

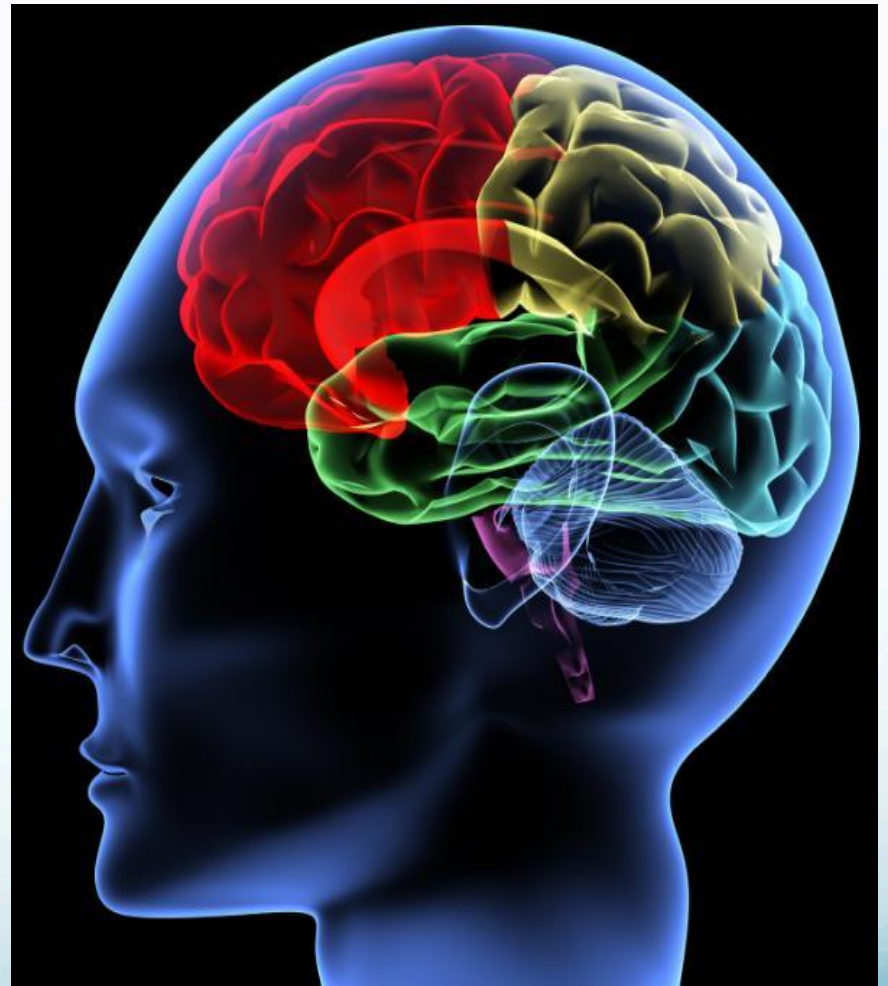
# WHAT ARE VALUES IN PUBLIC HEALTH?

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# Outline

1. Values
2. Value maps
3. Emotions
4. Vaccinations
5. Objective values



# Need for Values in Public Health

1. Policies about health care
2. Health care expenditures
3. Education about health practices
4. Professional behaviors



# What are Values?

## 3-analysis

**Exemplars:** health, education, science, human rights, integrity, creativity...

**Typical features:** positive feelings, lead to action, influence judgments,

**Explains:** judgments, behaviors

**Explained by: ?**

“Concepts are Semantic Pointers”: Blouw, Solodkin, Thagard, and Eliasmith, in press, *Cognitive Science*.

# Theories of Values

1. Preferences?
2. Abstract ideas?
3. Subjective opinions?
4. Values are mental processes that combine cognitions and emotions in the brain.  
Values are semantic pointers.

Values operate in systems that can be mapped.

# Cognitive-Affective Maps

New kind of concept map that represents values and emotions.

Nodes represent concepts and objects.

Positive: green ovals



Negative: red hexagons

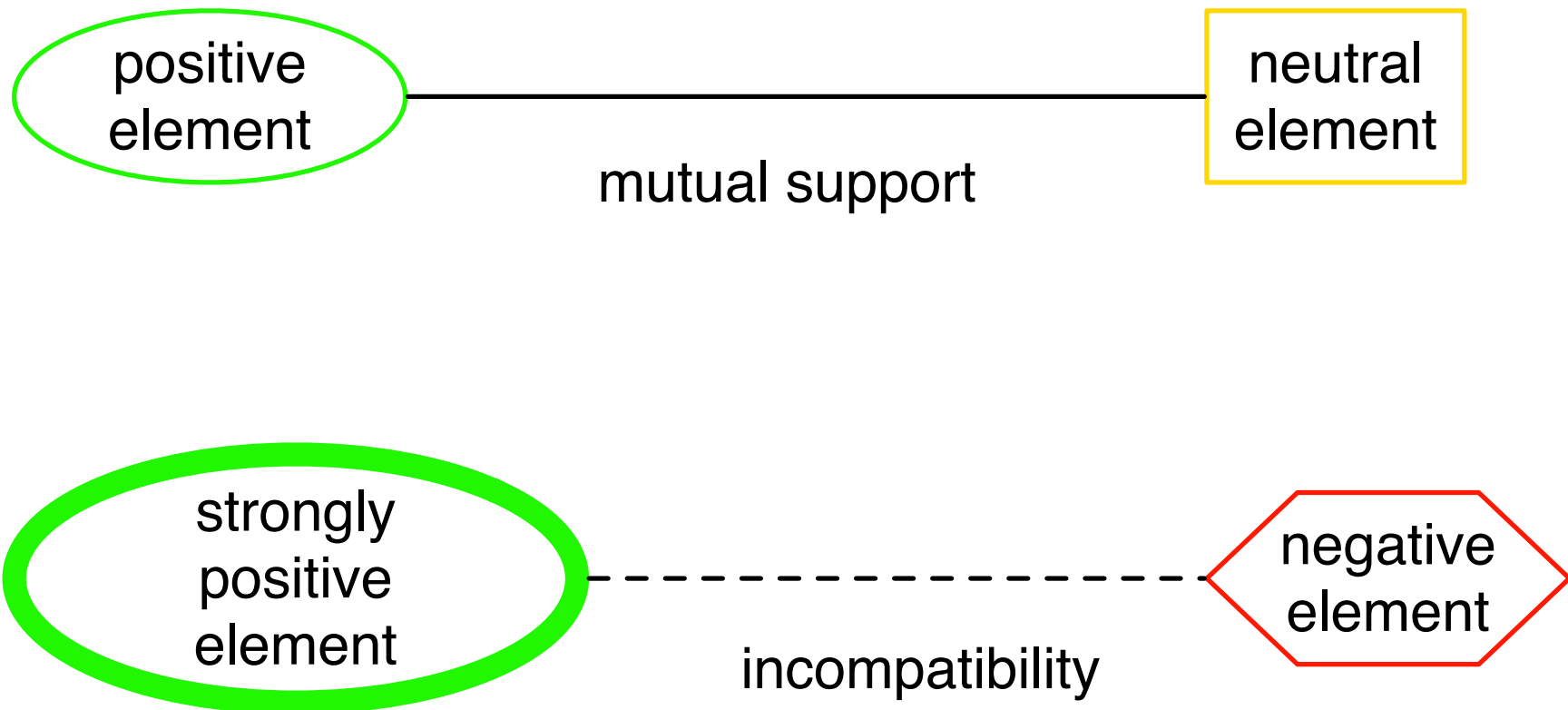


Neutral: yellow rectangles

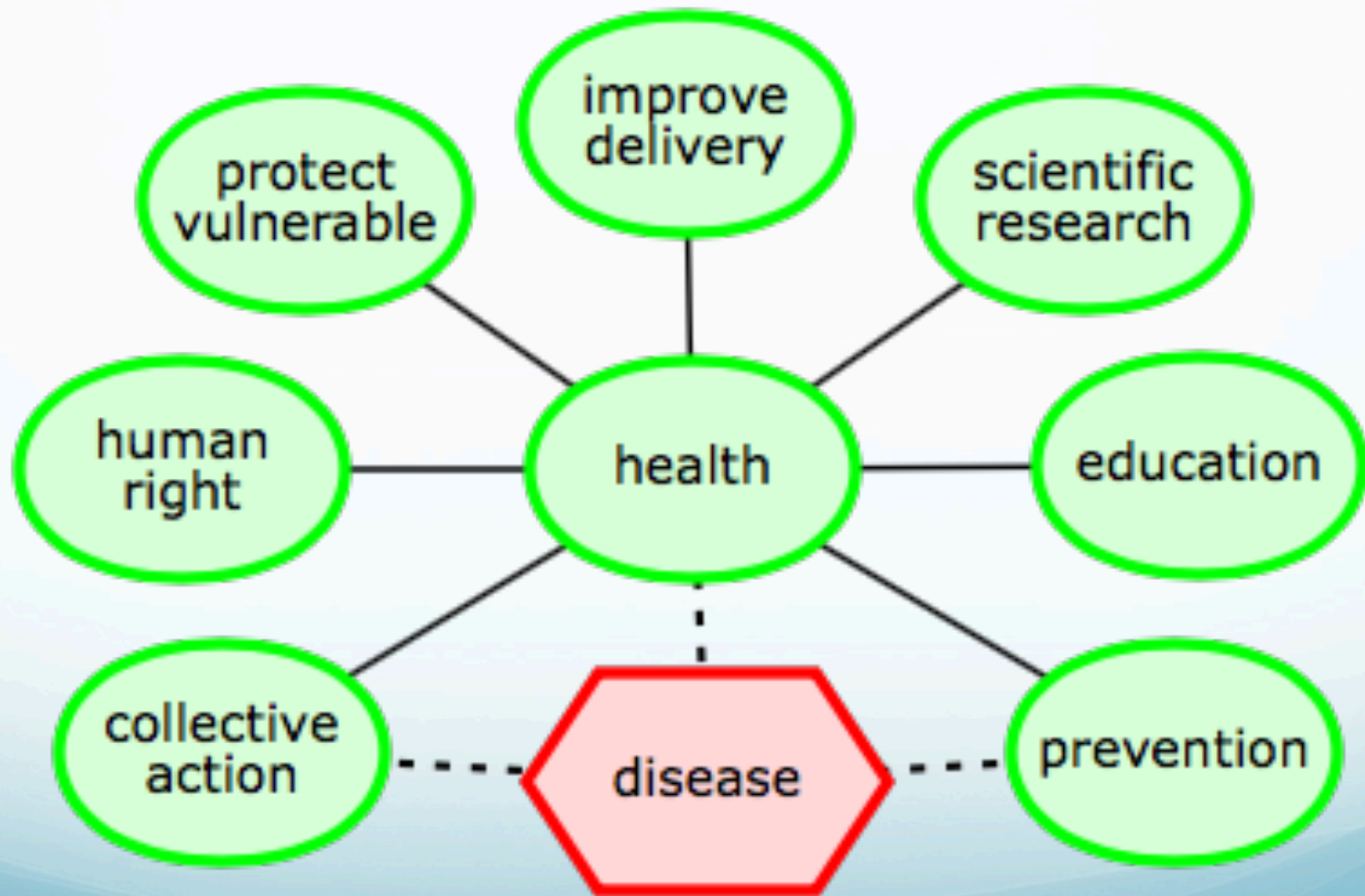


Lines represent mutual support (solid) or incompatibility (dotted).

# Cognitive-Affective Maps



# Value Map: Public Health





# Theories of Emotion

1. Emotion is a property of non-material souls.
2. Emotion is cognitive appraisal (Nussbaum, Ortony, Scherer, etc.).
3. Emotion is physiological perception & embodiment (James, Damasio, Prinz, Niedenthal, etc.).
4. Emotion is social/linguistic construction (Harre, etc.).

# 5. Emotions are Semantic Pointers

Emotion = bind (concept or belief, cognitive appraisal, physiological perception)

Example: being happy to be in Barcelona = bind (Barcelona, appraisal, physiology)

Concepts, beliefs, appraisal, and physiology are all patterns of neural firing.

Binding is by convolution as performed in the Semantic Pointer Architecture.

Thagard and Schröder, “Emotions as Semantic Pointers”, 2014.

# The New Synthesis



Thesis (1950s): Intelligence results from the processing of physical symbols (Herbert Simon, traditional AI, ACT).

Antithesis (1980s): Intelligence results from sub-symbolic processes in neural networks, operating with distributed representations.

Synthesis: Neural networks are capable of symbolic processes, using semantic pointers.

Chris Eliasmith: *How to Build a Brain*, Oxford U. Press, 2013. Eliasmith et al. (2012), *Science*.

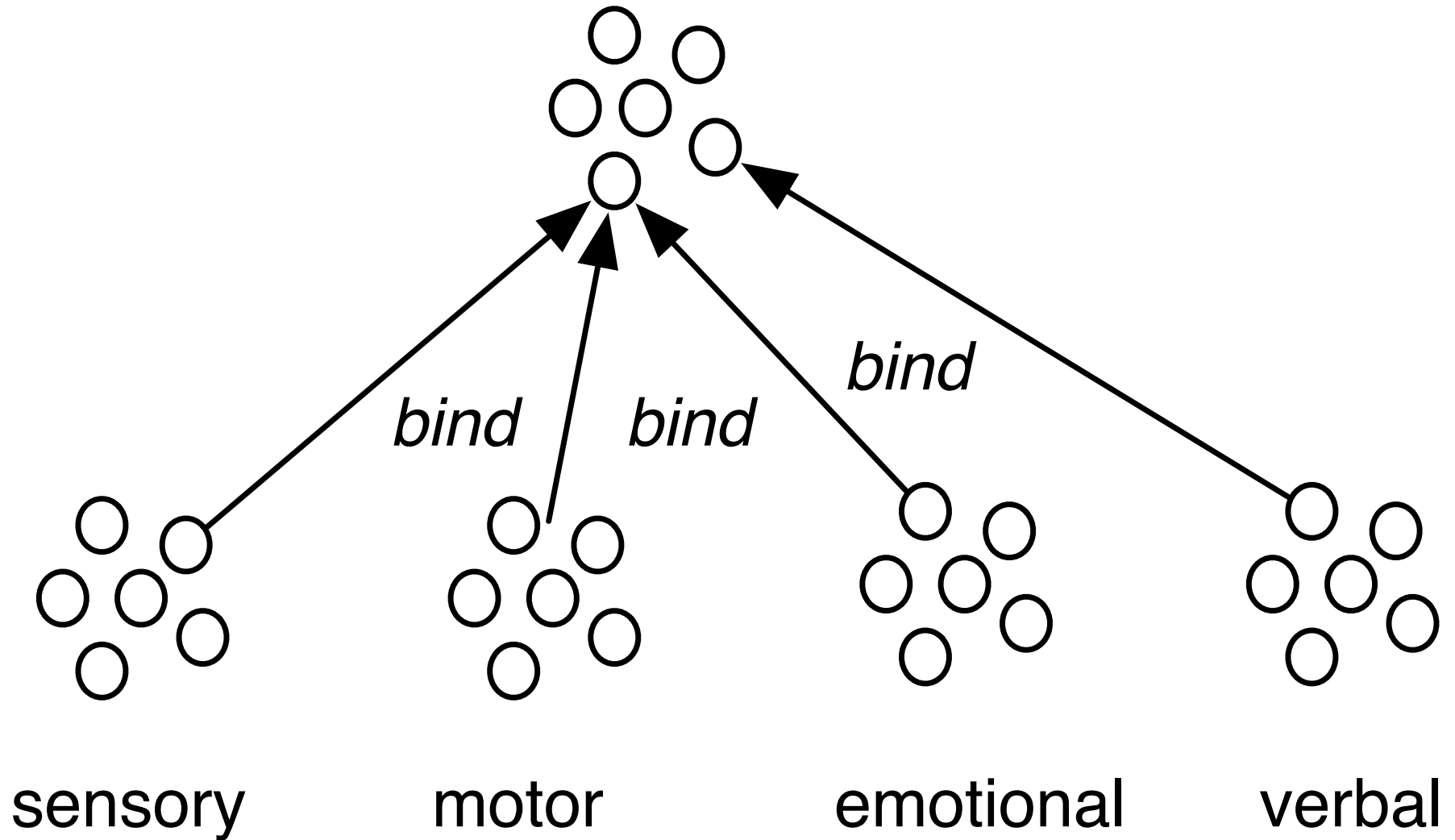
# Semantic Pointers (Eliasmith 2013)

Semantic pointers are patterns of neural firing that:

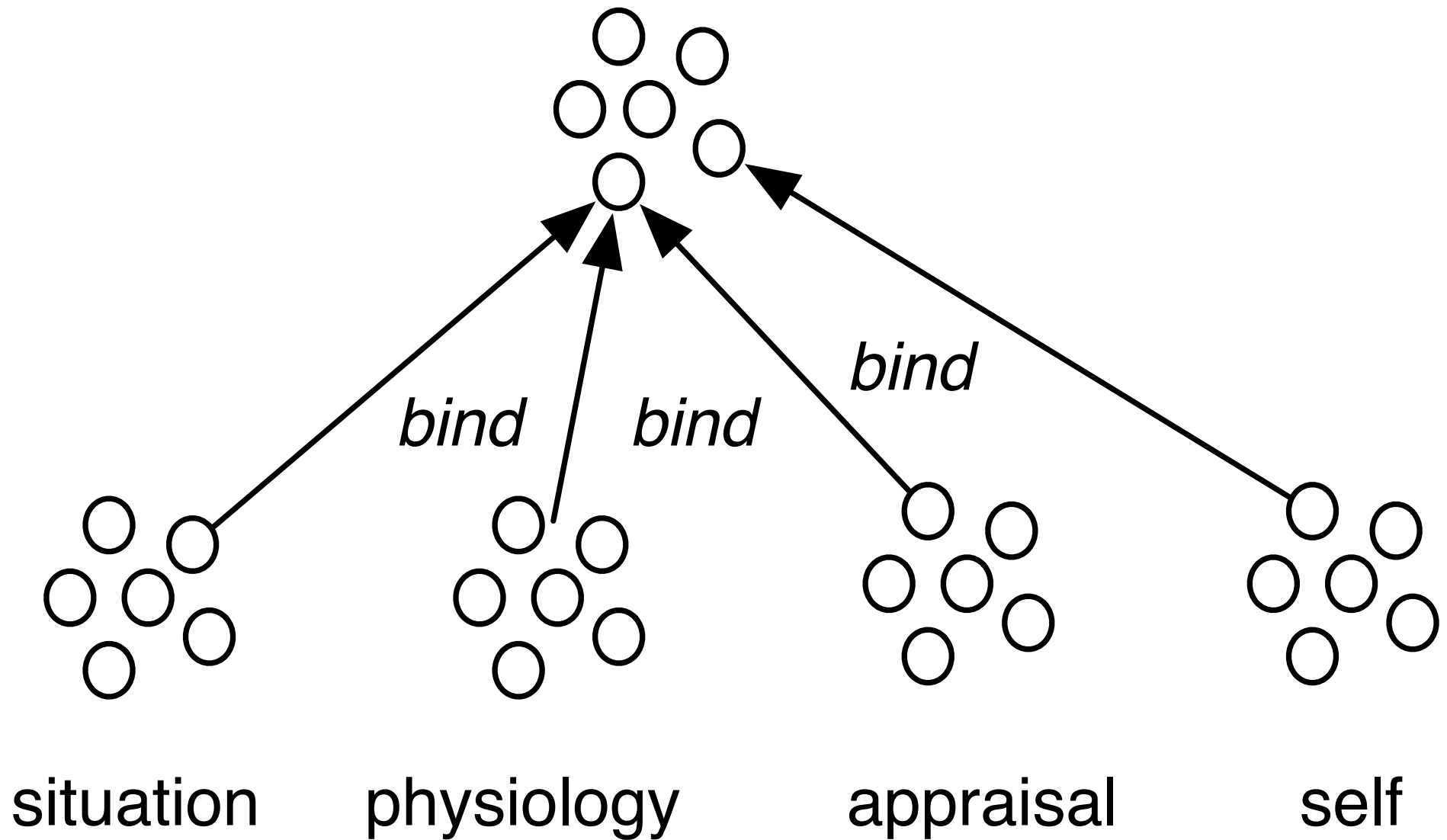
1. provide *shallow meaning* through symbol-like relations to the world and other representations;
2. expand to provide *deeper meaning* with relations to perceptual, motor, and emotional information;
3. support complex syntactic operations;
4. help to control the flow of information through a cognitive system to accomplish its goals.

# FORMATION

semantic pointer



# emotion semantic pointer



Thagard & Schröder, 2014.

# Values are Semantic Pointers

Value = bind (concept or belief, cognitive appraisal, physiological perception)

Example: valuing health = bind (health, appraisal, physiology)

Result: health is part of a system of values that provides the basis for personal decisions that fit with your own values and needs.

# Vaccination Debates

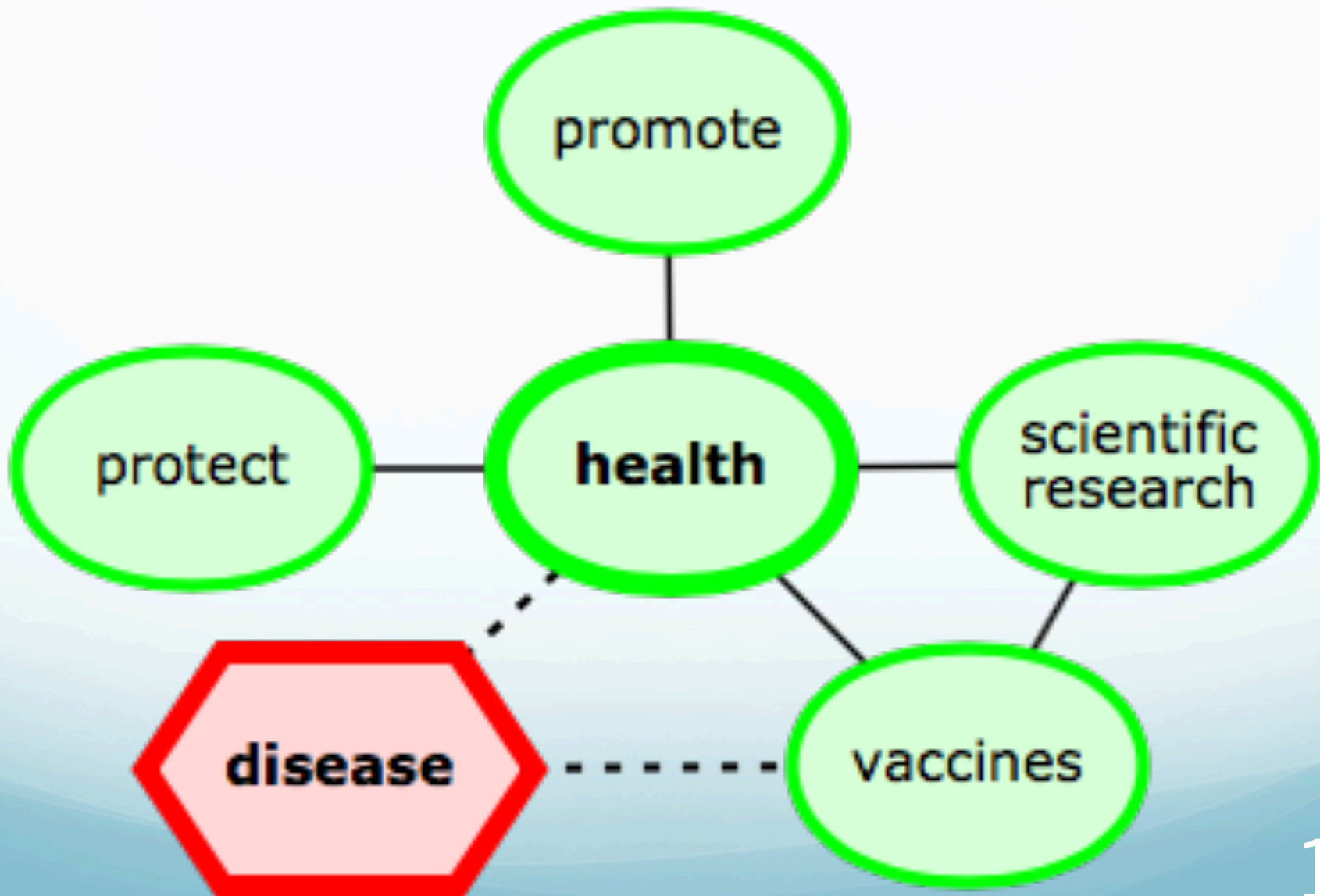
1. Should children be vaccinated?
2. Should parents be required to vaccinate their children?
3. How can parents be educated concerning the values of vaccines?







# Vaccination Defenders



# Social Cognitive-Emotional Workup of Vaccination: A

Concepts and values: vaccination, virus,  
medicine



Images: pictures

Beliefs: vaccines are untested and cause  
illnesses

Rules: vaccinate -> sick child

Multimodal rules, e.g. <shot> -> <hurt>

# Social Cognitive-Emotional Workup of Vaccination: B

Analogies: Vaccines are time bombs.

Emotions: fear, hope, pride

Inferences: coherence, motivated, fear-driven

Communication: transfer and instillation of  
semantic pointers

# Emotional Communication

Mirror neurons

Emotional contagion via mimicry

Attachment-based learning

Empathy and emotional analogy

Altruism and sympathy

Emotional cuing, e.g. anger -> guilt

Power: provide something desired, or  
threaten something feared

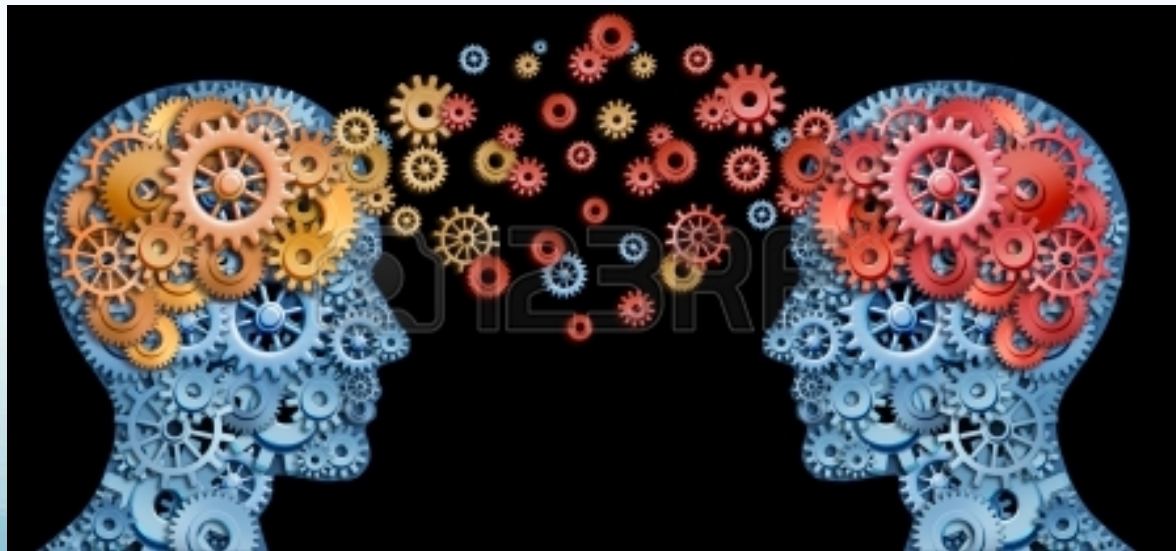
Propaganda, advertising



# Vaccination Education

Communication transfers emotional values, not just facts.

Communication is nonverbal (facial expressions, body language, tone of voice, images), not just words.



# Sources of Objectivity

1. A priori, necessary truths

2. Happiness

3. Needs

a. Biological: water, food, shelter, medical

b. Social: relatedness, competence, autonomy



Values are objective if their appraisals are based on biological and social needs.

Thagard 2010: *The Brain and the Meaning of Life*.

# Conclusions

1. Values are brain processes that integrate cognition and emotion.
2. Values form coherent systems that can be mapped.
3. Education about vaccinations is emotional as well as cognitive.
4. Values can be objective if based on needs.

