HARVARD
UNIVERSITY

Are emotions like elements or compounds?

Appraisals as a key element of emotion

Psychology 1702
The Emotional Mind

Today's agenda

- Basic and constructed emotion theory
- Appraisals

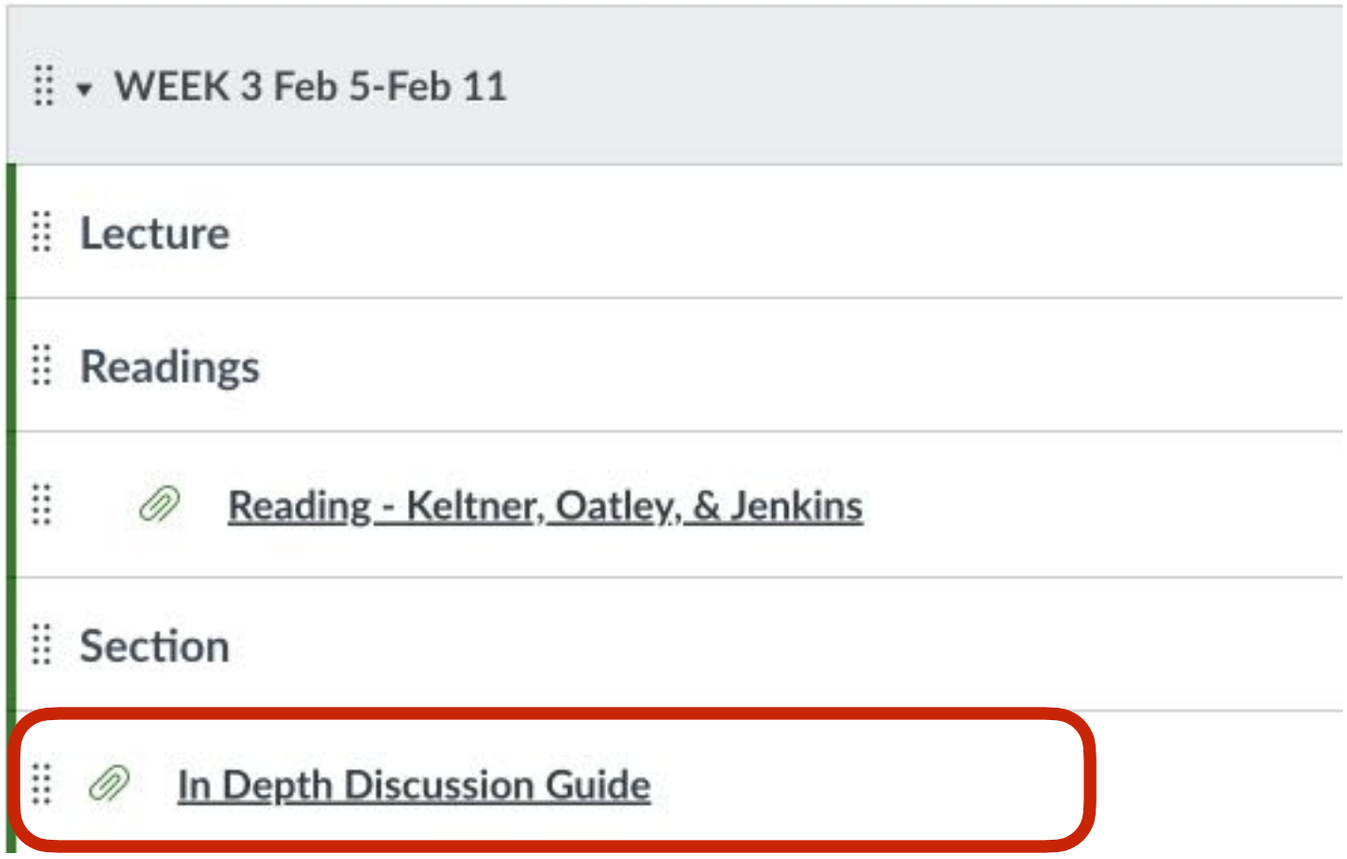
Announcements: College

- Sections start this week:

Section 1 Wednesdays 3:00 PM - 4:15 PM – William James 1305 – TF: Peter Aungle
Section 2 Thursdays 3:00 PM - 4:15 PM – William James B6 – TF: Diya Dharmendran
Section 3 Thursdays 4:30 PM - 5:45 PM – William James 303 – TF: Diya Dharmendran
Section 4 Fridays 10:30 AM - 11:45 AM – William James 1305 TF: Angelina Awad

Announcements: College

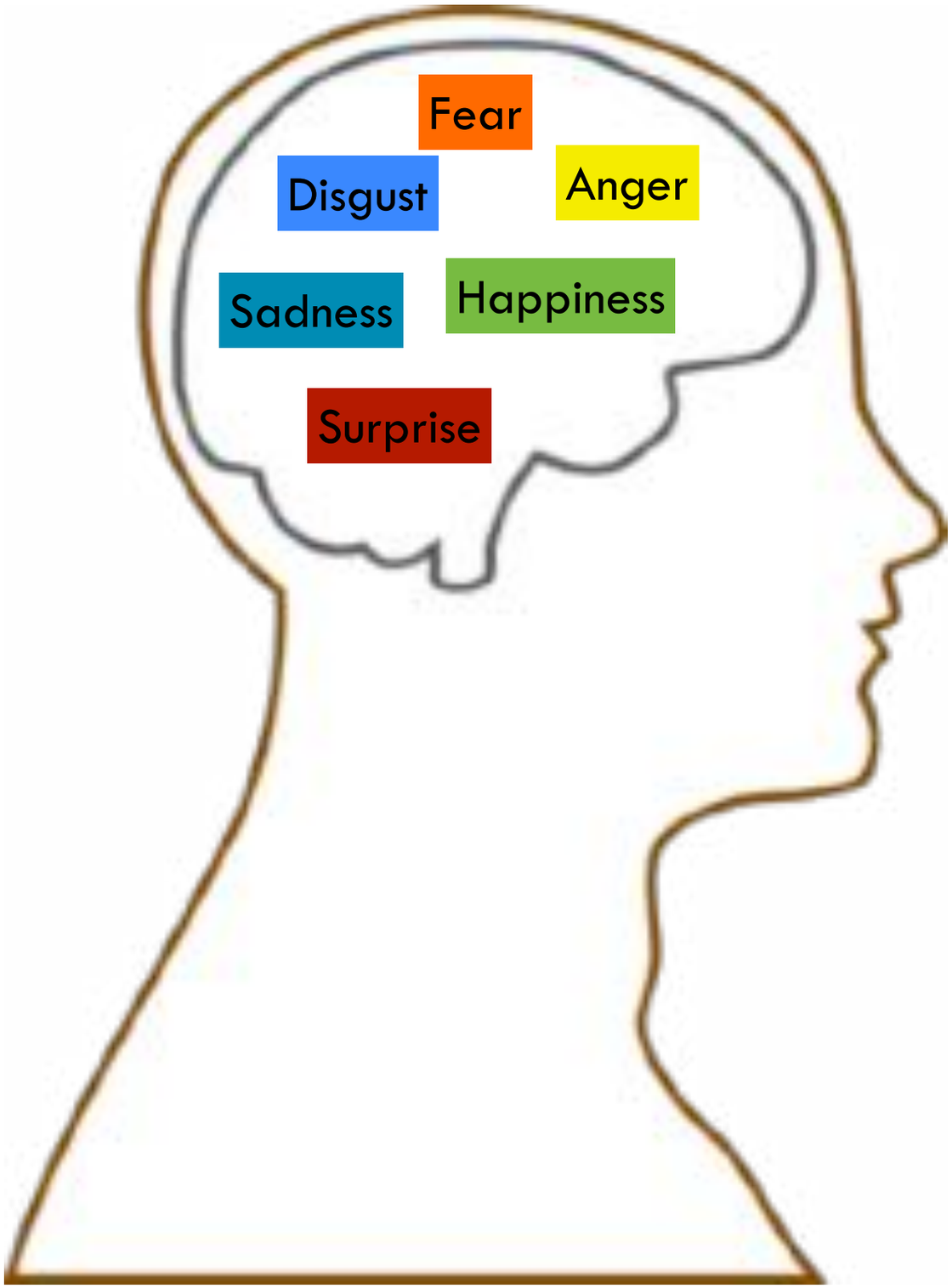
- Screen *Inside Out* + *read m*edia articles about Inside Out. Read BEFORE section!
- College course: Paragraph submissions due next Monday (upload link on Week 4's Module)



Announcements: DCE

- Screen *Inside Out* + *read m*edia articles about Inside Out.
- DCE: Discussion board is open. First written response to prompt questions due Wednesday night —> response to peers due Friday night —> final reflection due Monday night.

Basic emotion theory

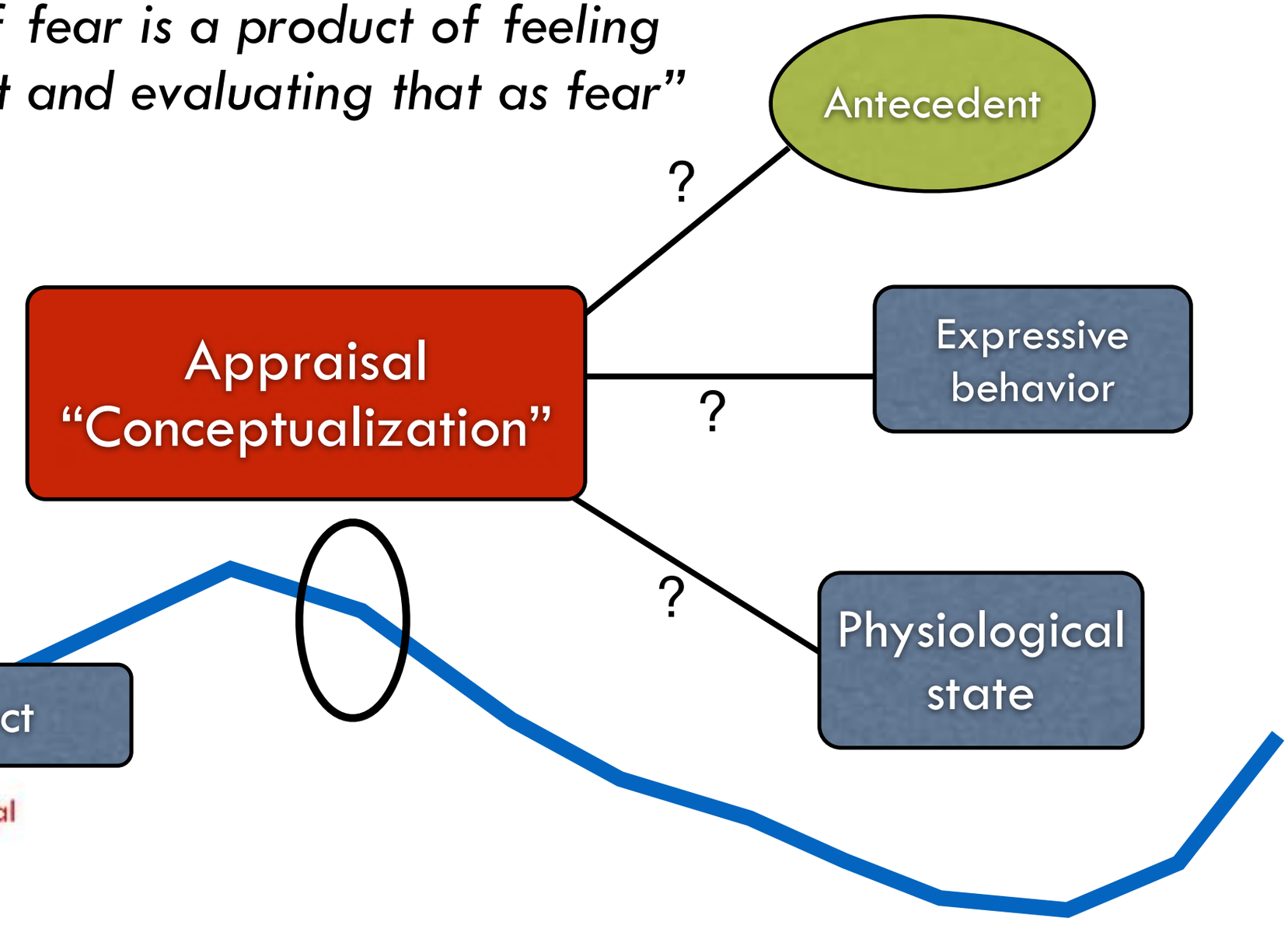


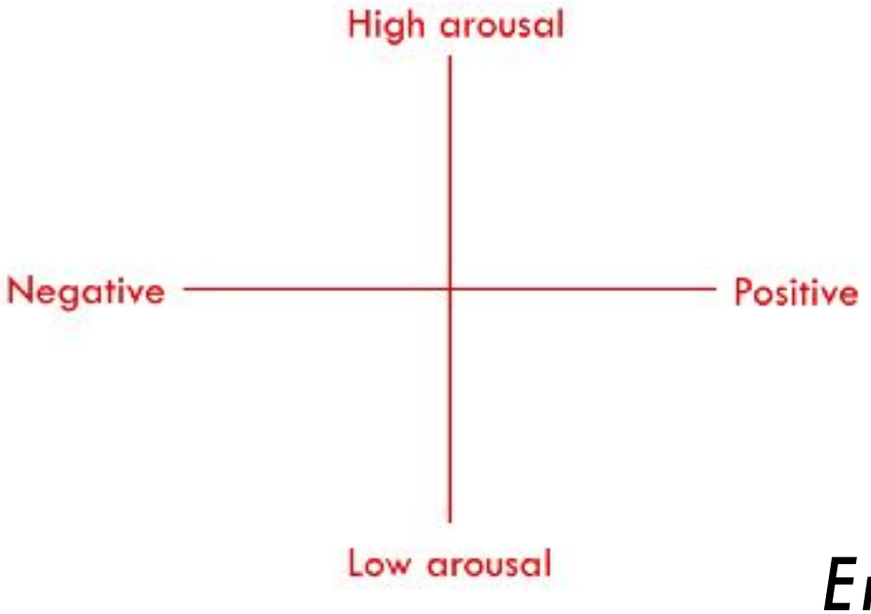
Emotions as packages or 'affect programs'

- Similar within a category
- Distinct from one another

Constructionist theory

"My experience of fear is a product of feeling intensely unpleasant and evaluating that as fear"



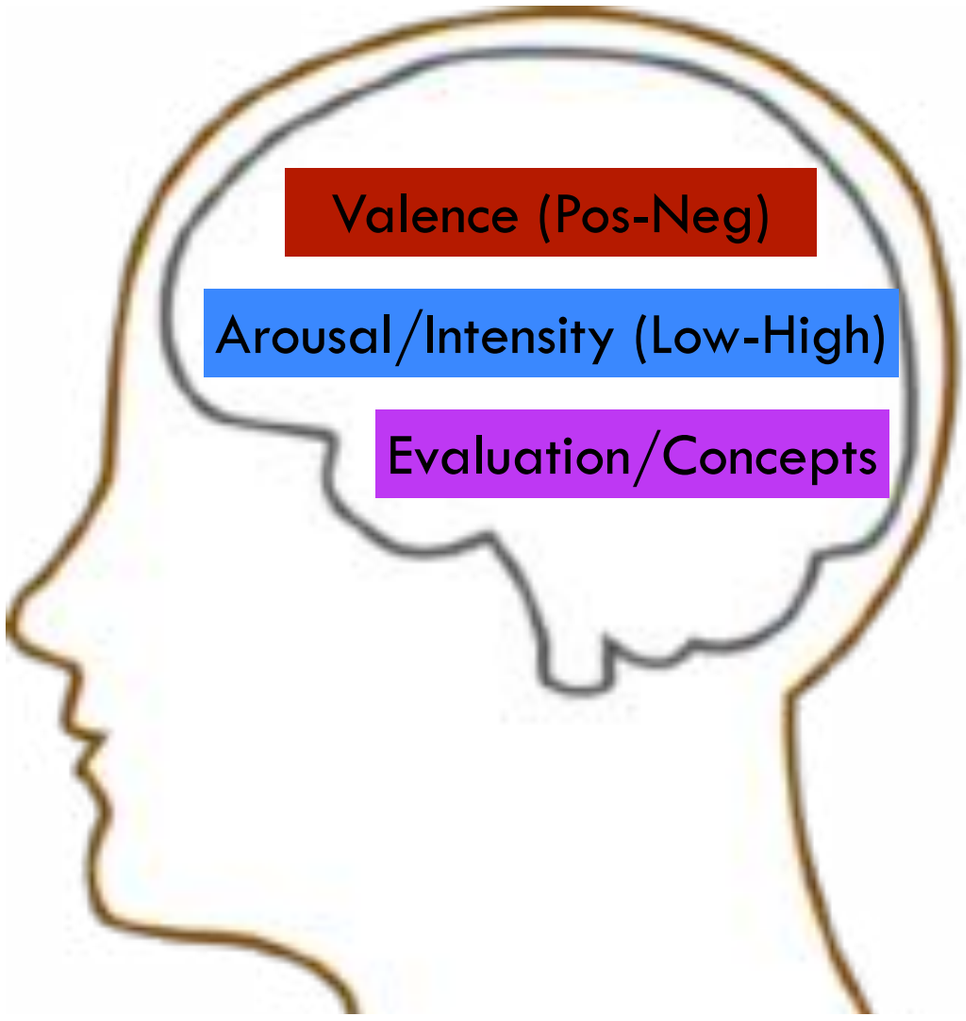


Emotions emerge from conceptualizing core affect

Basic emotion theory

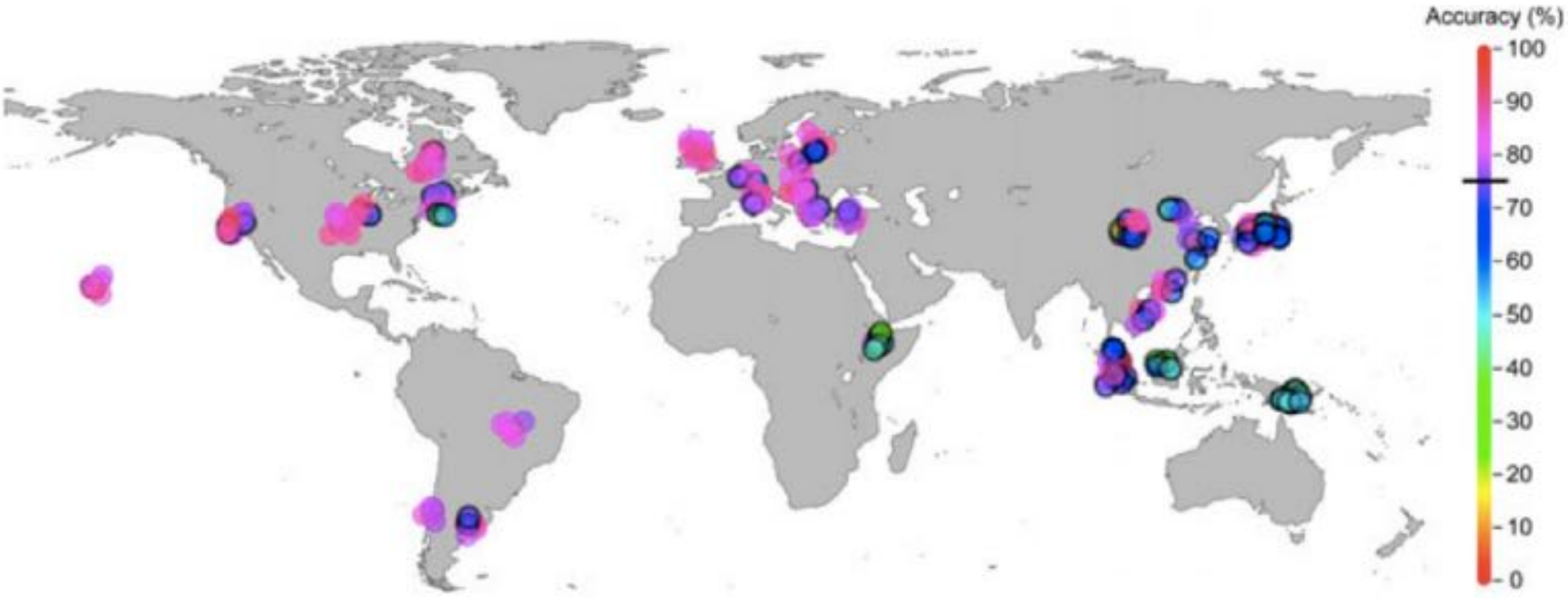
1. Universal/learning not necessary
2. Elemental i.e., Similar within a category and distinct from one another
3. Category transitions (not blends)

Constructionist emotion theory



4. Made up of even more fundamental dimensions (like valence and intensity)
5. Guided by concepts we have
6. Experienced as blends (infinite number of combinations)

Recognition of the "6 basic expressions" across the world



Black outlines: <75%

Jack, 2013

Similar study to Ekman, different method

Hadza hunter gatherers (Tanzania)

Hadza

laughing (26)
happy (19)
good (6)
angry (2)
no problem (2)

US

happy (34)
confident (3)
pleased (3)
conniving (2)
content (2)
something (2)

Hadza

upset (9)
angry (7)
something (6)
crying (5)
ill (4)
unhappy (4)
bad (3)
grieve (3)
happy (3)
see (3)
grumble (2)

US

disgusted (30)
confused (4)
afraid (3)
disappointed (2)
sad (2)
scared (2)
shocked (2)

Gendron et al., 2020

Similar study to Ekman, different method

Hadza hunter gatherers (Tanzania)

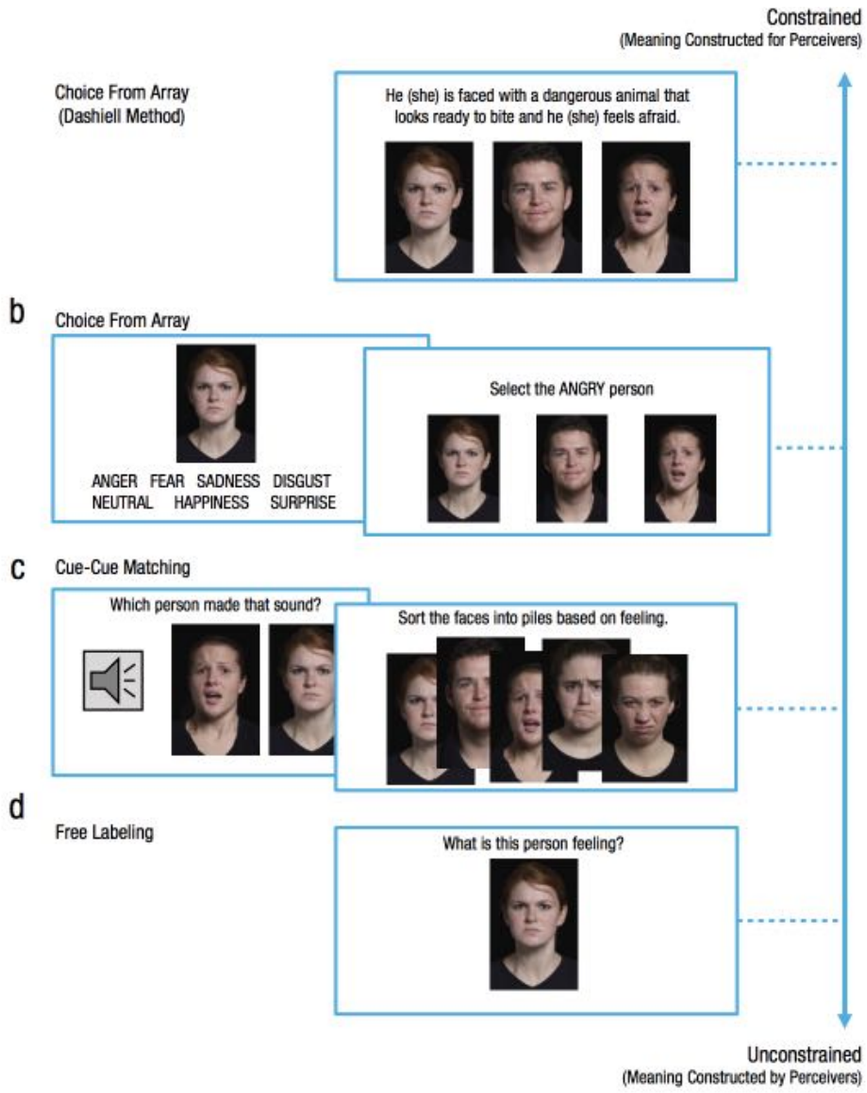
Hazda
angry (9)
something (8)
bad (7)
laughing (7)
see (6)
upset (6)
surprised (5)
happy (4)
afraid (3)
crying (3)
thinking (3)
good appearance (2)
IDK (2)
ill (2)
questioning (2)

US
scared (14)
afraid (9)
nervous (4)
shocked (4)
disgusted (3)
startled (3)
surprised (3)
concerned (2)
grossed out (2)
worried (2)

Gendron et al., 2020

I *Universal?*

Claims of universality might be artificially inflated due to assessment method



More evidence for universality

Less evidence for universality

Universality Reconsidered: Diversity in Making Meaning of Facial Expressions

Maria Gendron[1], Carlos Crivelli[2], and Lisa Feldman Barrett[1]
[1]Department of Psychology, Northeastern University; and [2]School of Applied Social Sciences, De Montfort University

Current Directions in Psychological Science
2018, Vol. 27(4) 211–219

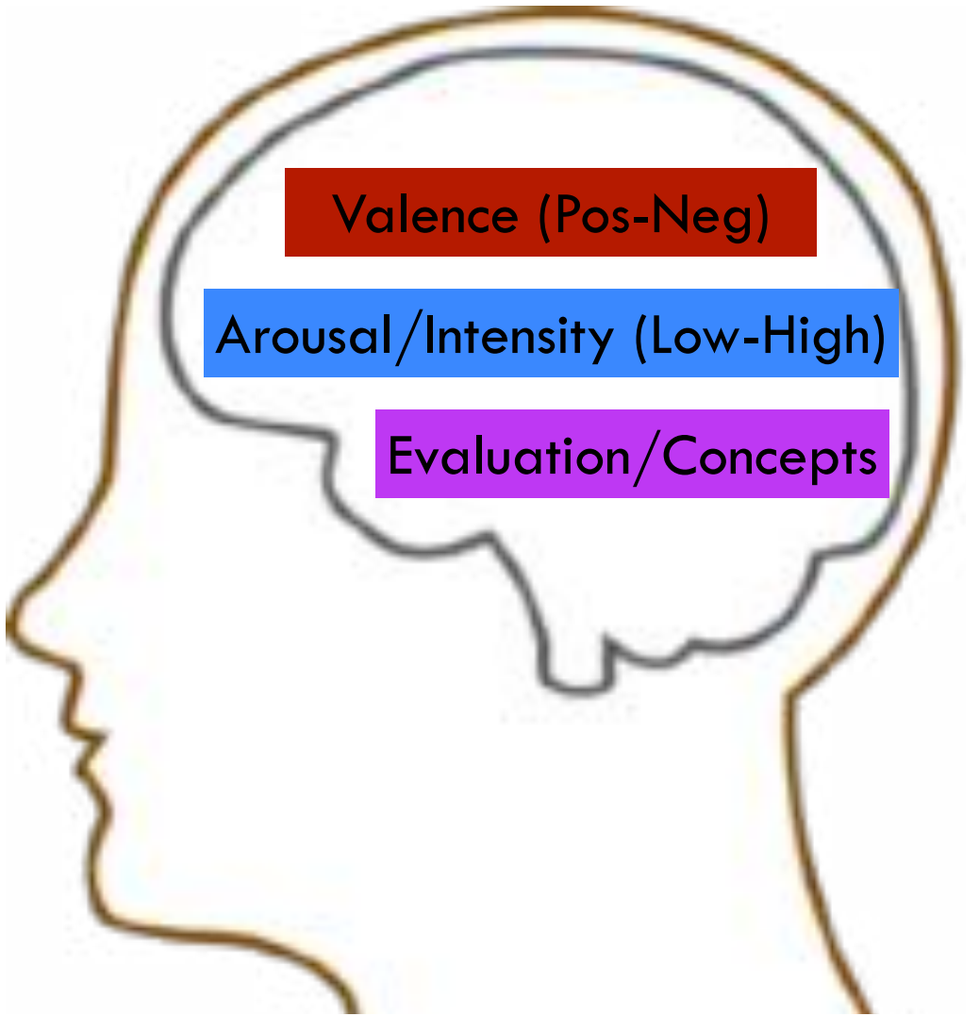
DOI: 10.1177/0963721417746794
www.psychologicalscience.org/CDPS
SAGE

Gendron et al., 2018

Basic emotion theory

1. Universal ?? Evidence on both sides
2. Elemental i.e., Similar within a category and distinct from one another
3. Category transitions (not blends)

Constructionist emotion theory



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2

Elemental i.e., Similar within a category and distinct from one another

John Cacioppo
1970s to 2018

DBP, diastolic blood pressure; BV, blood volume (includes head blood volume); CO, cardiac output (includes average height of IJ wave × pulse rate); LVET, left ventricular ejection time; PEP, preejection period; PTT, pulse transit time; SBP, systolic blood pressure; HR, heart rate; RSP-Dur, respiration duration (includes respiration rate, respiratory period, postinspiratory pause, expiratory time, inspiratory time, total cycle duration, respiratory intercycle interval); FPV, finger pulse volume (includes finger pulse volume amplitude, finger blood volume); FT, finger temperature; RSP-Amp, respiratory amplitude (includes respiratory depth, tidal volume, increase in functional capacity); SCL, skin conductance level (includes log conductance change, log palmar conductance); NNSCR, number of nonspecific skin conductance responses (includes number of galvanic skin responses, rate of galvanic skin responses); MVT, movement; SV, stroke volume (includes ballistocardiogram); FCT, face temperature; EMG, muscle activity (includes number of muscle tension peaks, maximum muscle tension increase); HT, hand temperature; TPR, total peripheral resistance (includes peripheral vascular resistance); SBF-Nod, nonoscillatory duration of the skin blood flow response; EDR-Dur, electrodermal response duration.

"In sum, the meta-analyses indicated that even a limited set of discrete emotions such as happy, sad, fear, anger, and disgust **cannot be fully differentiated by visceral activity** alone."

Cacioppo et al., 2000

2

Elemental i.e., Similar within a category and distinct from one another

Emotion Fingerprints or Emotion Populations? A Meta-Analytic Investigation of Autonomic Features of Emotion Categories

Erika H. Siegel
University of California, San Francisco

Molly K. Sands
Northeastern University

Wim Van den Noortgate
University of Leuven

Paul Condon, Yale Chang, and Jennifer Dy
Northeastern University

Karen S. Quigley
Edith Nourse Rogers Memorial VA Hospital, Bedford, Massachusetts, and Northeastern University

Lisa Feldman Barrett
Northeastern University and Massachusetts General Hospital/ Harvard Medical School, Boston, Massachusetts

The classical view of emotion hypothesizes that certain emotion categories have a specific autonomic nervous system (ANS) "fingerprint" that is distinct from other categories. Substantial ANS variation within a category is presumed to be epiphenomenal. The theory of constructed emotion hypothesizes that an emotion category is a population of context-specific, highly variable instances that need not share an ANS fingerprint. Instead, ANS variation within a category is a meaningful part of the nature of emotion. We present a meta-analysis of 202 studies measuring ANS reactivity during lab-based inductions of emotion in nonclinical samples of adults, using a random effects, multilevel meta-analysis and multivariate pattern classification analysis to test our hypotheses. We found increases in mean effect size for 59.4% of ANS variables across emotion categories, but the pattern of effect sizes did not clearly distinguish 1 emotion category from another. We also observed significant variation within emotion categories; heterogeneity accounted for a moderate to substantial percentage (i.e., $I^2 \geq 30\%$) of variability in 54% of these effect sizes. Experimental moderators epiphenomenal to emotion, such as induction type (e.g., films vs. imagery), did not explain a large portion of the variability. Correction for publication bias reduced estimated effect sizes even further, increasing heterogeneity of effect sizes for certain emotion categories. These findings, when considered in the broader empirical literature, are more consistent with population thinking and other principles from evolutionary biology found within the theory of constructed emotion, and offer insights for developing new hypotheses to understand the nature of emotion.

Not distinct across categories →

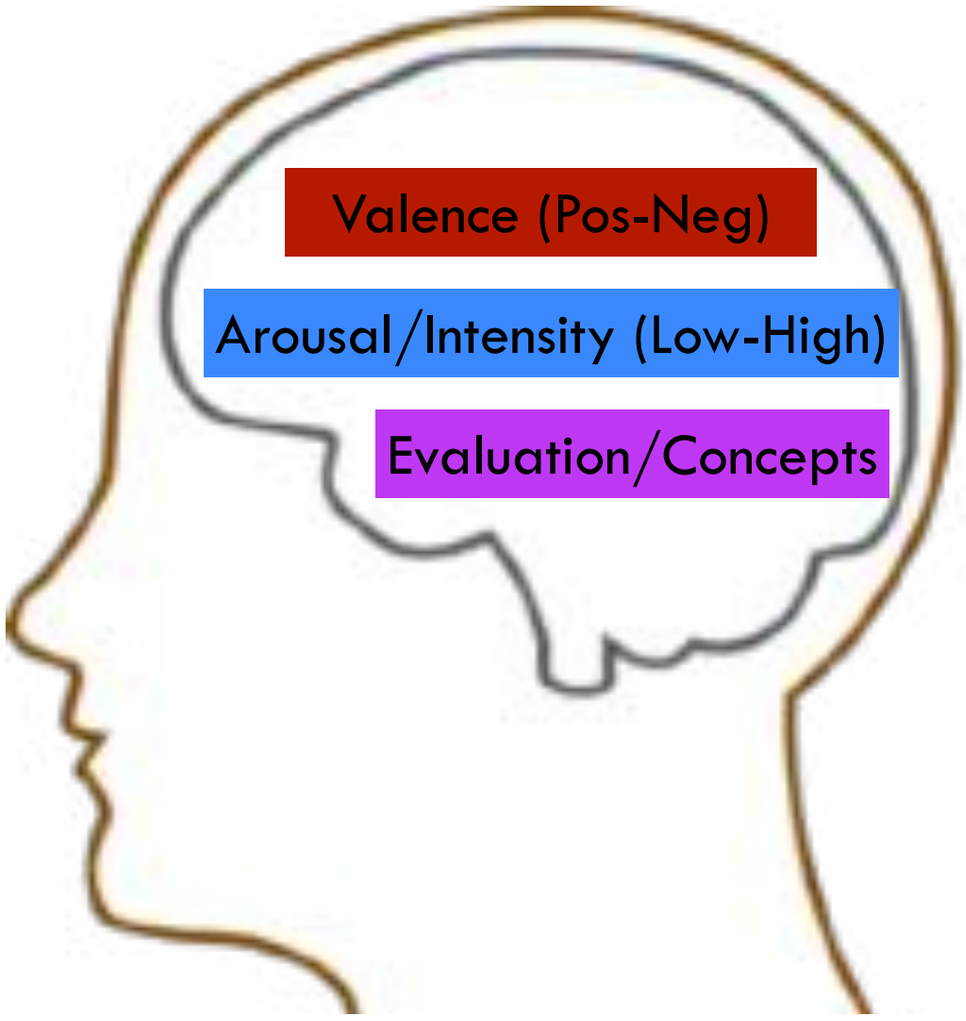
Variable within categories →

Siegel et al., 2018

Basic emotion theory

1. Universal ?? Evidence on both sides
2. Elemental i.e., Similar within a category and distinct from one another ?? Not for autonomic resp…
3. Category transitions (not blends)

Constructionist emotion theory

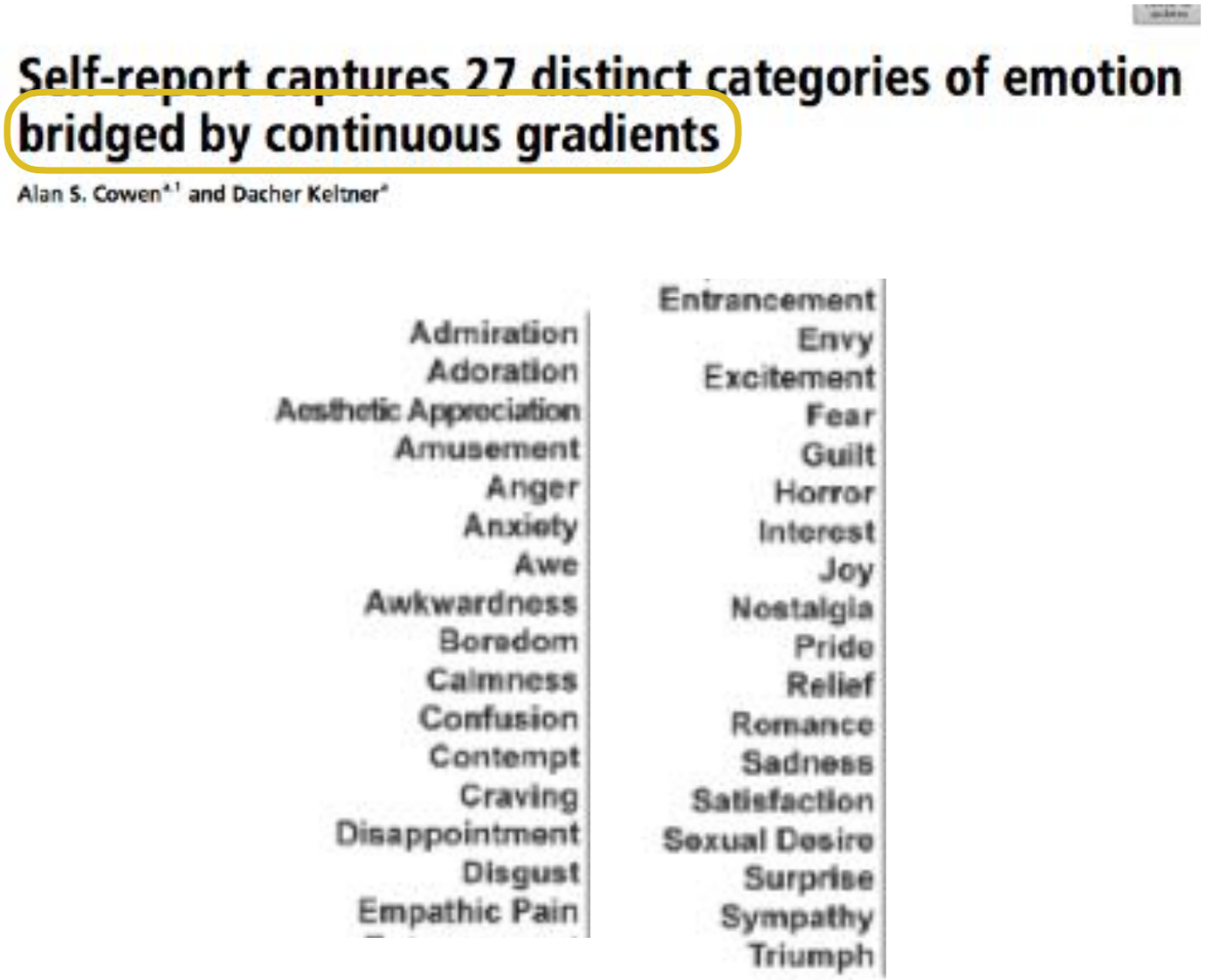


4. Made up of even more fundamental dimensions (like valence and intensity)
5. Guided by concepts we have
6. Experienced as blends (infinite number of combinations)

How do people *experience* their emotions? With sharp boundaries or as blends?

Method:

- 2,185 wide ranging, evocative video clips
- Rated by thousands of people on every emotion term that could be brainstormed or derived from theories
- >324,000 ratings in total
- Submitted to mathematical modeling to recover the underlying structure
  - Could show sharp or blended boundaries
  - Any # terms could be deemed unique
  - Any similarity space possible



Self-report captures 27 distinct categories of emotion bridged by continuous gradients

Alan S. Cowen[a,1] and Dacher Keltner[a]

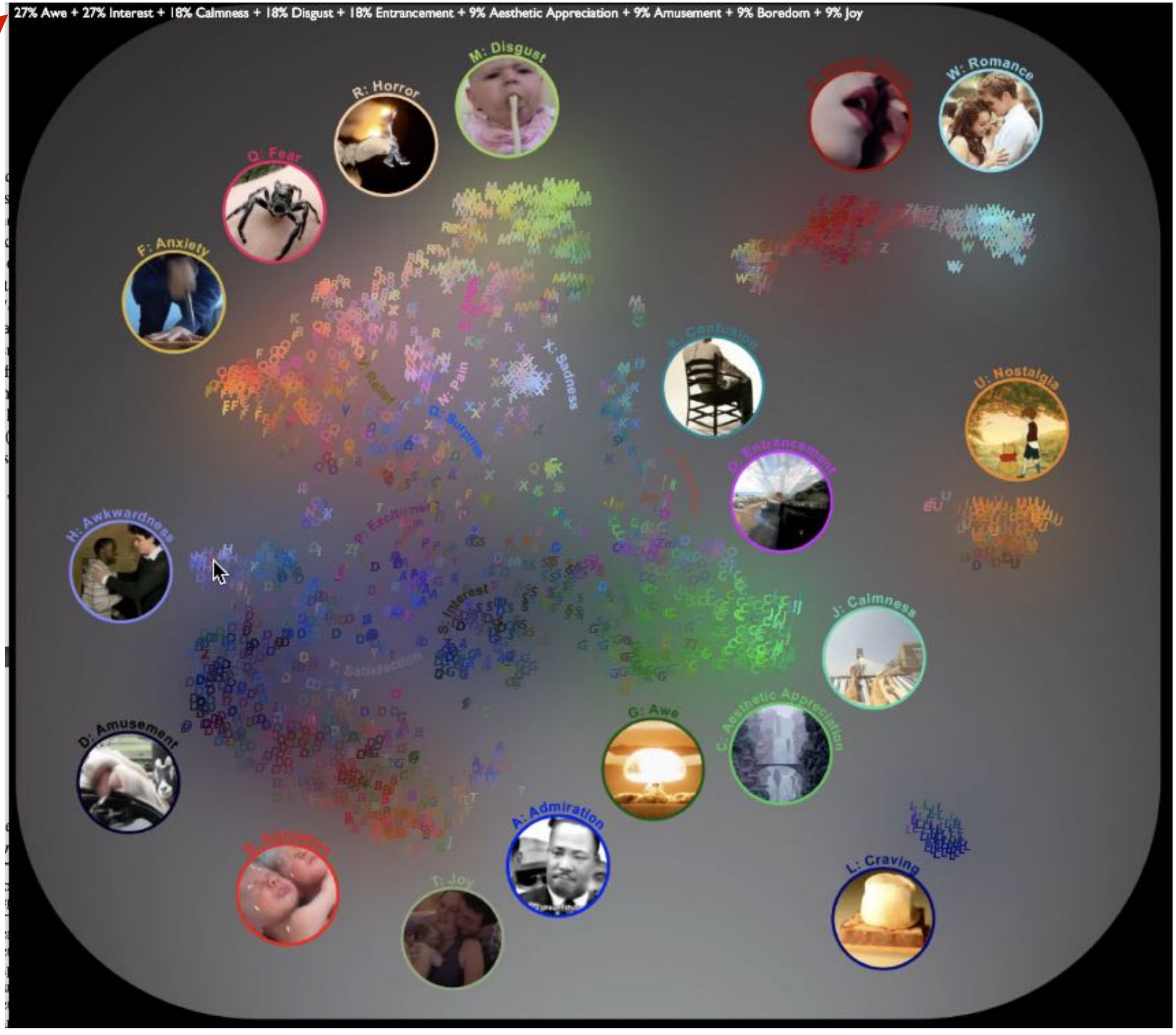
Admiration
Adoration
Aesthetic Appreciation
Amusement
Anger
Anxiety
Awe
Awkwardness
Boredom
Calmness
Confusion
Contempt
Craving
Disappointment
Disgust
Empathic Pain
Entrancement
Envy
Excitement
Fear
Guilt
Horror
Interest
Joy
Nostalgia
Pride
Relief
Romance
Sadness
Satisfaction
Sexual Desire
Surprise
Sympathy
Triumph

Cowan & Keltner, 2017, *PNAS*

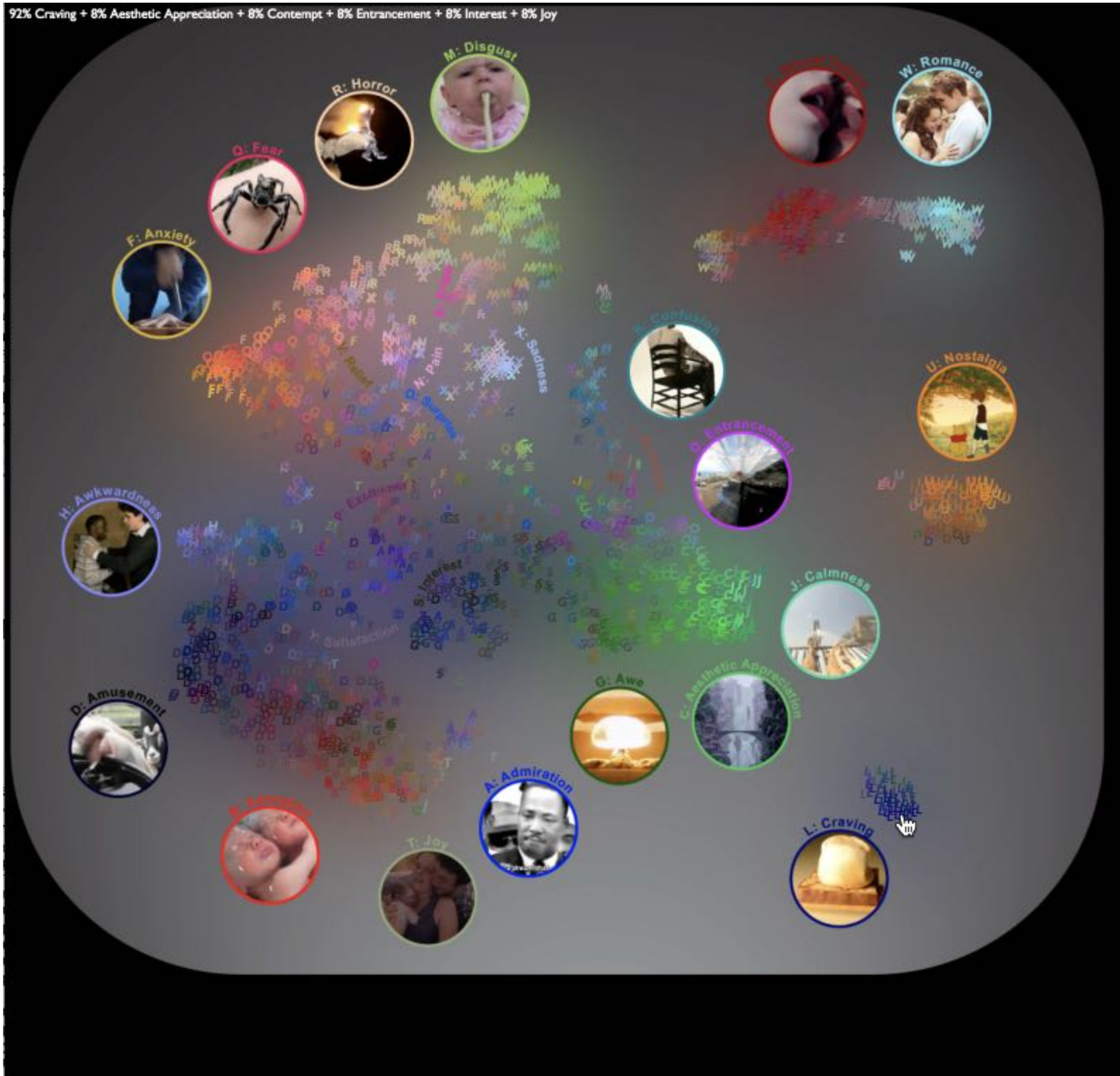
3 *Category transitions*

Cowan & Keltner, 2017, *PNAS*

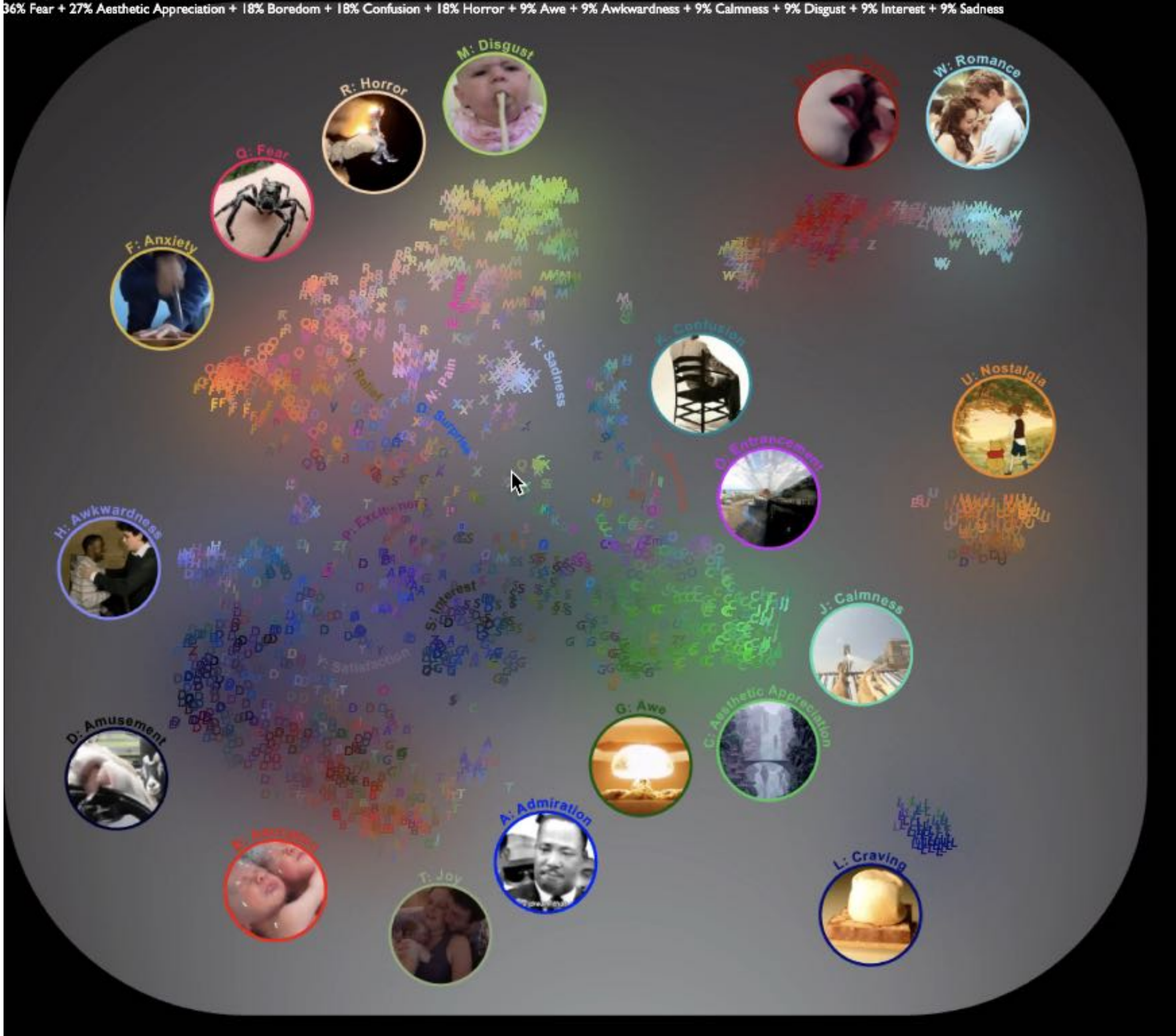
Blends!


27% Awe + 27% Interest + 18% Calmness + 18% Disgust + 18% Entrancement + 9% Aesthetic Appreciation + 9% Amusement + 9% Boredom + 9% Joy
M: Disgust
R: Horror
O: Fear
F: Anxiety
W: Romance
U: Nostalgia
H: Awkwardness
D: Amusement
A: Admiration
G: Awe
C: Aesthetic Appreciation
J: Calmness
L: Craving
X: Sadness
N: Pain
Q: Surprise
S: Interest
T: Joy

Much less blending for a couple of categories (craving)



More blends


36% Fear + 27% Aesthetic Appreciation + 18% Boredom + 18% Confusion + 18% Horror + 9% Awe + 9% Awkwardness + 9% Calmness + 9% Disgust + 9% Interest + 9% Sadness
M: Disgust
R: Horror
Q: Fear
F: Anxiety
W: Romance
X: Sadness
N: Pain
U: Nostalgia
E: Confusion
H: Awkwardness
S: Interest
J: Calmness
G: Awe
C: Aesthetic Appreciation
D: Amusement
A: Admiration
T: Joy
L: Craving

- The boundaries between categories is not abrupt (emotional experience better characterized by blends)

"…most categories of emotion share continuous gradients with at least one other category. These correspond to smooth gradients in affective meaning, as one can see in Fig. 2A, where we observe gradients linking experiences of admiration, awe, and aesthetic appreciation; anxiety, fear, horror, and disgust; and a number of other emotion categories. These findings suggest ***a far more complex distribution of emotional states*** *than the clustered organization hinted at in discrete and basic theories."*

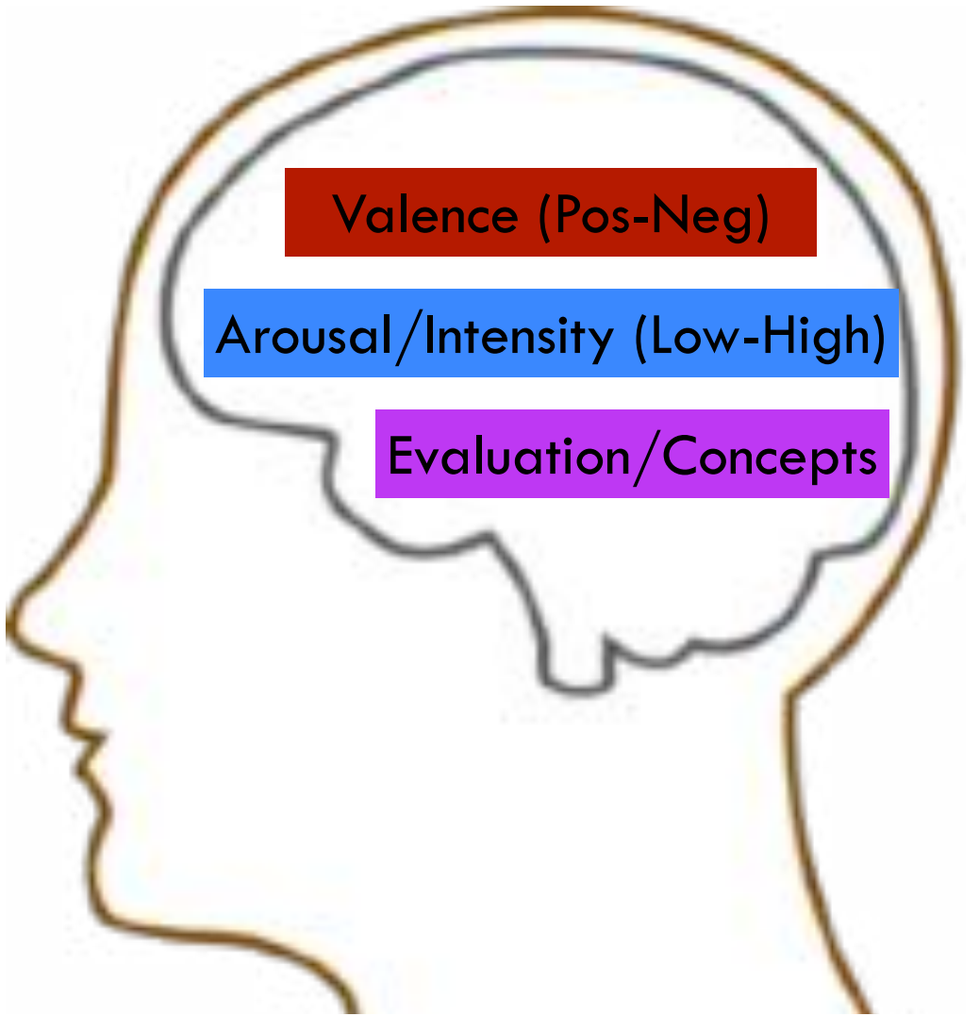
https://s3-us-west-1.amazonaws.com/emogifs/map.html

Cowan & Keltner, 2017, *PNAS*

Basic emotion theory

1. Universal ?? Evidence on both sides
2. Elemental i.e., Similar within a category and distinct from one another ?? Not for autonomic resp…
3. - Category transitions (not blends) Data favor blends

Constructionist emotion theory



4. Made up of even more fundamental dimensions (like valence and intensity)
5. Guided by concepts we have
6. Experienced as blends (infinite number of combinations) Data favor blends

4 *Made up of even more fundamental dimensions (like valence and intensity)*

Do people organize their emotional experiences according to *valence* and *intensity*, rather than categories?

- Student responses to terrorist attacks of 9/11
  - "My first reaction was terrible sadness. But the second reaction was that of anger, because you can't do anything with the sadness."
  - "I felt a bunch of things I couldn't put my finger on. Maybe anger, confusion, fear. I just felt bad on September 11th, Really bad."

Emotional granularity

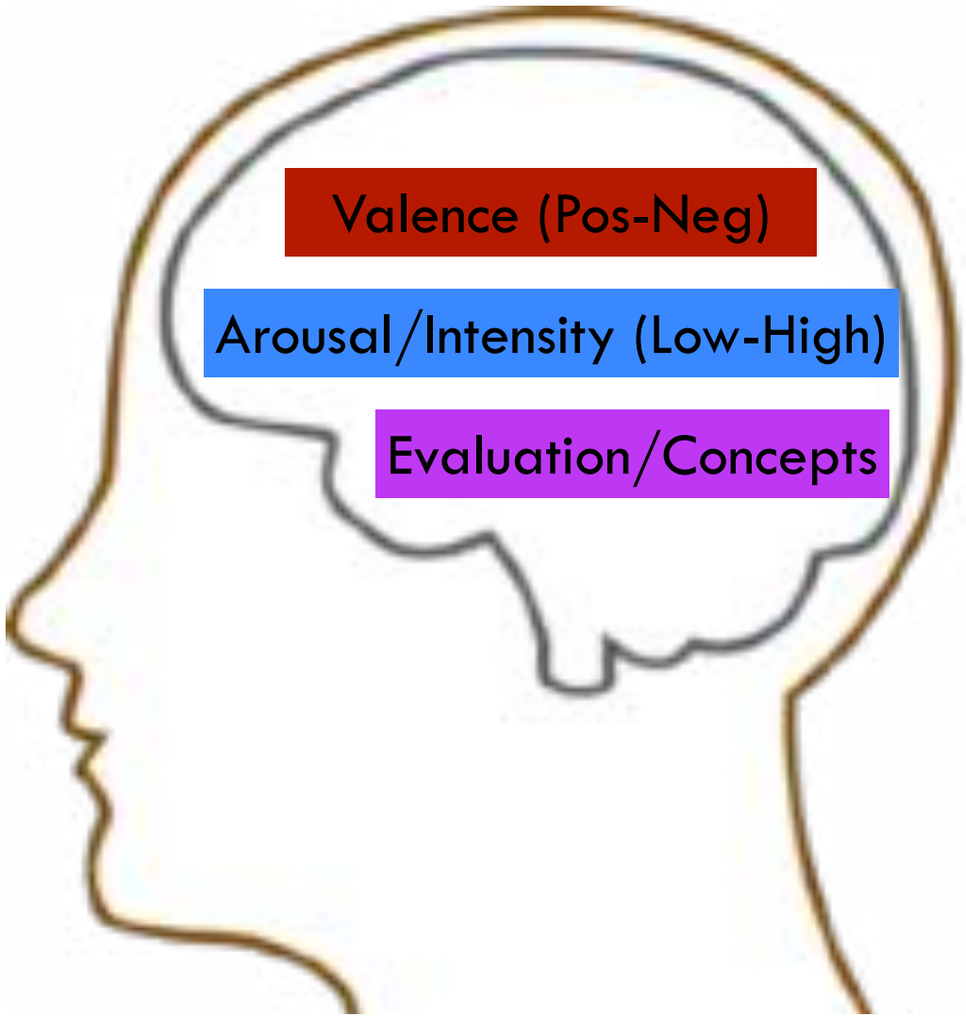
- Whereas some people describe their emotions in discrete terms, many demonstrate valence-focus
- Since valence-focus is characteristic of all individuals, valence exists at a *more basic* level than discrete emotions.

Feldman Barrett 2006

Basic emotion theory

1. Universal ?? Evidence on both sides Elemental i.e., Similar within a category and distinct from one another ?? Not for autonomic resp…
2.
3. - Category transitions (not blends) Data favor blends

Constructionist emotion theory



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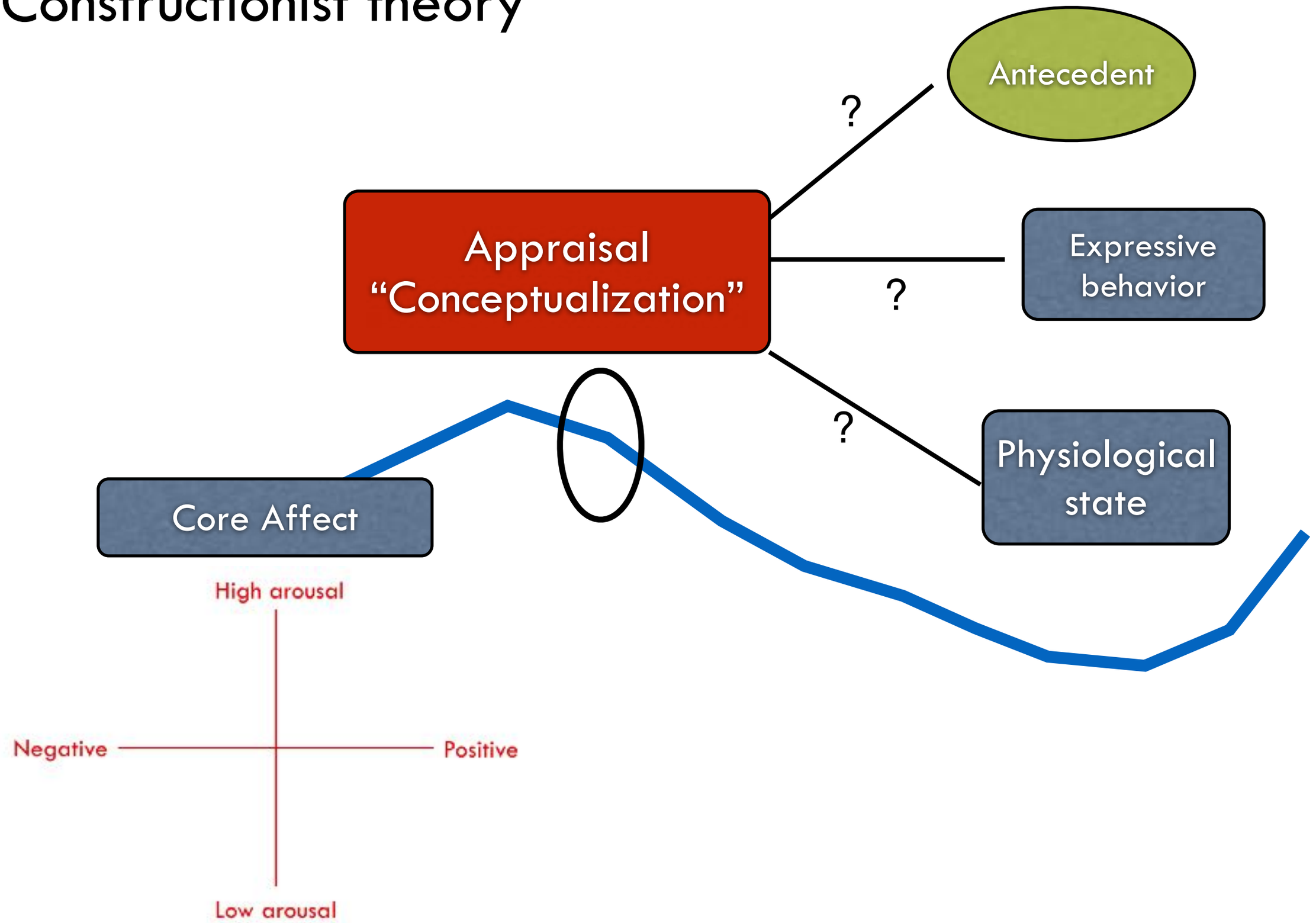
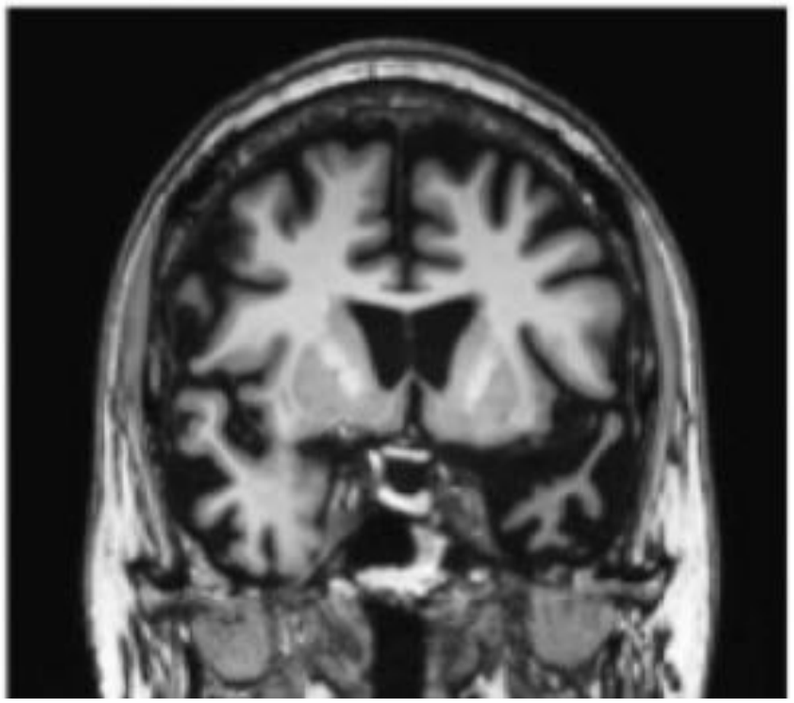


Emotions emerge from conceptualizing core affect

How do people understand emotional cues when their emotion concept knowledge is limited?

Young children



Older adults with frontotemporal dementia

5 *Guided by the concepts we have*

Young children age 2-7

Put expression in labeled box

What they put in the "anger" box

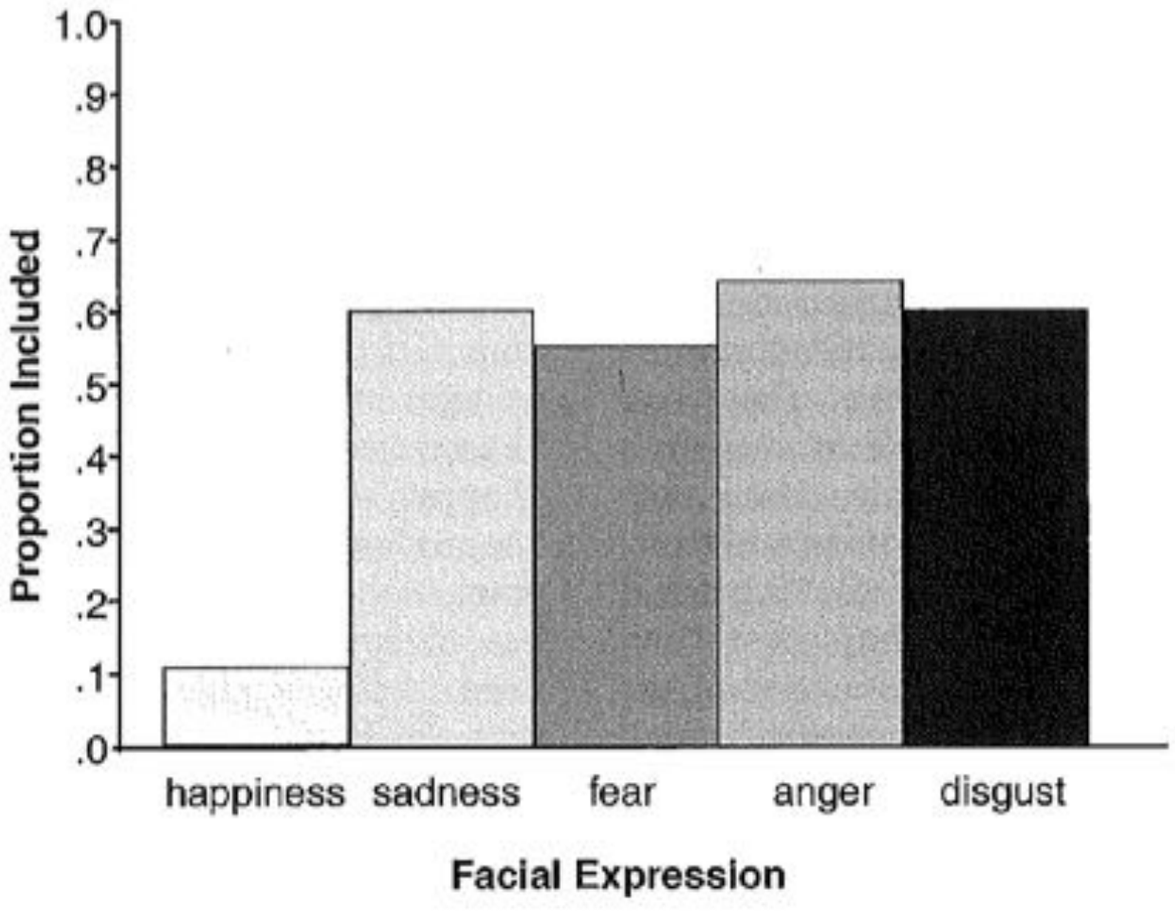
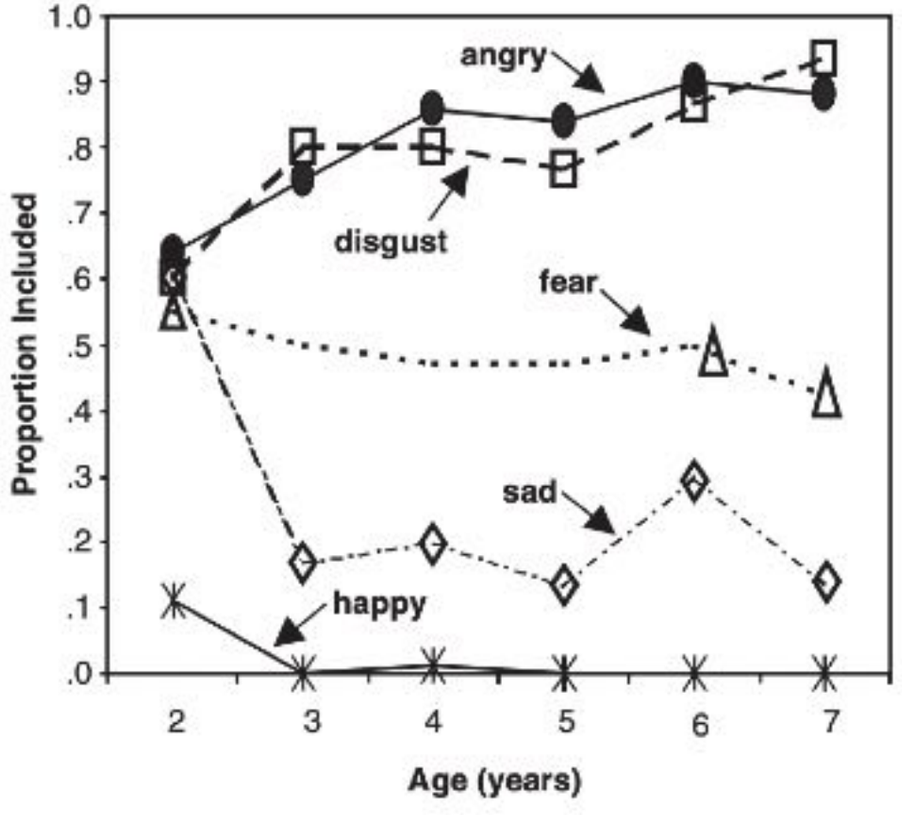


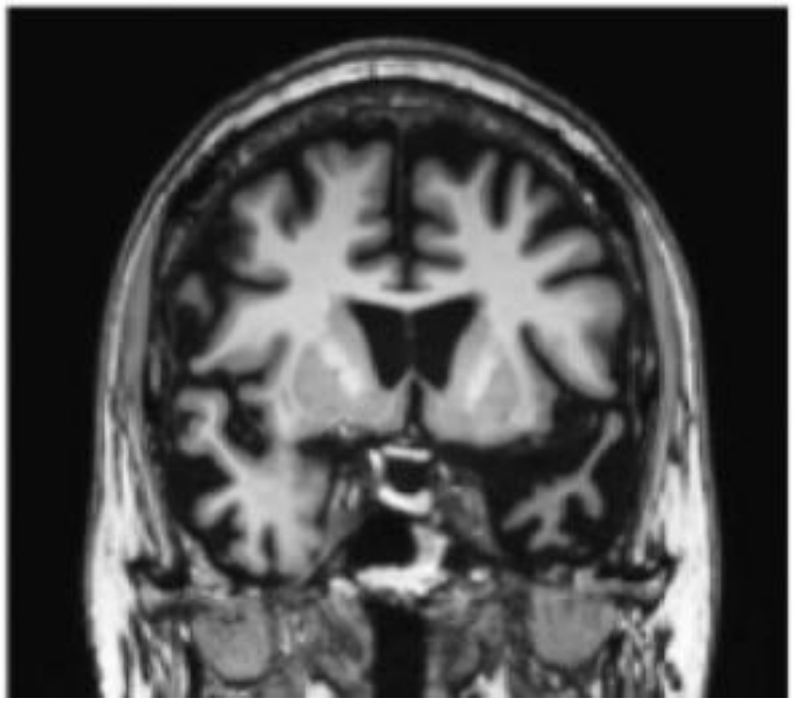
FIGURE 21.3. Faces that 2-year-olds included in the angry box.



Thought to be paralleled in experience

Widen & Russell, 2002

5 *Guided by the concepts we have*



Older adults with frontotemporal dementia

- Lose semantic (meaning-based) understanding of concepts

- Healthy older adults sorted into "basic emotion" categories
- Dementia patients sort only on valence (positive/negative)

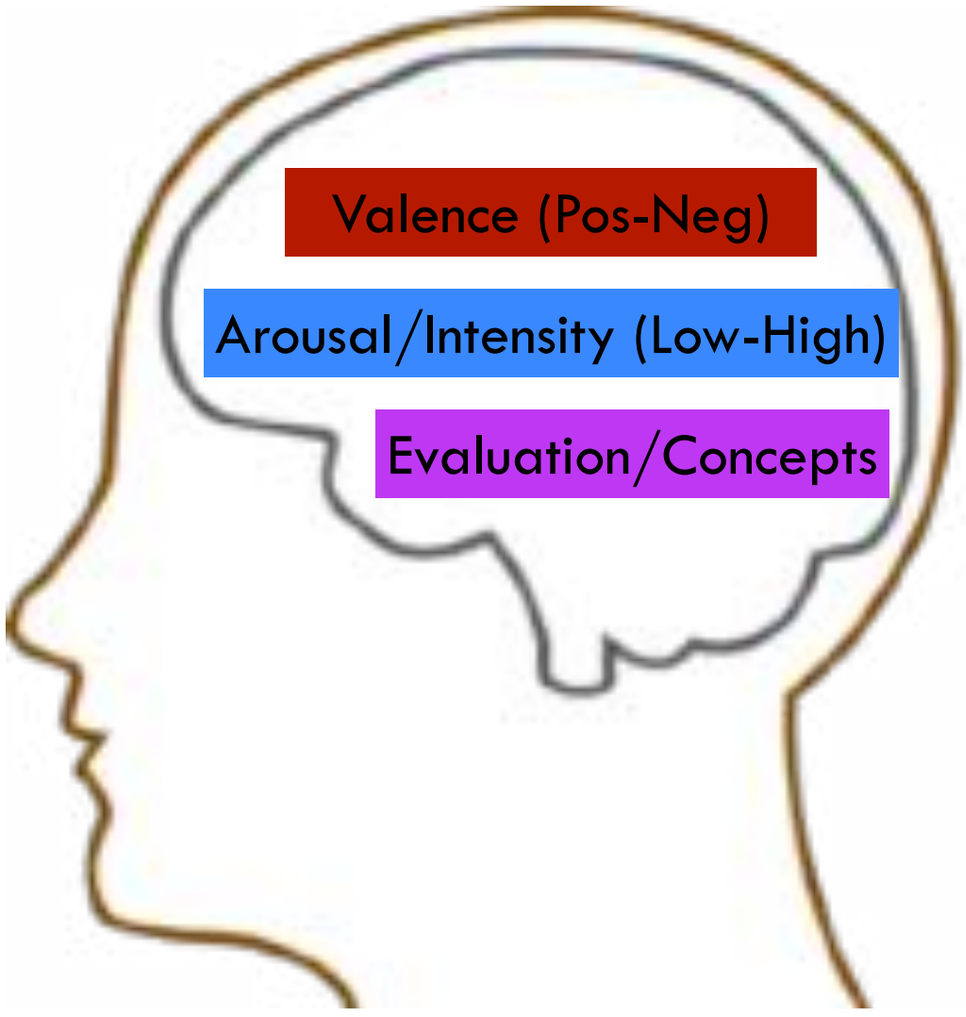
…"*with impaired emotion concept knowledge, dementia patients had a preserved ability to perceive affect but were unable to perceive discrete emotion on faces.*"

Lindquist et al., 2014

Basic emotion theory

- Universality in expression
- Blind judo players
- Intuitive appeal: The phenomenology that emotions *feel* distinct

Constructionist emotion theory



- Maybe expression understanding is less "universal" than claimed
- No physiological specificity
- Emotions experienced as blends
- Valence more fundamental than emotion categories?

Class's intuitions

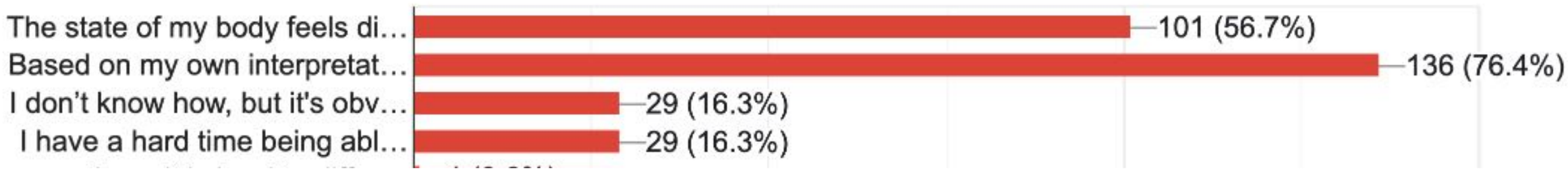
When you experience an emotion, how do you know which specific emotion you're feeling (for example, discerning you are afraid rather than sad, or feel guilty rather than angry)? Check all that apply:

The state of my body feels different when I am experiencing two different emotions.

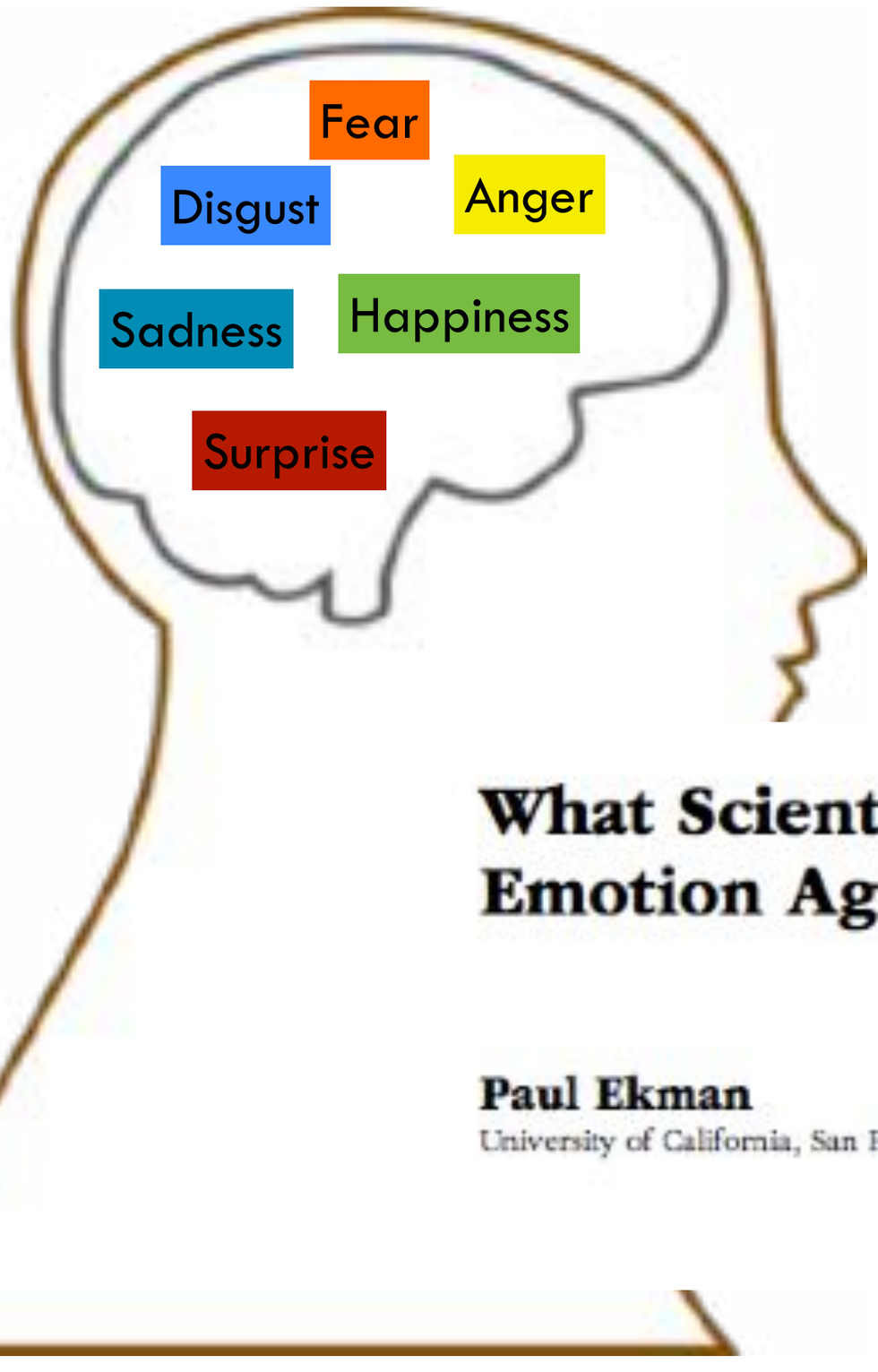
Based on my own interpretation of the situation I'm in.

I don't know how, but it's obvious.

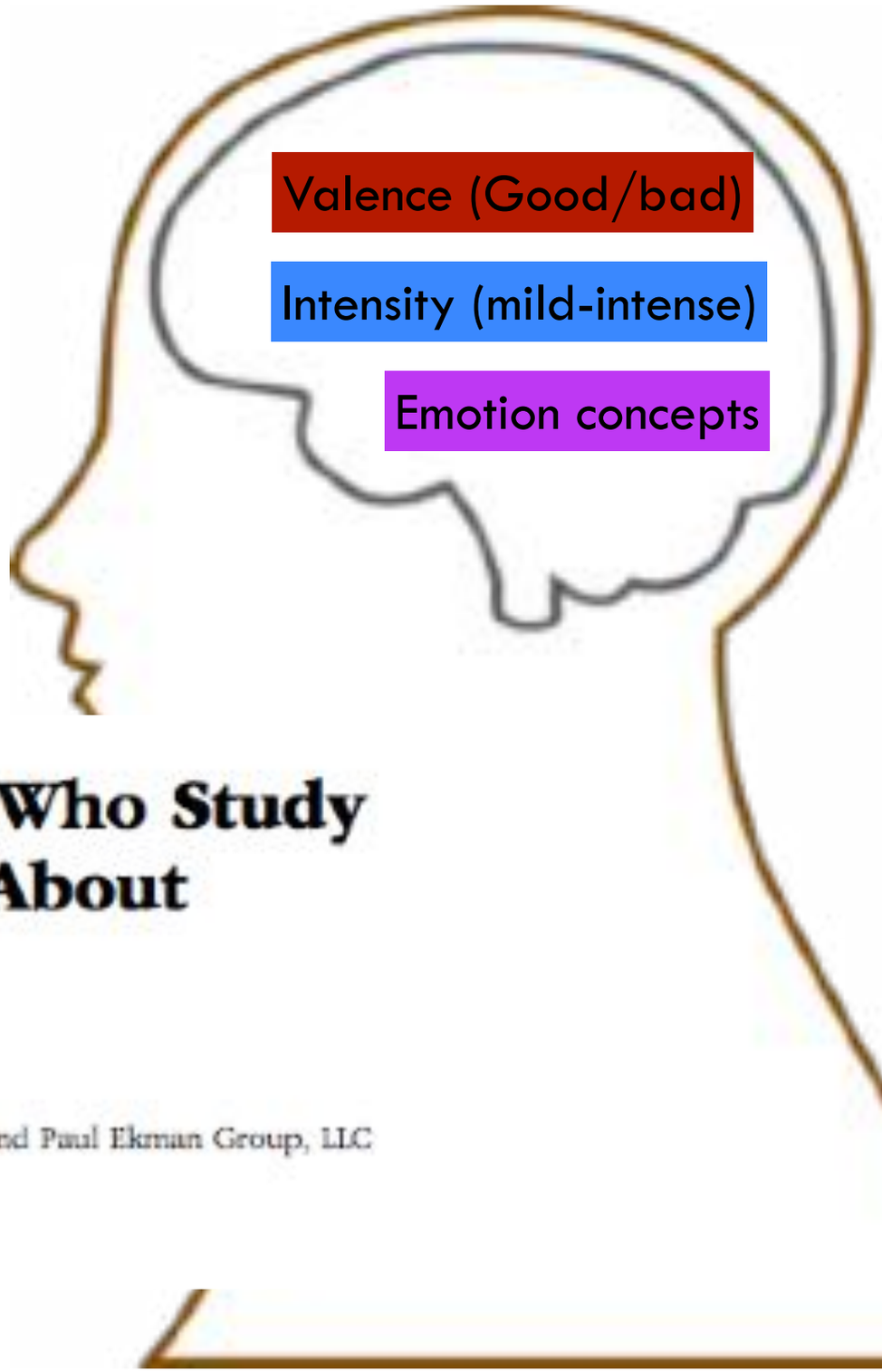
I have a hard time being able to discern which specific emotion I'm feeling.



Basic emotion theory



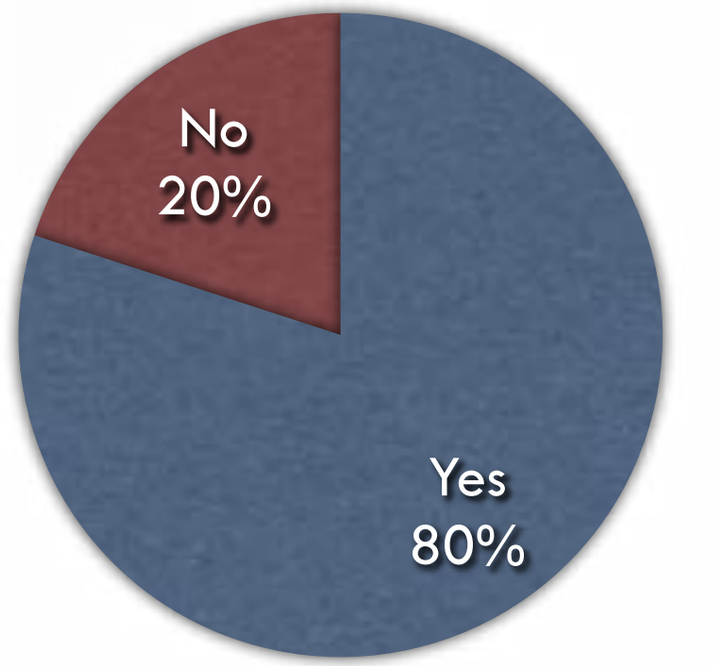
Constructionist emotion theory



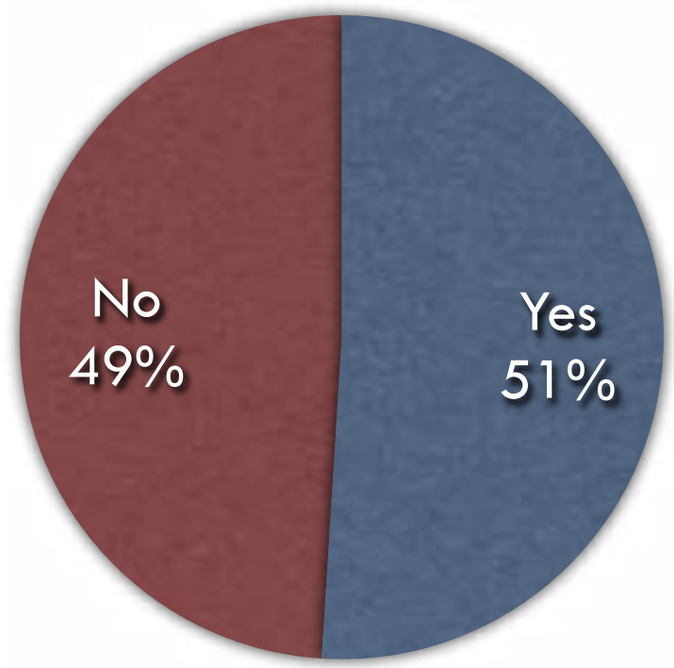
What Scientists Who Study Emotion Agree About

Paul Ekman
University of California, San Francisco and Paul Ekman Group, LLC

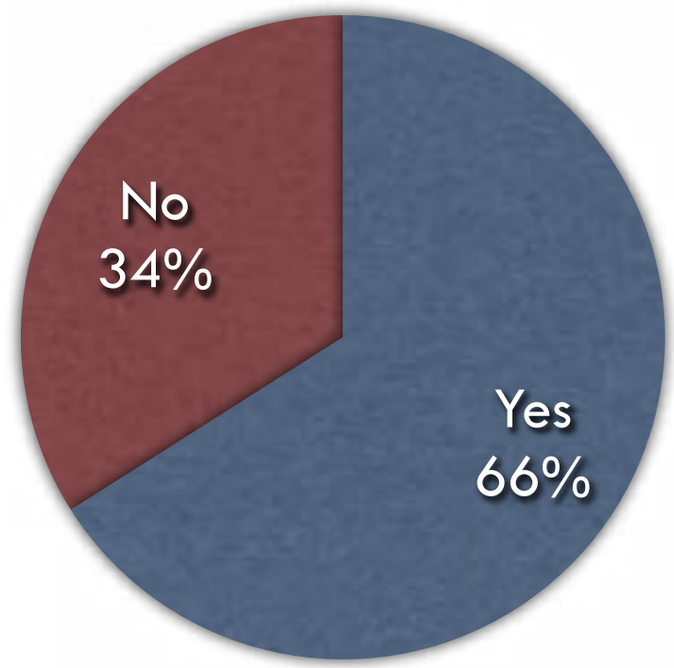
Is there compelling evidence for universal expressions of emotion?



Is there compelling evidence for universal physiological markers of specific emotions?

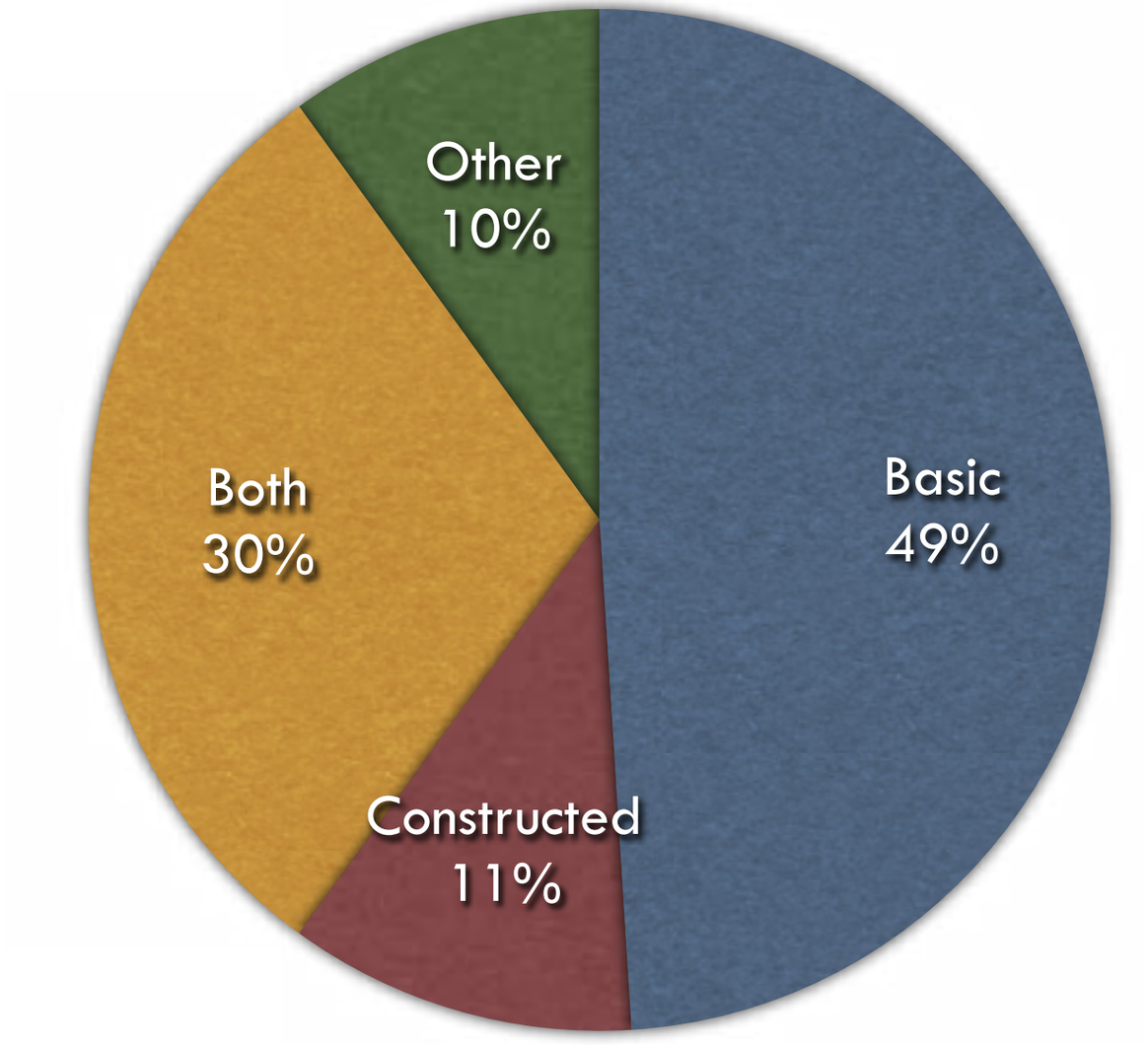


Is there compelling evidence for universal triggers of emotion?



Ekman, 2016
Surveyed ~250 emotion scientists

Which of the following best captures your orientation toward emotion research?



Ekman, 2016
Surveyed ~250 emotion scientists

Good or bad? It depends.

The role of appraisals & how they work

1. Eliciting Event

- Emotions don't come out of nowhere

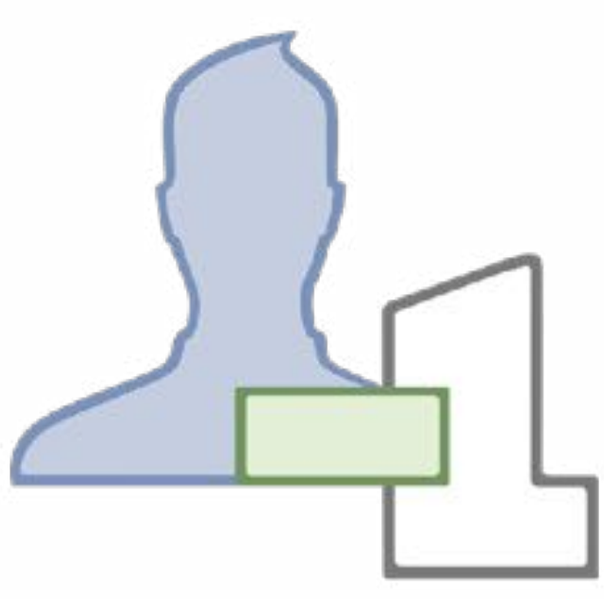
<u>Antecedent</u>

- Often sudden

- Often specific

- Sometimes object focused, sometimes internally focused

- Always <u>goal-relevant</u>



Social group status

Survival

Resources

Cognitive Appraisal

- Appraisals are **psychological evaluations of emotional significance.**
- Idiosyncratic based on <u>stable</u> and <u>transient</u> factors.
- Allows us to explain why one stimulus could evoke a wide range of responses within and across people.

Richard Lazarus
1960s-1990s

"I think that startle, pain, and pleasure are best thought of as innate reflexes rather than emotions. These reactions to external stimuli are automatic and fairly rigid consequences of the way we are constructed physiologically, and very specific and concrete stimuli are capable of eliciting each reaction. **In contrast, no single stimulus is capable of eliciting any emotion regularly in all intact persons.**"

"Emotions constitute a very different kind of adaptational process from reflexes. In the evolution of complex and intelligent species, whose adaptation came to **depend greatly on the ability to learn from experience, emotions make possible much greater variability and flexibility than either reflexes or physiological drives.** Moreover, human emotions are often predicated on complex social structures and meanings that define what is harmful or beneficial and, therefore, **require judgment,** the ability to learn from experience and the ability to distinguish subtle differences that signify different **consequences** for well-being. Appraisal is thus a key factor in the evolution of adaptational processes, including emotion."

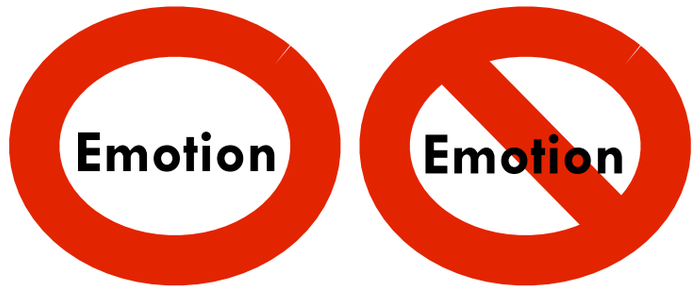
-Lazarus, 1991

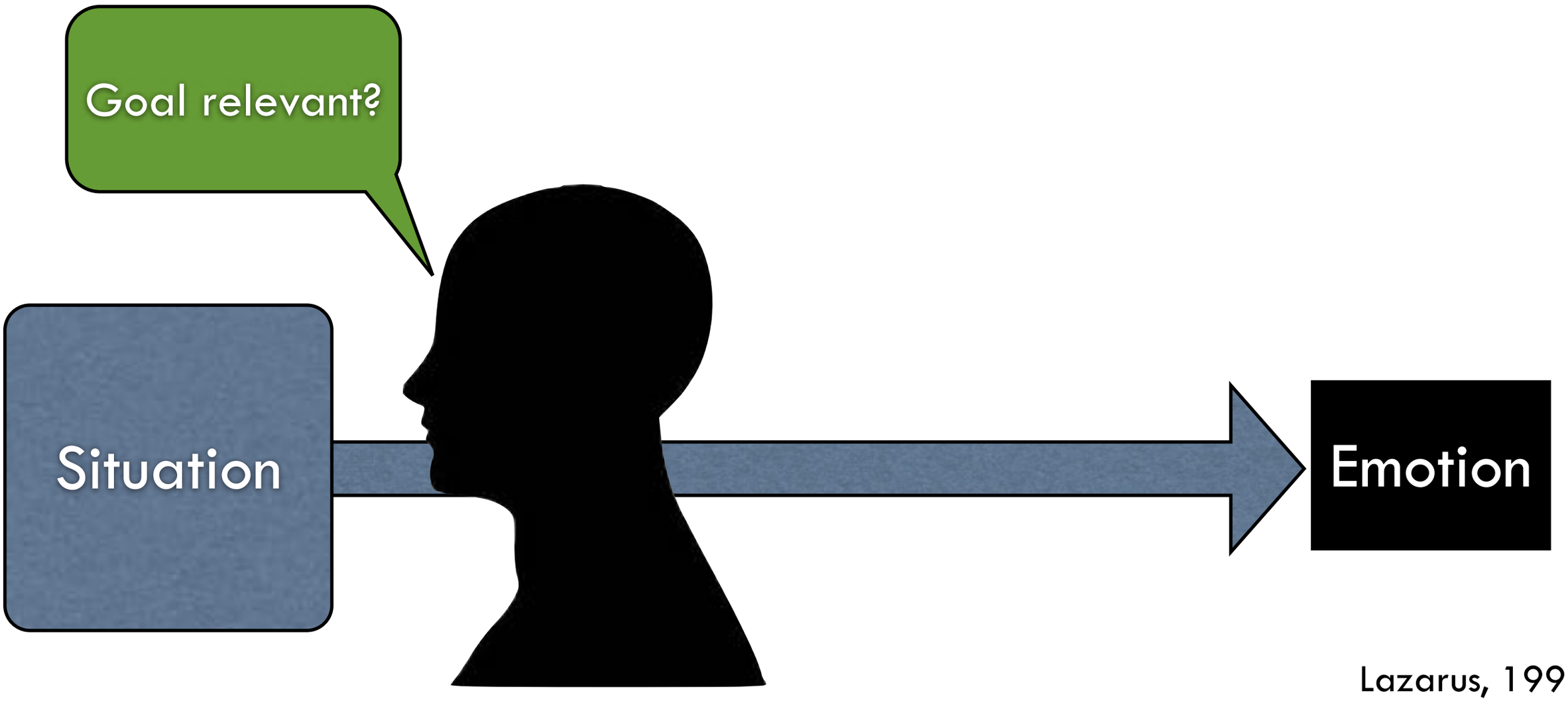
Appraisal dimensions

Question:

Is something at stake for me?

Outcome:





Lazarus, 1991

Appraisal dimensions

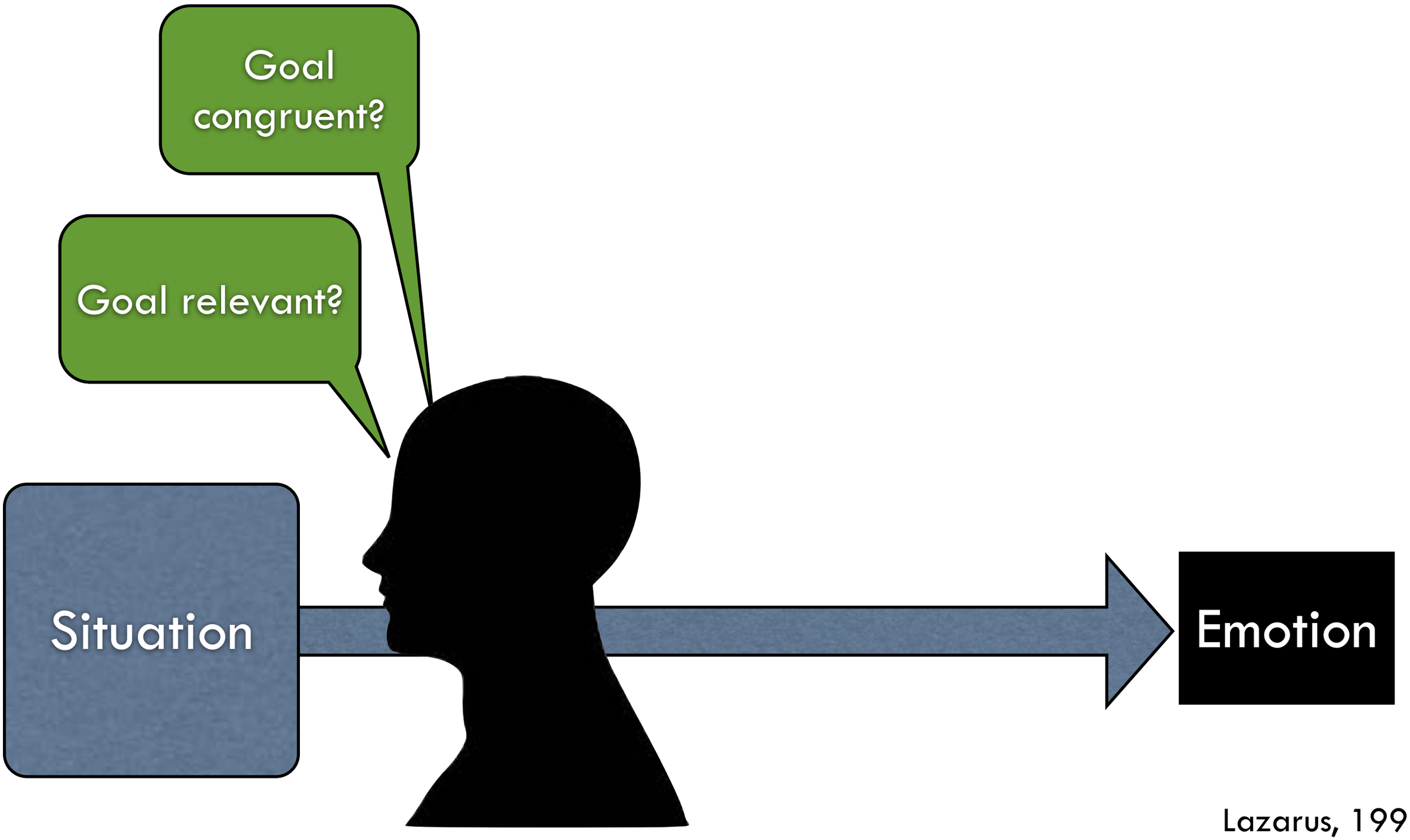
Question:

Harmful or beneficial to me?

Outcome:

Neg

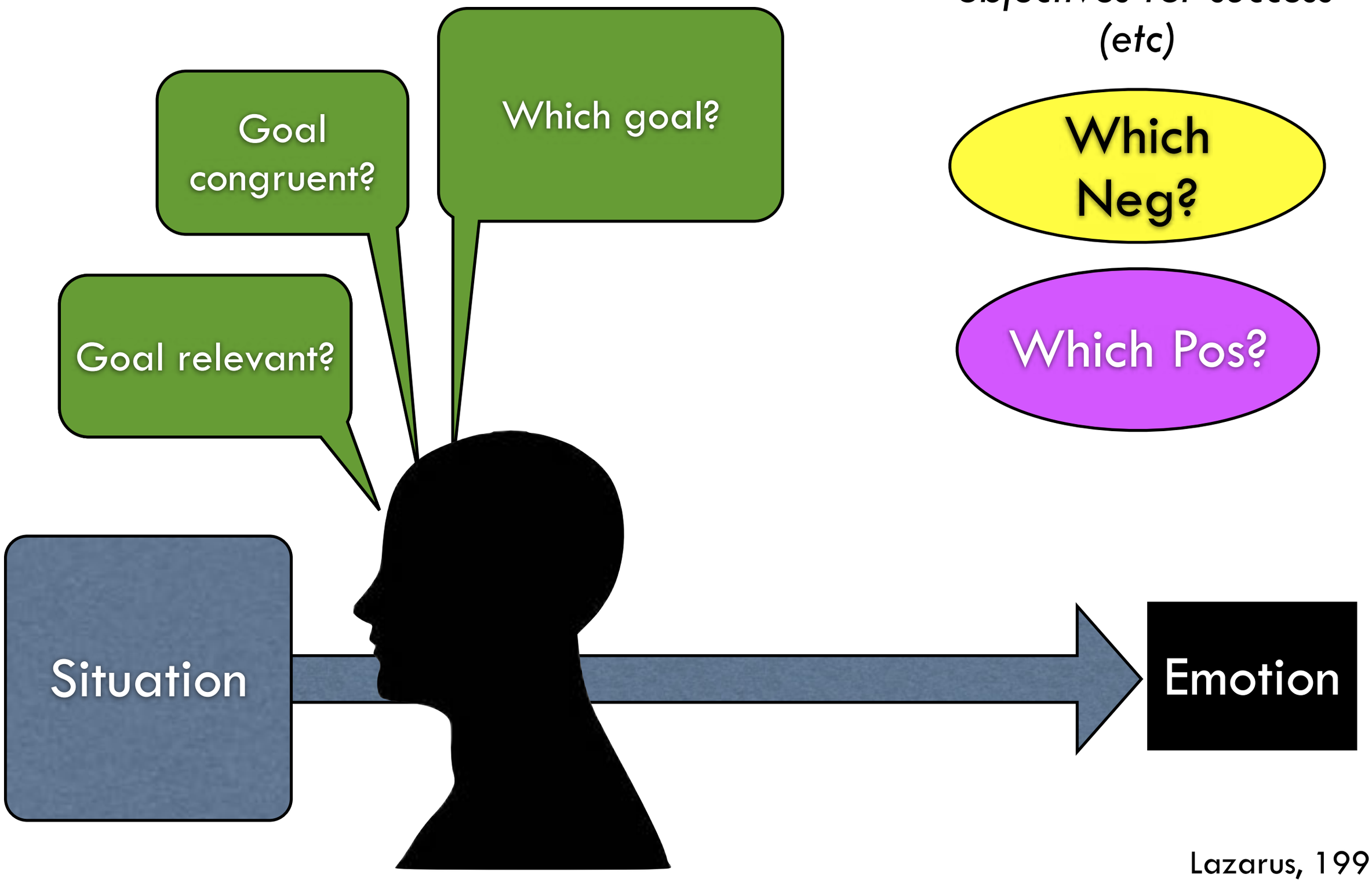
Pos



Lazarus, 1991

Primary Appraisal:
"What does this mean for me?"

Relevant to my:
-safety
-morality
-objectives for success
(etc)



Lazarus, 1991

Lazarus's primary appraisals: Particular emotions tied to particular goals

Anger	Wronged
Fear	Danger
Anxiety	Uncertainty
Guilt	Moral transgression
Shame	Failed to reach goal
Sadness	Loss
Envy	Wanting what others have
Jealousy	Resentment
Disgust	Contamination
Happiness	Reaching goal
Pride	Taking credit for goal-directed beh.
Relief	Removal of goal incongruence
Hope	Yearning for better
Love	Affection
Compassion	Helping

Secondary appraisals modify <u>intensity:</u>

- Self-relevance
- Attribution of self as cause
- Expectation of change

No need to memorize!

Goal relevant?

Situation

Found out that roommate is leaving

No

ave no relationship with them

Yes

This person plays a role in my life that is important.

Goal relevant?

Goal congruent?

Situation

Found out that roommate is leaving

Yes

No

My relationship with this person ended too soon.

Neg

Yes

I wanted my relationship with this person to be over.

Pos

Goal relevant?

Goal congruent?

Which goal?

Neg

Situation

Found out that roommate is leaving

Yes

No

Failed to live up to ideal

Loss

Sadness

I mourn that I can no longer spend time with this person.

Shame

I was a bad friend when the person was here, and now they are gone

Intensity of emotion could go up if:

- *roommate's leaving is permanent*
- *roommate's leaving is caused by you*

Goal relevant?

Situation

No

Yes

You are standing in a very slow line at the store to buy an important medication

Goal relevant?

Goal congruent?

Situation

Yes

No

I need this medication urgently

Neg

You are standing in a very slow line at the store to buy an important medication

Goal relevant?

Goal congruent?

Which goal?

Neg

Situation

Yes

No

Injustice

Anger

My attempt to get meds is being sabotaged

Anger

Who's to blame?

Frustration

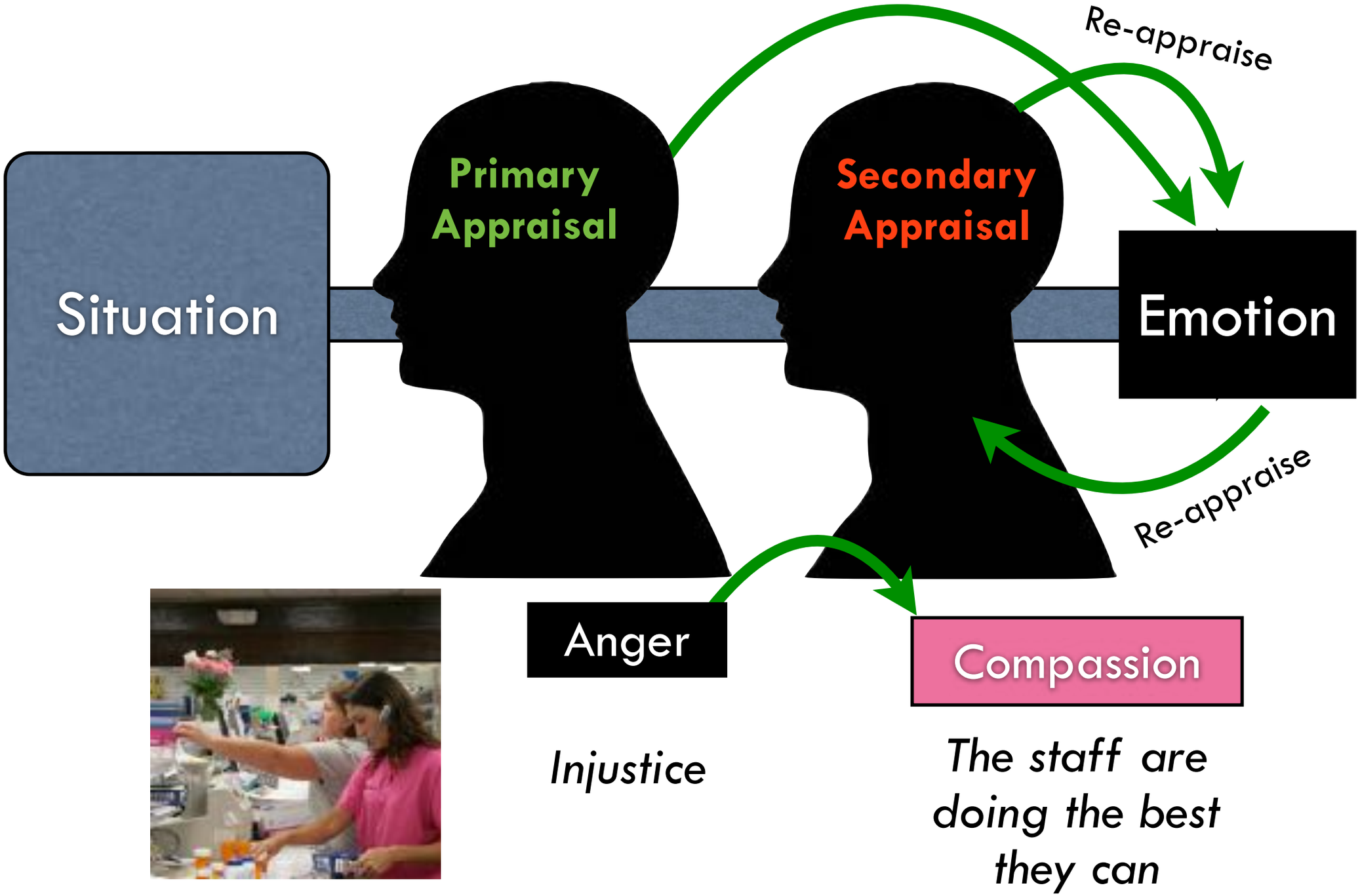
Here, secondary appraisals modified intensity

Compassion*

**In this case, secondary appraisals provoked us to find new information that changed the meaning of the situation*

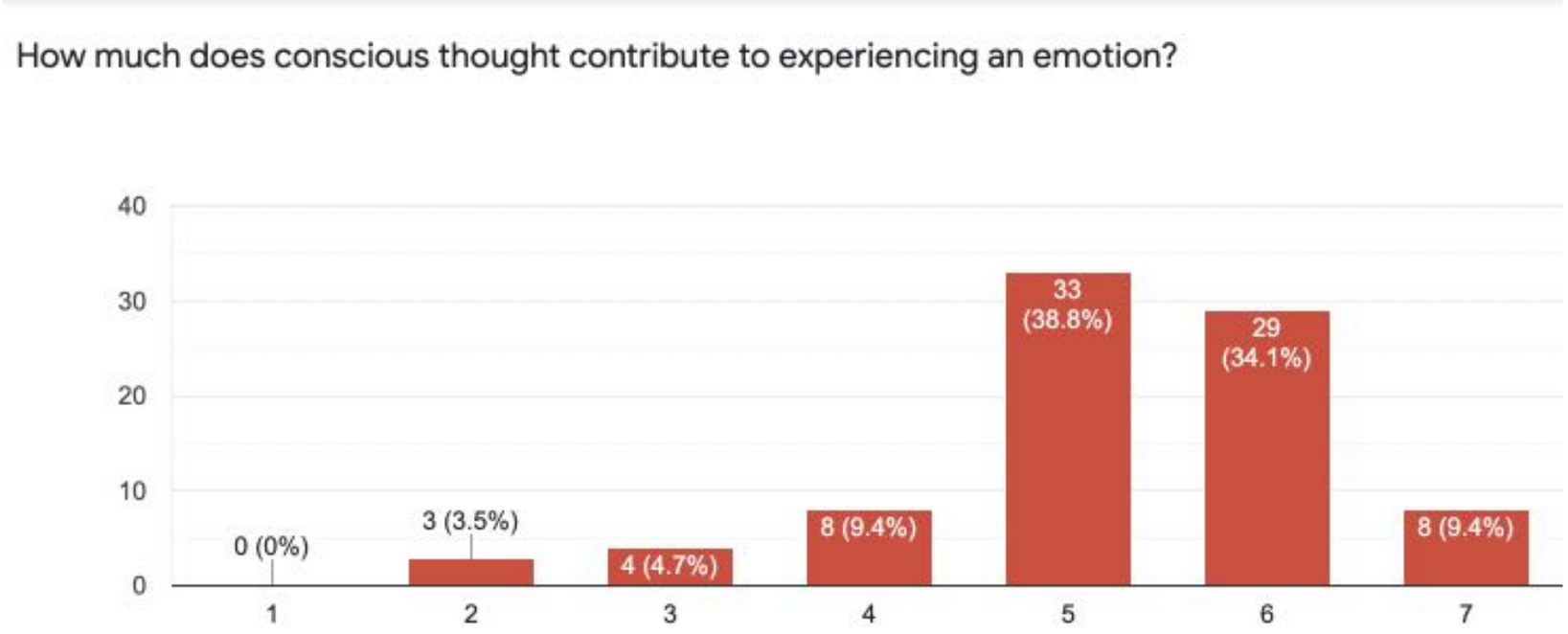
Important aspects of appraisals:

- Appraisal is a continual process - emotional responses can keep changing accordingly.



2 Important aspects of appraisals:

- Although we often discuss appraisals in words, they are not necessarily assumed to occur as an 'internal dialogue' or even as a conscious processes.



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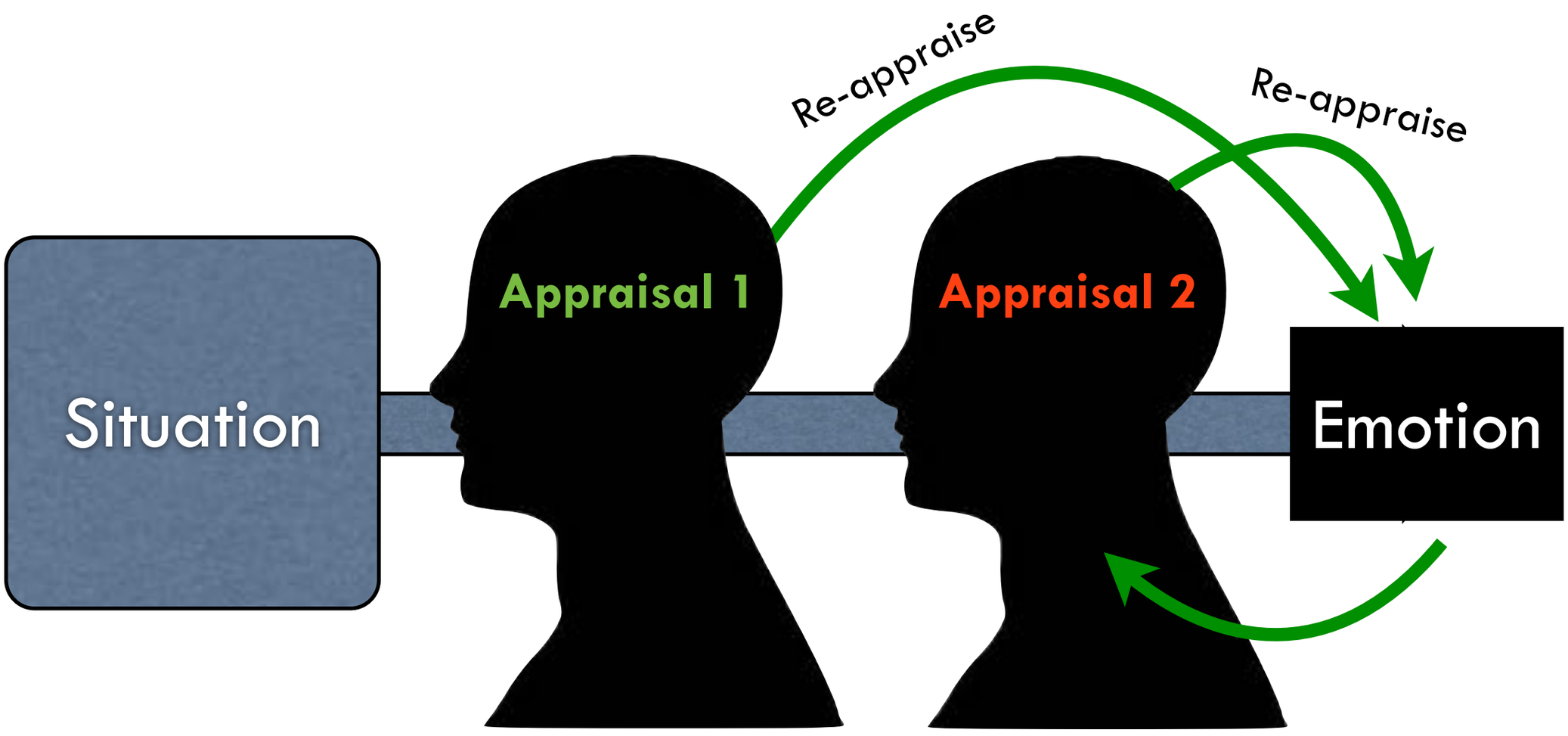
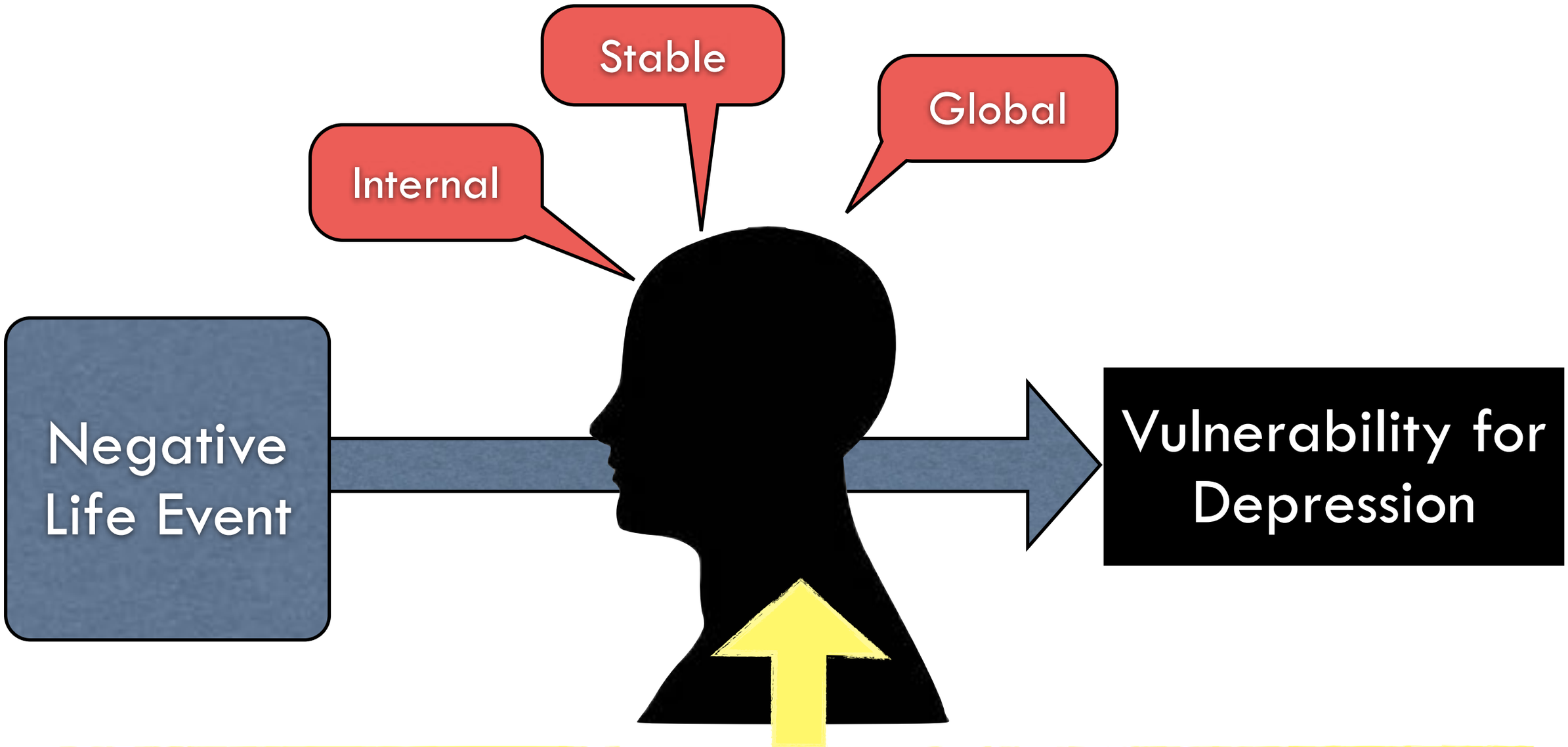


- If our appraisals shape what emotions we experience, we should be able to harness them!

Cognitive-Behavioral Therapy

Hopelessness theory of depression



Cognitive Behavioral Therapy:
1. Identify when making these appraisals
2. Promote external, changeable, situational appraisals
3. Mindfulness of relationship between appraisals & emotions

Alloy & Abramson, 1994