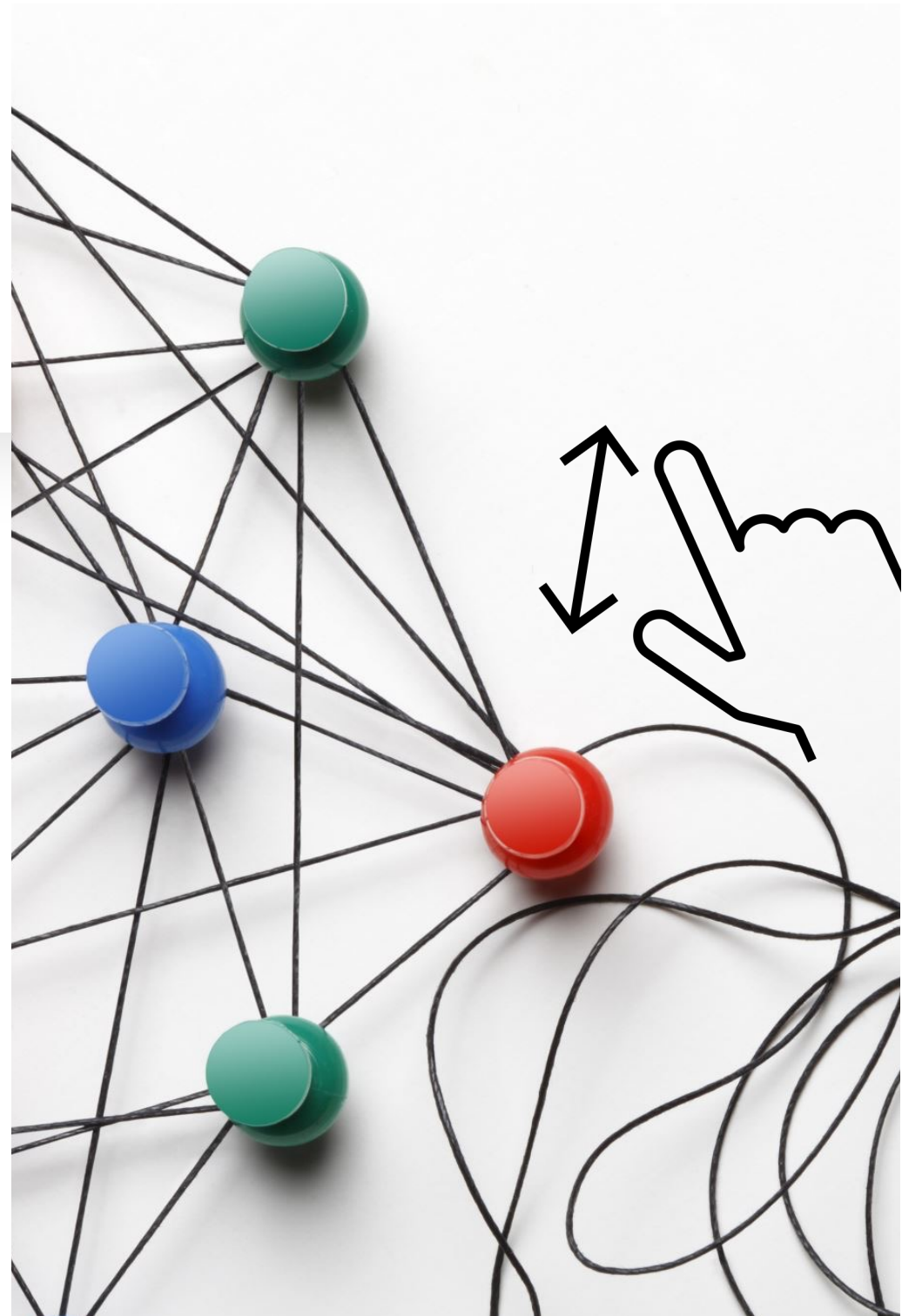
Eg cognitive dissonance; evaluative conditioning; arguments
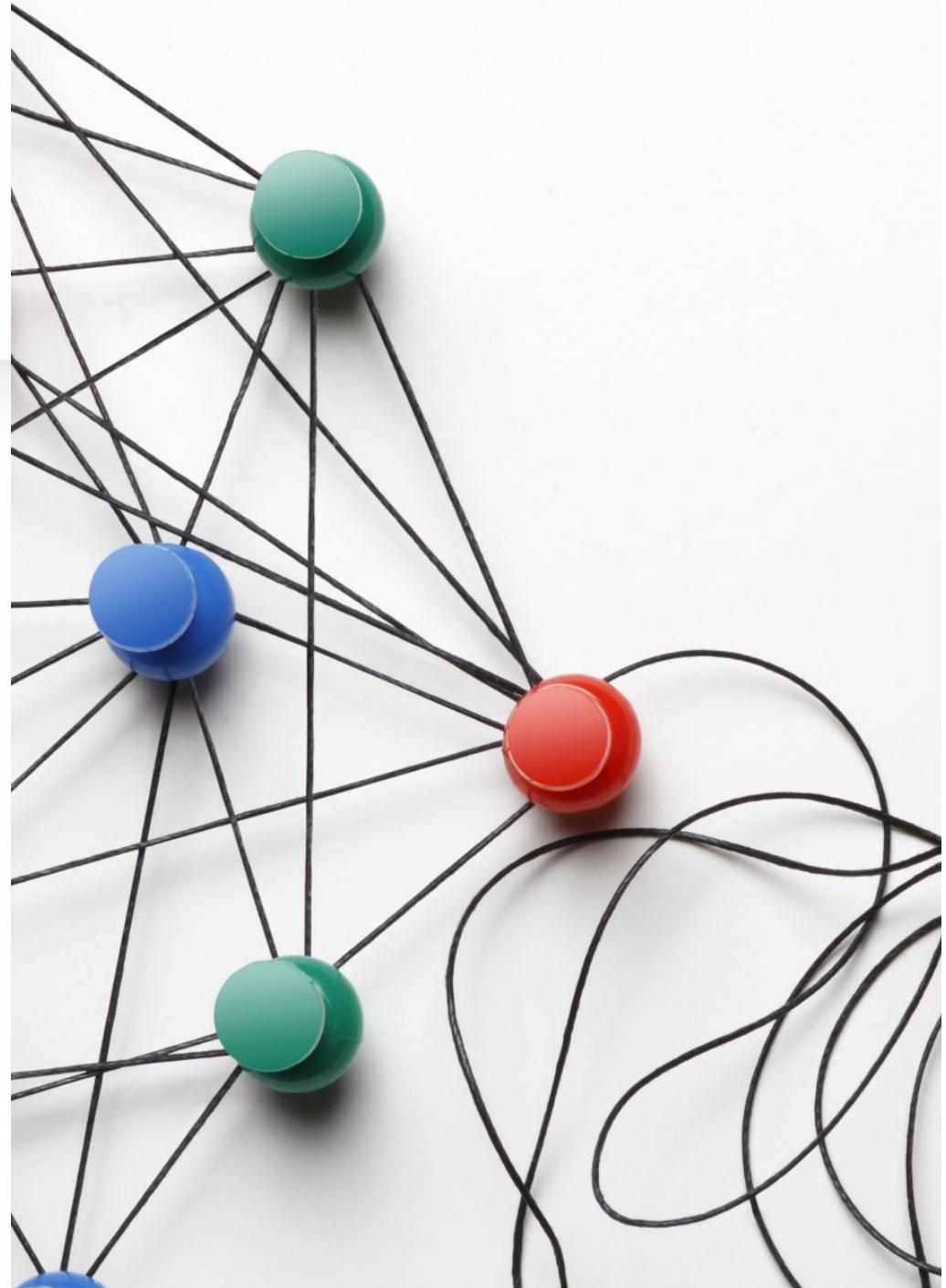
Attitude Change

Function of

- strength of external pressure

- state of the neighboring nodes

- strength of the links between the targeted node and the neighboring nodes (robustness!!)

Attitude Change

If one evaluative reaction changes and this change persists, other evaluative reactions are also likely to change.

If a node in this cluster were to be changed, this change would mostly spread to other nodes in this cluster.

whether the change will spread through the whole network depends on the behavior of the nodes that connect this cluster to other parts of the network.

While highly central evaluative reactions will be likely to resist change, their change will also be more consequential than change in an evaluative reaction that is not central.

Attitude strenght
as *global connectivity*

Strong attitudes are defined by their stability, resistance to change, and impact on behavior and information-processing

- *global connectivity* (i.e., average shortest path length; West, 1996) of an attitude network can be regarded as a mathematically formalized conceptualization of attitude strength.
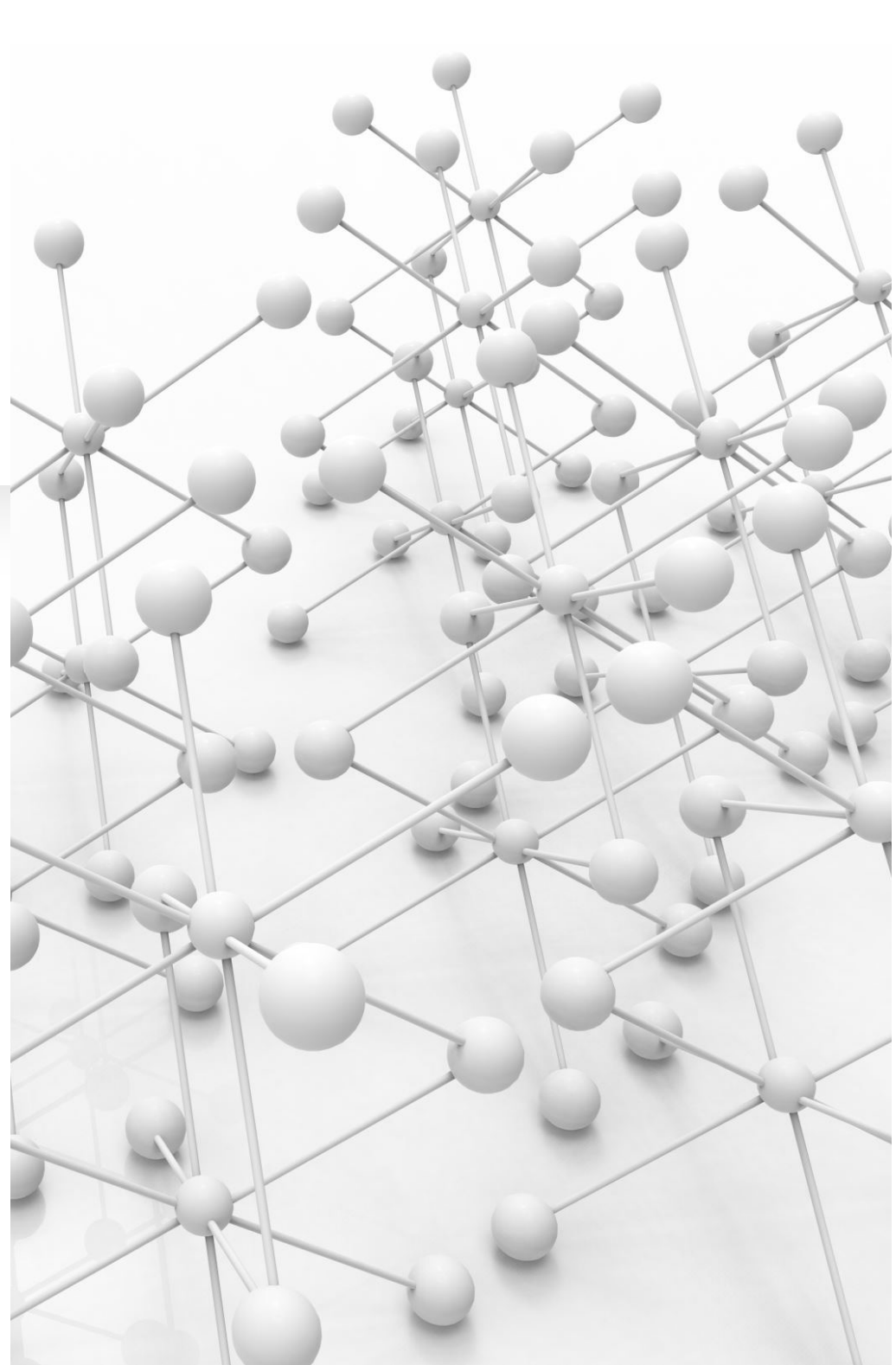
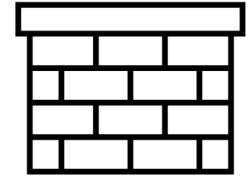# Attitude resistance

evaluative reactions that are not aligned to each other cost more energy in a highly connected attitude network

highly connected attitude networks are more likely to resist persuasion attempts

See resistance of strong versus weak attitudes to persuasion attempts (e.g., Bassili, 1996; Visser & Krosnick, 1998).

Predictivity of behavior

- evaluative reactions in highly connected attitude networks are more likely to align to each other.

- an aligned attitude network is likely to be more informative for a decision on whether a related behavior should be executed or not.

- highly connected network attitudes are more predictive of behavior

Knowledge: network size

- knowledge amplifies the effects of attitude strength (Wood et al., 1995).
- attitude networks that are both highly connected and consist of many different evaluative reactions will correspond to stronger attitudes

Traditional attitude strenght contributors

ACCESSIBILITY

STRUCTURAL CONSISTENCY

INTENSITY

CERTAINTY

EXTREMITY
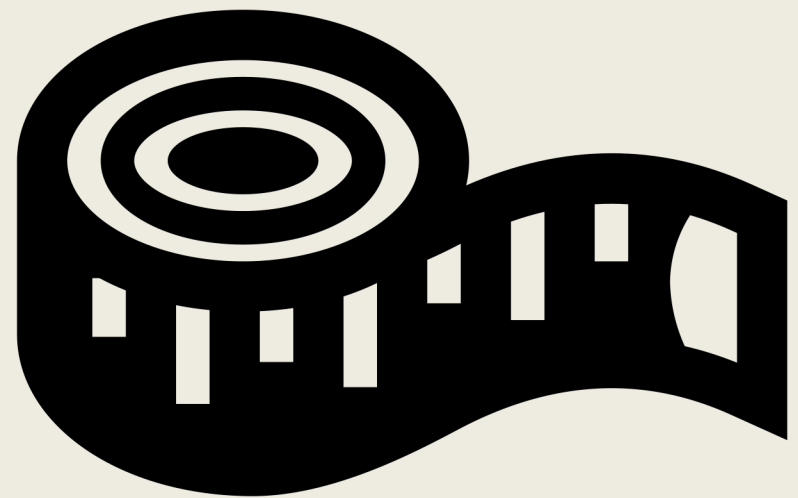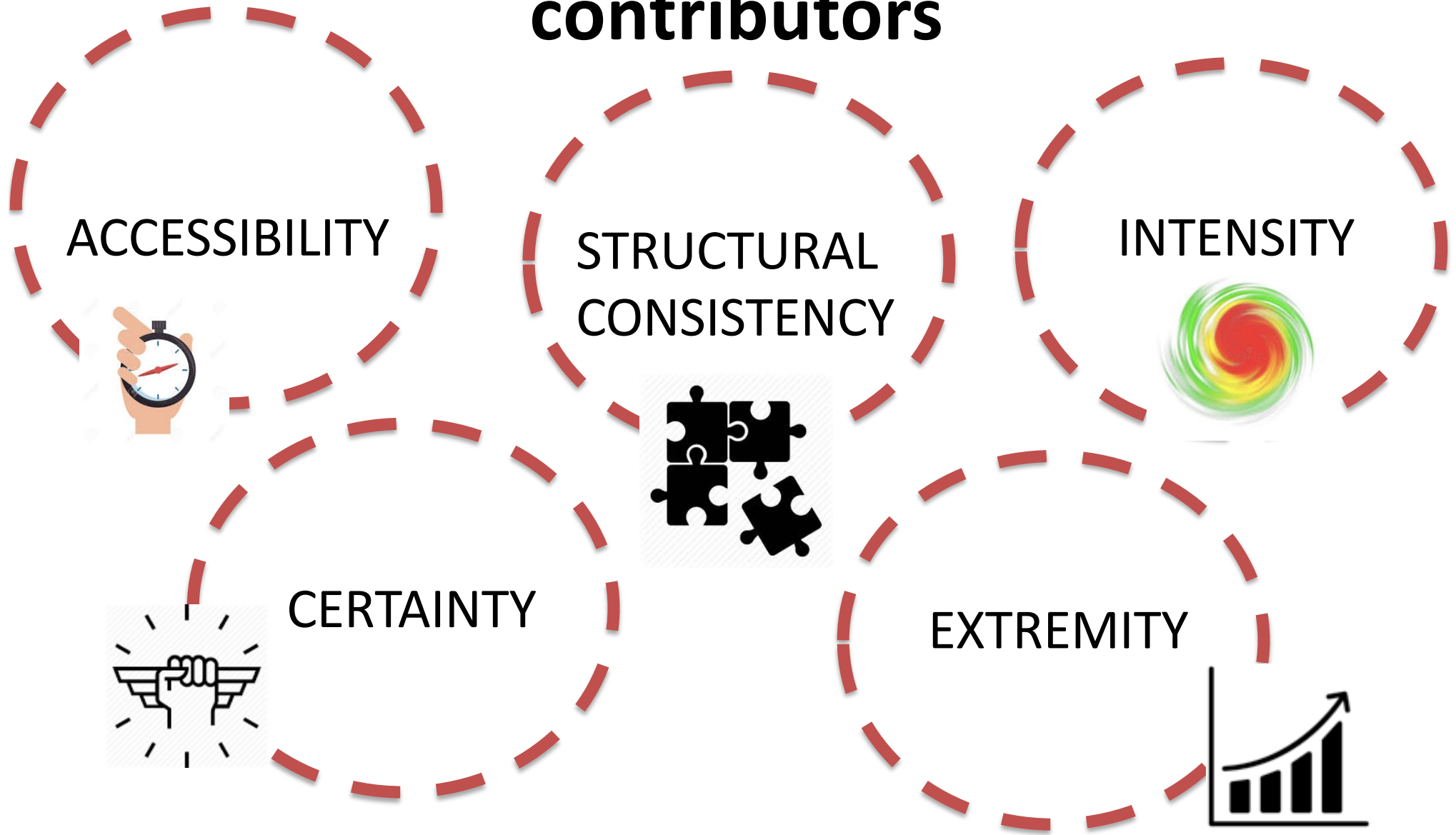
all likely to be caused by connectivity

Traditional attitude strenght contributors

ACCESSIBILITY

how fast a person can judge whether a given attitude object is positive or negative

FASTER IF evaluative reactions ARE aligned
-> highly connected attitude network

Traditional attitude strenght contributors

CERTAINTY
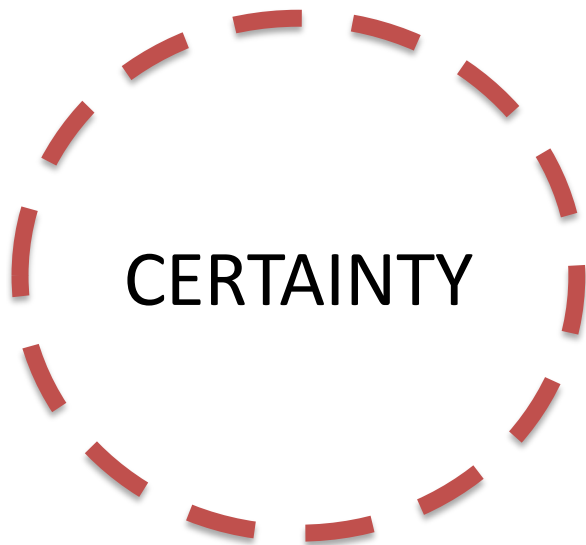
Attitude clarity= CONFIDENCE in the attitude and in its validity

aligned attitude network
-> highly connected attitude network

Traditional attitude strenght contributors

STRUCTURAL CONSISTENCY
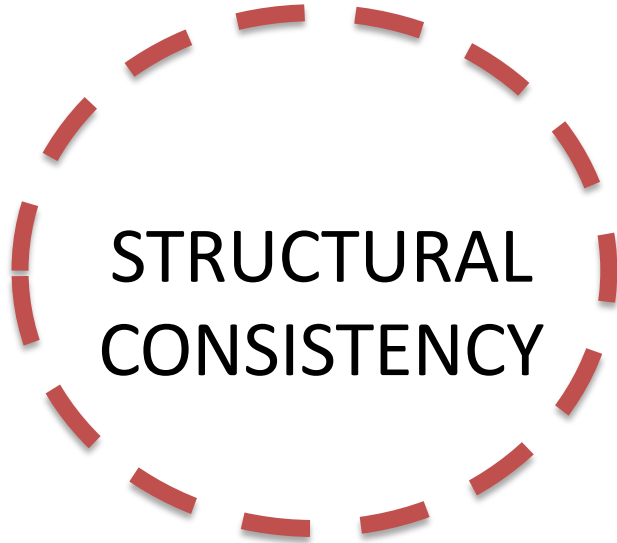
- evaluative- affective consistent
- evaluative-cognitive consistent
- affective- cognitive consistent (Chaiken et al., 1995)

aligned attitude network
-> highly connected attitude network

Traditional attitude strenght contributors

INTENSITY
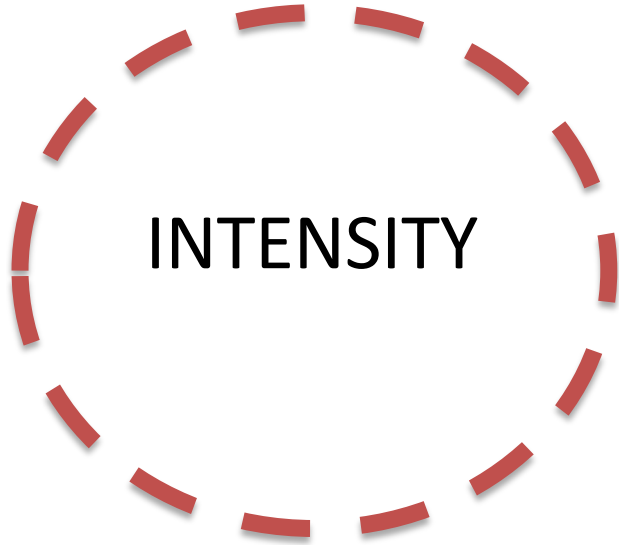
how strongly an attitude object
elicits emotional reactions
Visser et al., 2006

aligned attitude network
-> highly connected attitude
network

Traditional attitude strenght contributors

EXTREMITY

- POLARIZATION OF ATTITUDES

aligned attitude network -> highly connected attitude network

Elaboration → connectivity

- **Elaboration** imparts more substantial and complex internal structure to attitudes that are often more resistant to change
- **Expertise** is related to increased consistency among relevant beliefs, showing that elaboration and consistency are often concomitant
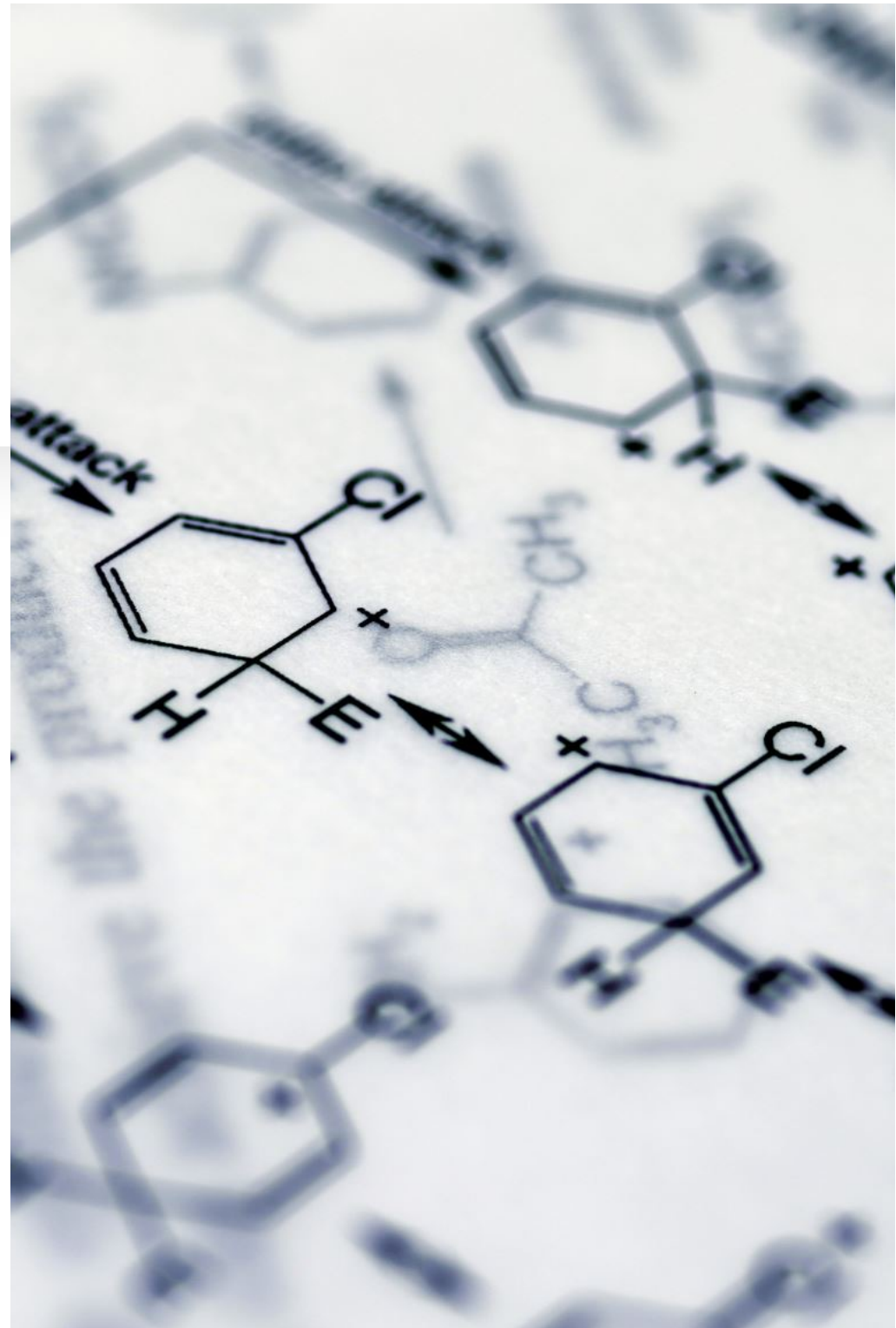
IN SUM... YOU CAN

- Attitude networks are driven by the trade-off between optimization (i.e., consistency between evaluative reactions) and accuracy.
- This trade-off results in a small-world structure, in which evaluative reactions, that are similar to each other, tend to cluster.
- Conceptualizing attitudes as networks provides
  - **testable hypotheses** for attitude change (e.g., change in an evaluative re-action will foremost affect the cluster it belongs to) and
  - a **parsimonious explanation** for the differences between strong and weak attitudes by conceptualizing
- attitude strength = connectivity of attitude networks.

Understanding Job Satisfaction in the Causal Attitude Network (CAN) Model

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CAN

- **Key Idea:** Attitudes are dynamic systems, not static latent variables.

- **Why Important?** Moves beyond traditional tripartite models (cognition, affect, behavior) to view attitudes as emergent from interactions among evaluative reactions.

- **Relevance:** Better captures attitude formation, stability, and change.

Job satisfaction is an attitude that can be defined as an individual's evaluations reflecting contentment and positive associations with their job (Locke, 1969).

Instrumental vs symbolic objects

- ## Instrumental Objects: pay and promotions

- Symbolic objects: the work itself, coworkers, supervisors

- Networks for more instrumental features (e.g., pay) show stable, high connectivity and form a single cluster, whereas networks regarding symbolic features (e.g., supervisor) increase in connectivity with exposure (i.e., job tenure) and form clusters based on valence and cognitive-affective distinction.

Instrumental vs symbolic attitudes

- **Instrumental attitude** objects have more **tangible and objective characteristics** and serve a <u>knowledge function</u> -> to maximize rewards and minimize punishment, with a primary focus on utility (Katz, 1960).

- **Symbolic attitude** objects have more **subjective, intangible features**, relying on the attitude holder's formed image of the object. Attitudes toward symbolic attitude objects serve a <u>social identity, or self-expressive function</u>, that communicates identity to others and informs the attitude holder of their place in the world

Network Structure in Attitudes toward JOB

- **Representation:**
  - **Nodes**: Evaluative reactions (e.g., "job is good").
  - **Edges**: Connections between evaluations, indicating strength and direction of influence.
- **Insights:**
  - Small-world structures: Clusters of similar evaluations with strong interconnections.
  - Symbolic features (e.g., coworkers) show more clustering than instrumental ones (e.g., pay).

Findings

- **Instrumental Features**: Form highly connected, single clusters (e.g., pay, benefits).
- **Symbolic Features**: Show increased clustering with tenure and differentiate by valence (positive/negative) and type (cognitive/affective).
- **Implications:** Symbolic facets are more dynamic and evolve with exposure.

Predicting Attitude Change

- **Centrality Metrics in CAN:**
  - **Strength Centrality:** Evaluations with many and strong connections drive change.
- **Empirical Support:** Items with higher centrality are better predictors of future turnover intentions in job satisfaction networks.

Practical Applications and Future Directions

- **Applications:**
  - Target high-centrality evaluations in interventions to drive broader attitude changes.
  - Use CAN to improve predictive power in organizational surveys.
- **Future Research:**
  - Explore network dynamics over time.
  - Investigate applicability in other domains (e.g., leadership, team attitudes).
- **Conclusion:** CAN bridges theory and practice by modeling attitudes as emergent, interconnected systems.

- The end