

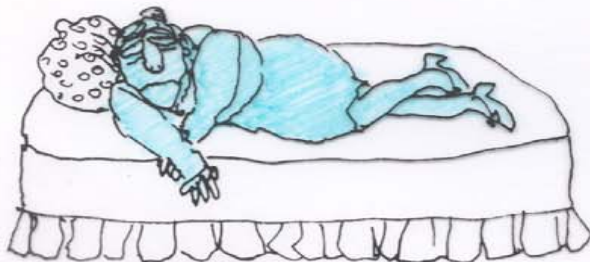


**AFFECTIVE GUIDANCE OF
INTELLIGENT AGENTS:
*How Emotion Controls Cognition***

**Gerald L. Clore
University of Virginia**

Emotion colors cognition

STATES



W. Steig

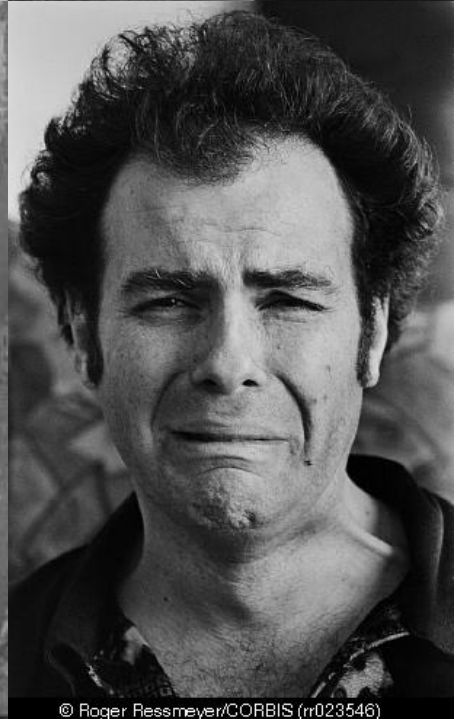
Moods & emotions are affective states

- “Affective” *goodness-badness*
- “States” *multiple systems reflect same condition at same time*

**Emotions are multi-system registrations,
that something is good ...**



...or that something is **bad**



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Do People and other Intelligent Agents Need Emotions?

Judgments

Thinking Style

Attention

Memory

Motivation



Intelligent Agents: Do They Need Emotions?

Judgments
Thinking Style

Attention

Memory

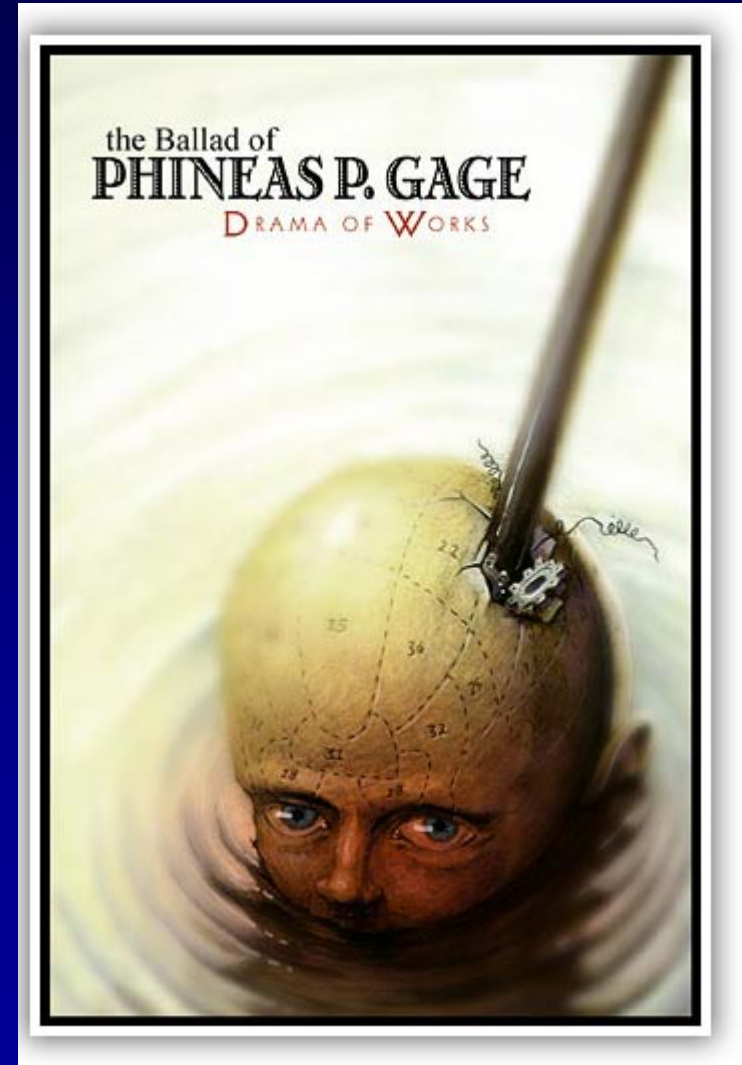
Motivation



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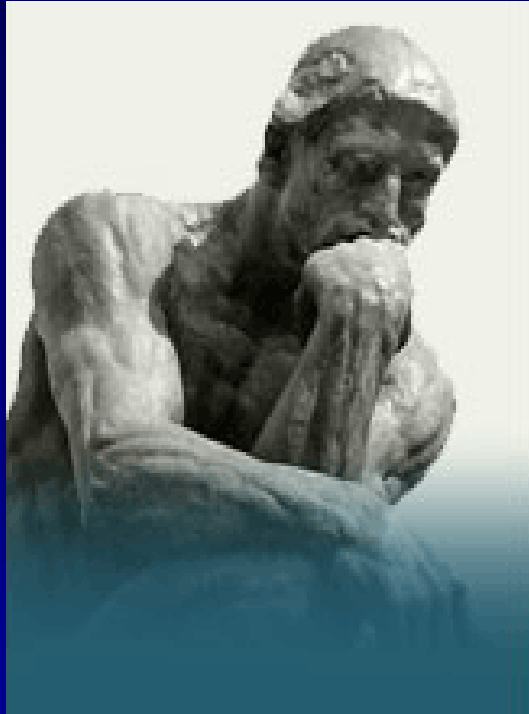
Damasio: studies of brain damage

Decision-making
problems



Affect-as-Information

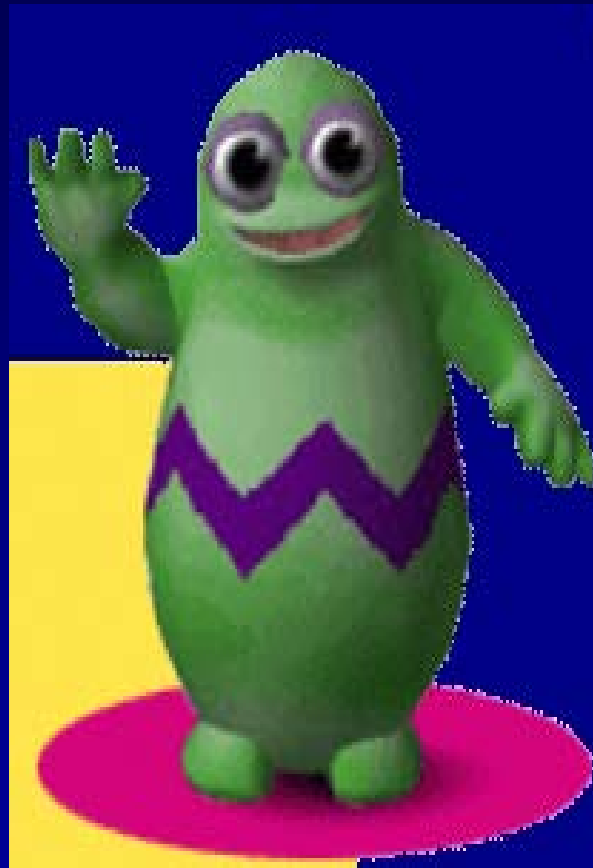
(Schwarz & Clore, 1983)



Judgments, Decisions

**Decisions based on
anticipated affect**

(Baumeister et al in press)



Mr. Bubb

Neil-Reilly, 1996

Believable agents



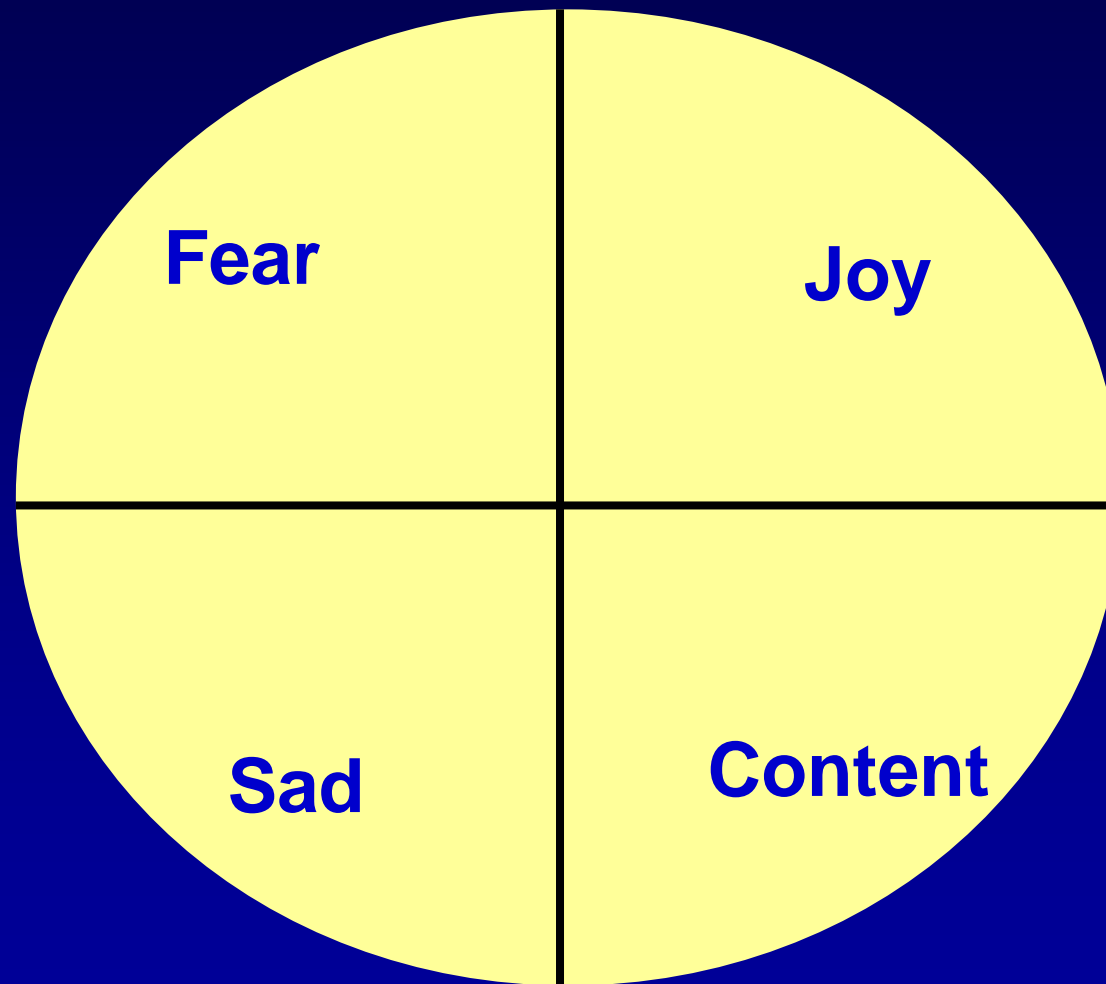


Affect-as-Information Approach

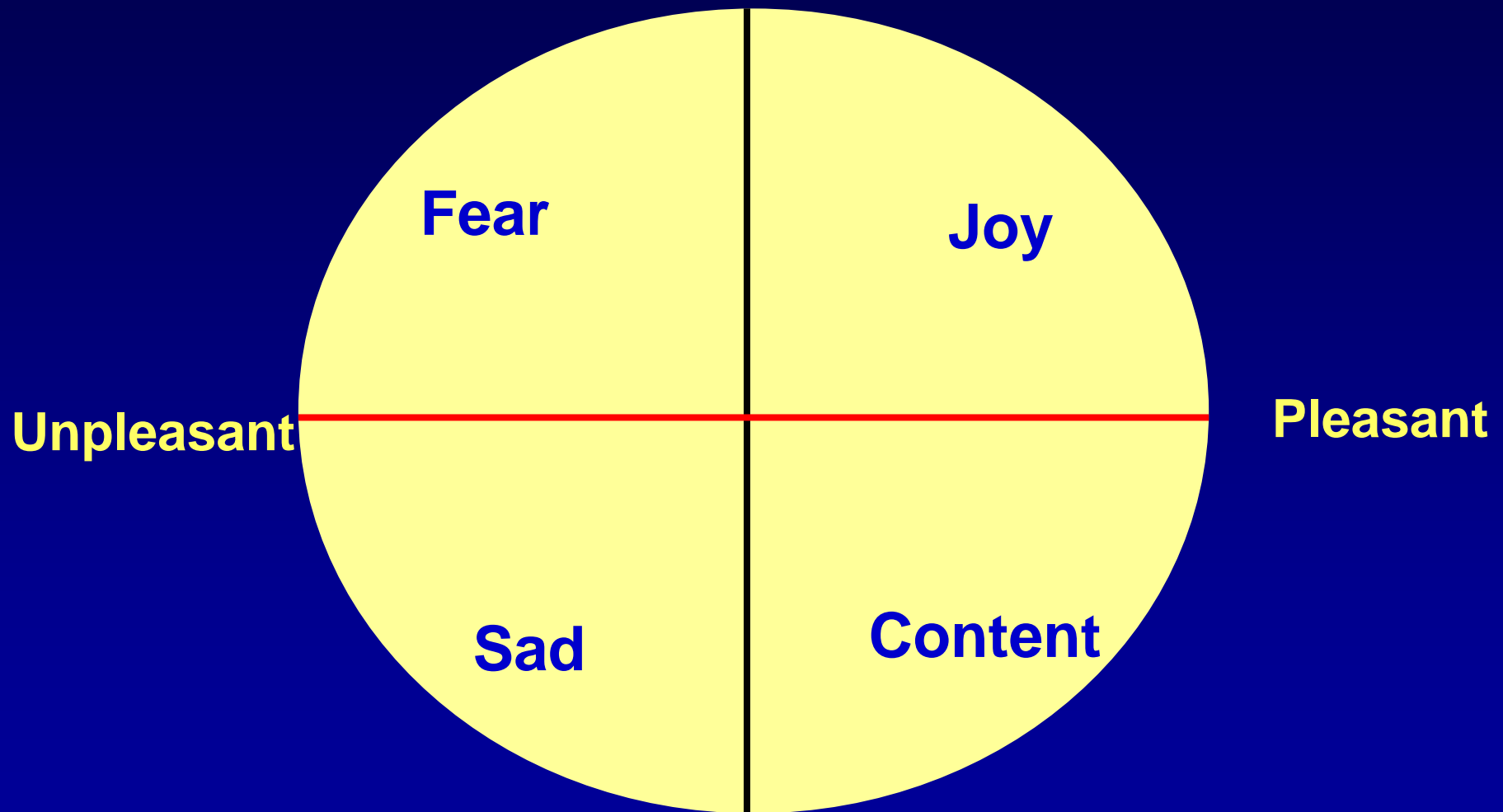
**Affective expressions inform us
about others**

**Our affective feelings inform us
about ourselves**

Dimensions of affect

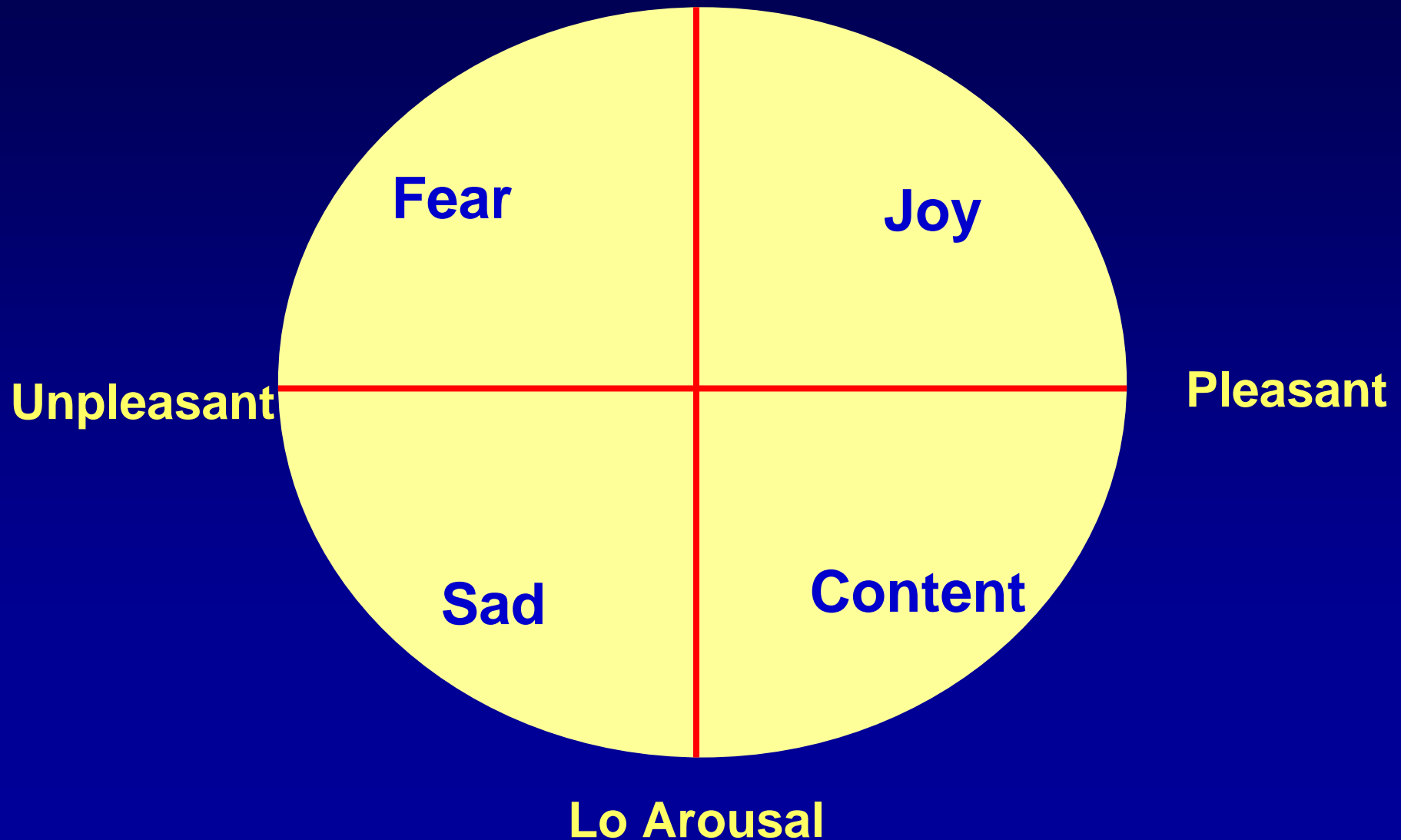


Dimensions of affect



Dimensions of affect

Hi Arousal



Unpleasant

Pleasant

Lo Arousal

Information

Important

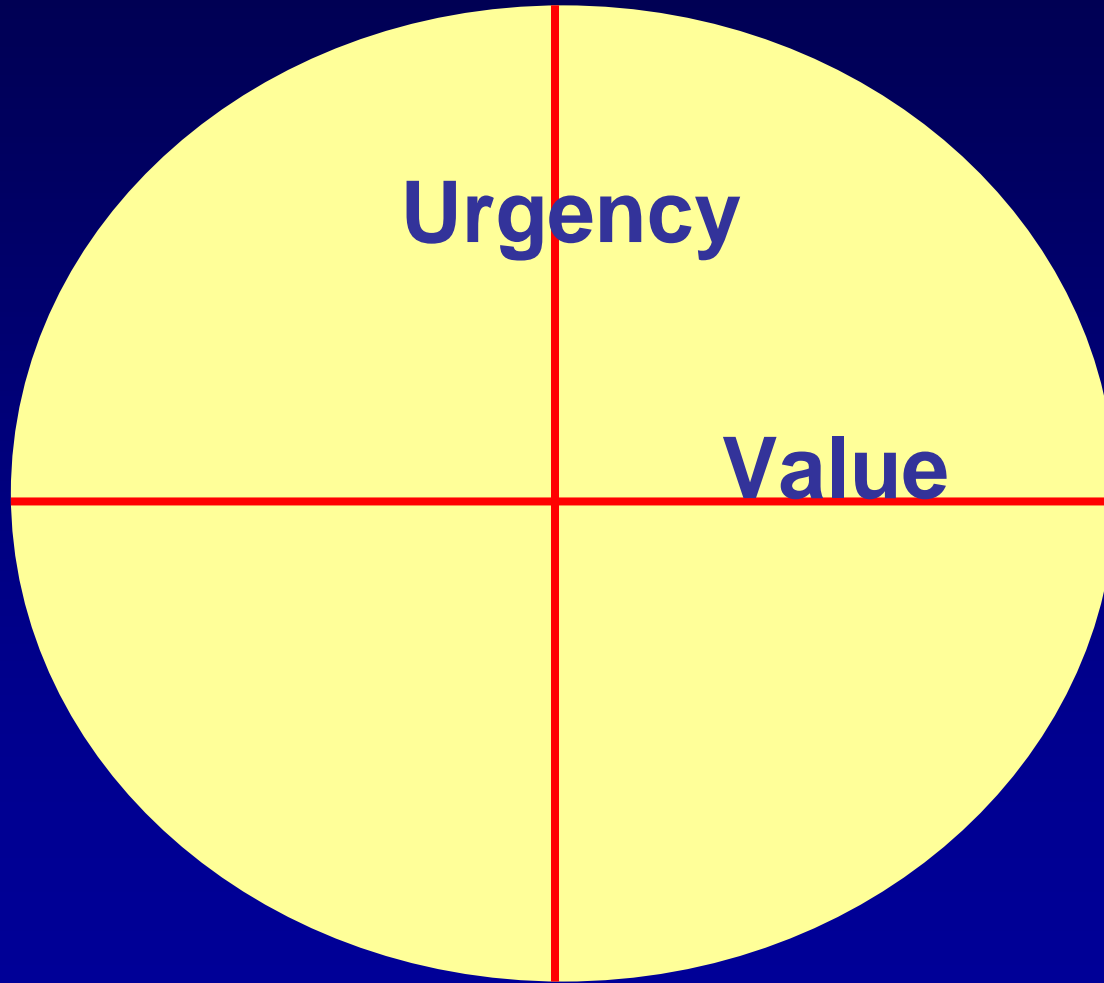
Urgency

Value

Bad

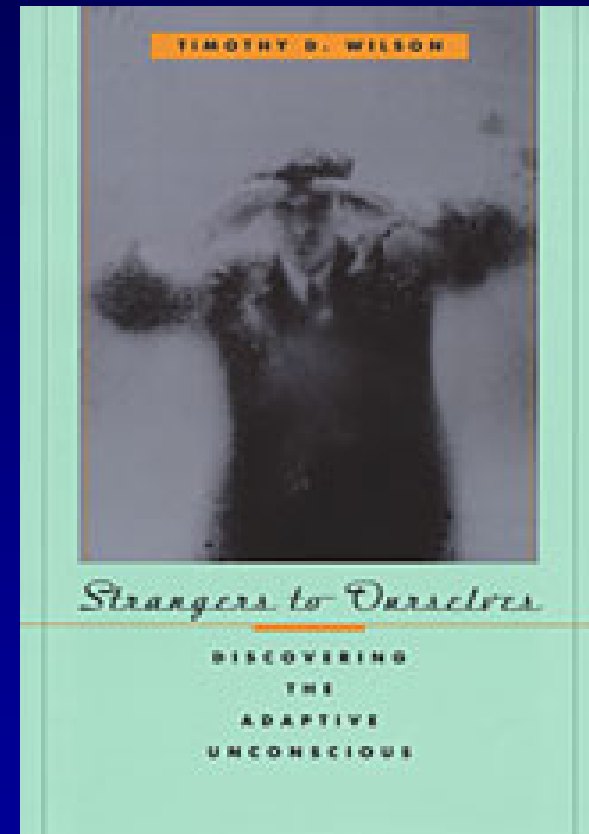
Good

Unimportant

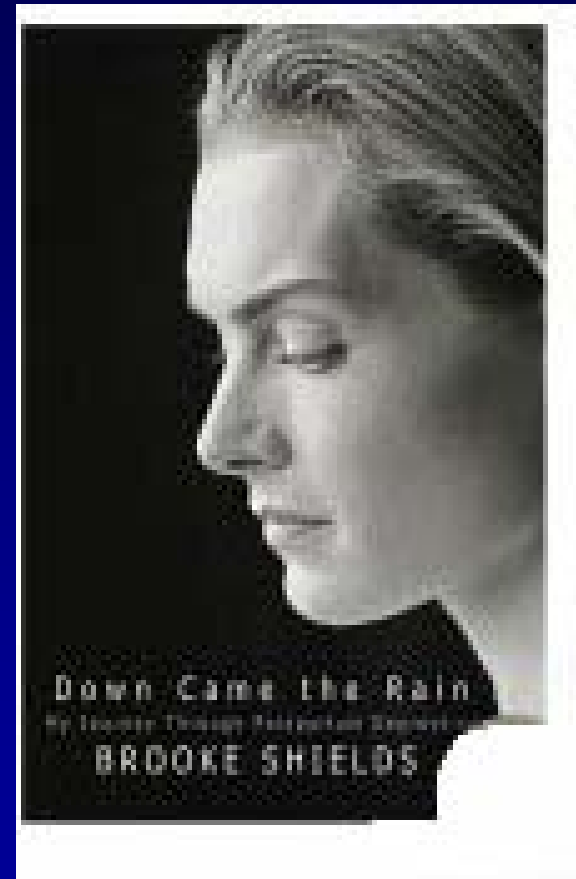


Unconscious

**Affective feelings
provide information
about unconscious
appraisal processes**



**Sometimes the
absence of affect is
also informative**



I. Affect & Judgment

How do people make evaluative judgments?

Access evaluative **beliefs** about object

Ask ourselves, “How do I **feel** about it?”

(Schwarz & Clore, 1988)

Problem: Beliefs & feelings are usually
confounded

Solution: Induce irrelevant moods (Gouaux 1971)

Explanations

Affect-as-Prime *Bower et al 1978; Isen et al 1978; Forgas, 2001*

affect → beliefs/memory → judgment

assumes mood activates declarative memory

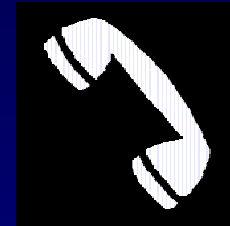
Affect-as-information *Schwarz & Clore, 1983; Clore et al 2001*

affect → judgment

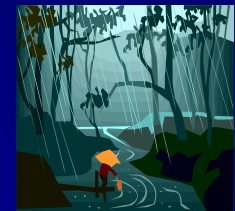
Mood and Life Satisfaction

(Schwarz & Clore, 1983)

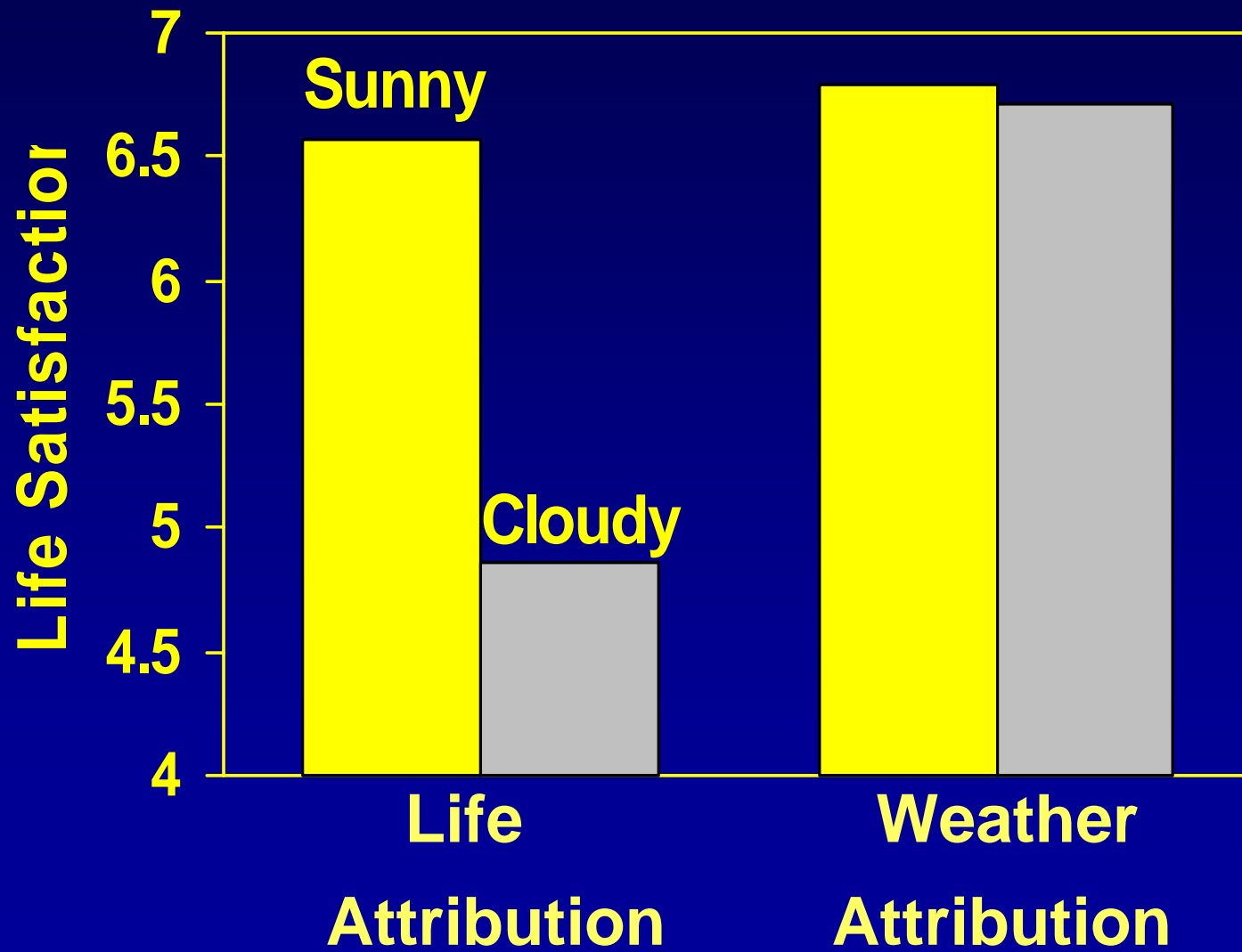
Procedure: *Telephone survey*



Mood: *Sunny vs. Rainy*
Spring days



Judgment: *Life Satisfaction*



We are informed by our affect, even though we produce it ourselves.

Rather than being reflex-like, affective influences on judgment can be **altered by simple cognitive manipulations.**

Affective influences are due, not to the affect itself, but to its **information value**

**Is this unique to judgments of such
amorphous things as life satisfaction?**

**How about other kinds of evaluations,
about which people have more fixed
ideas -- **moral judgments?****

Disgust and Moral Judgment

(Schnall, Haidt, & Clore, 2006)

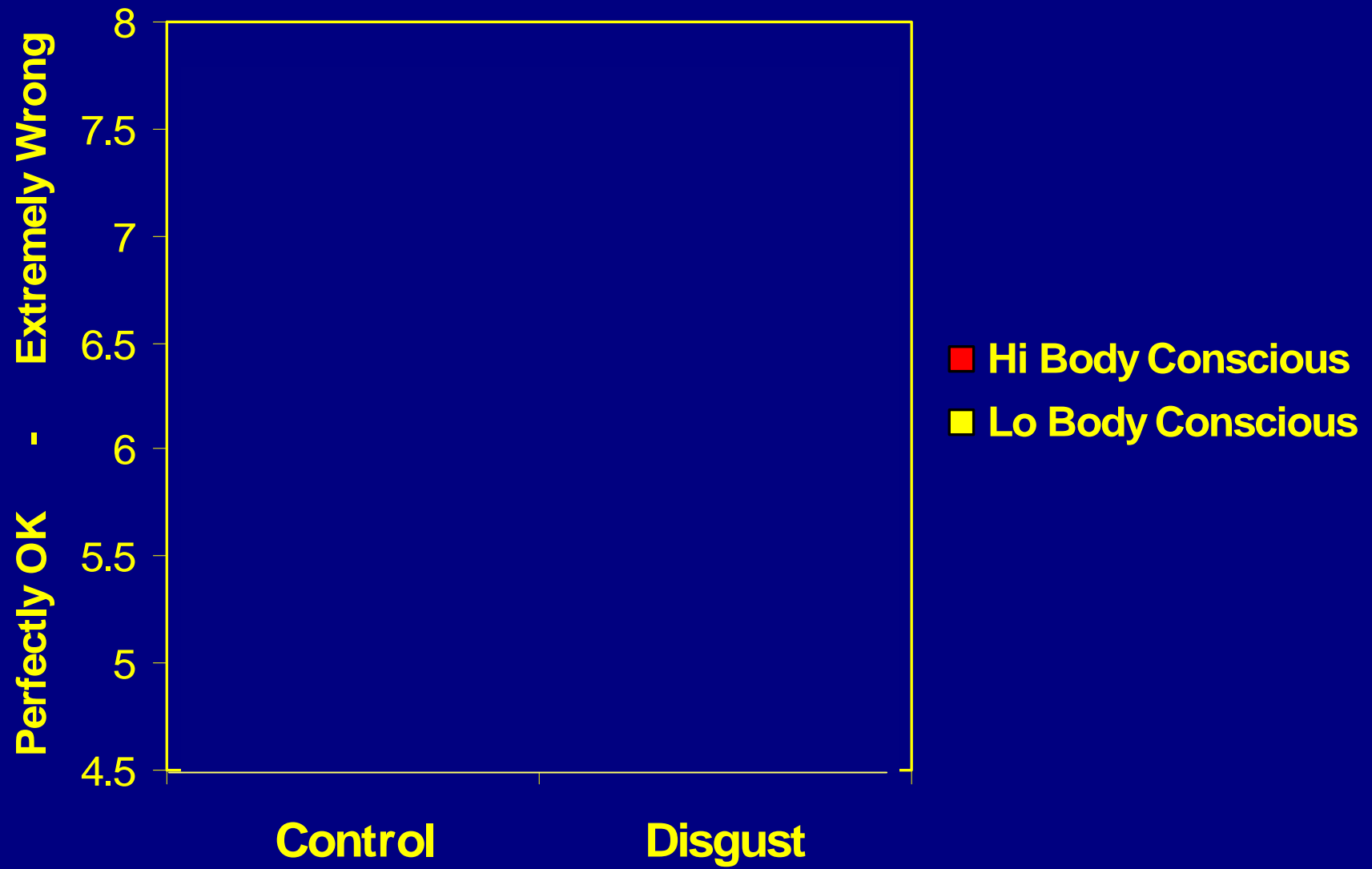
Stimuli: *Moral vignettes*

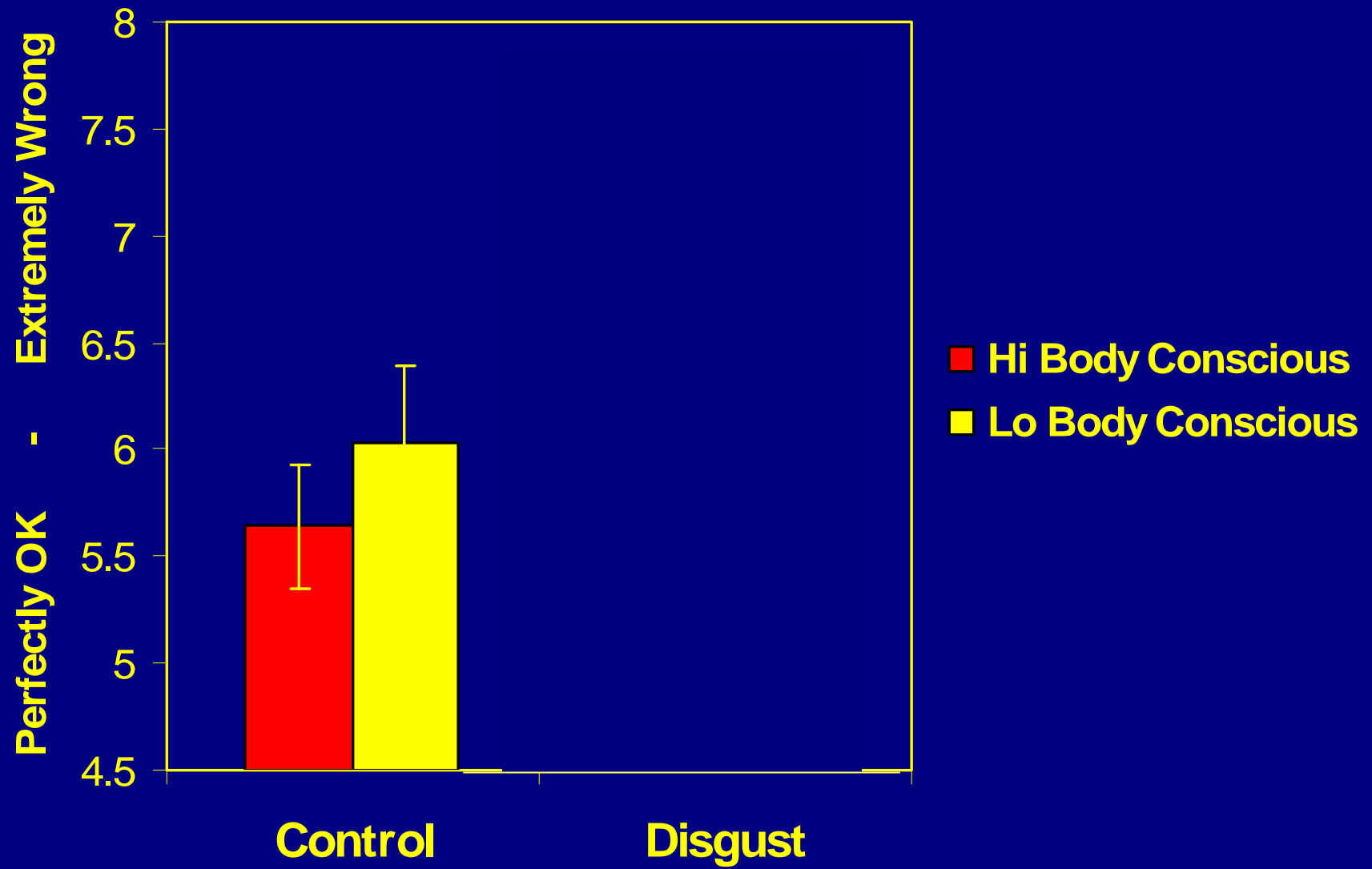
Emotion: *Work in Disgusting room*

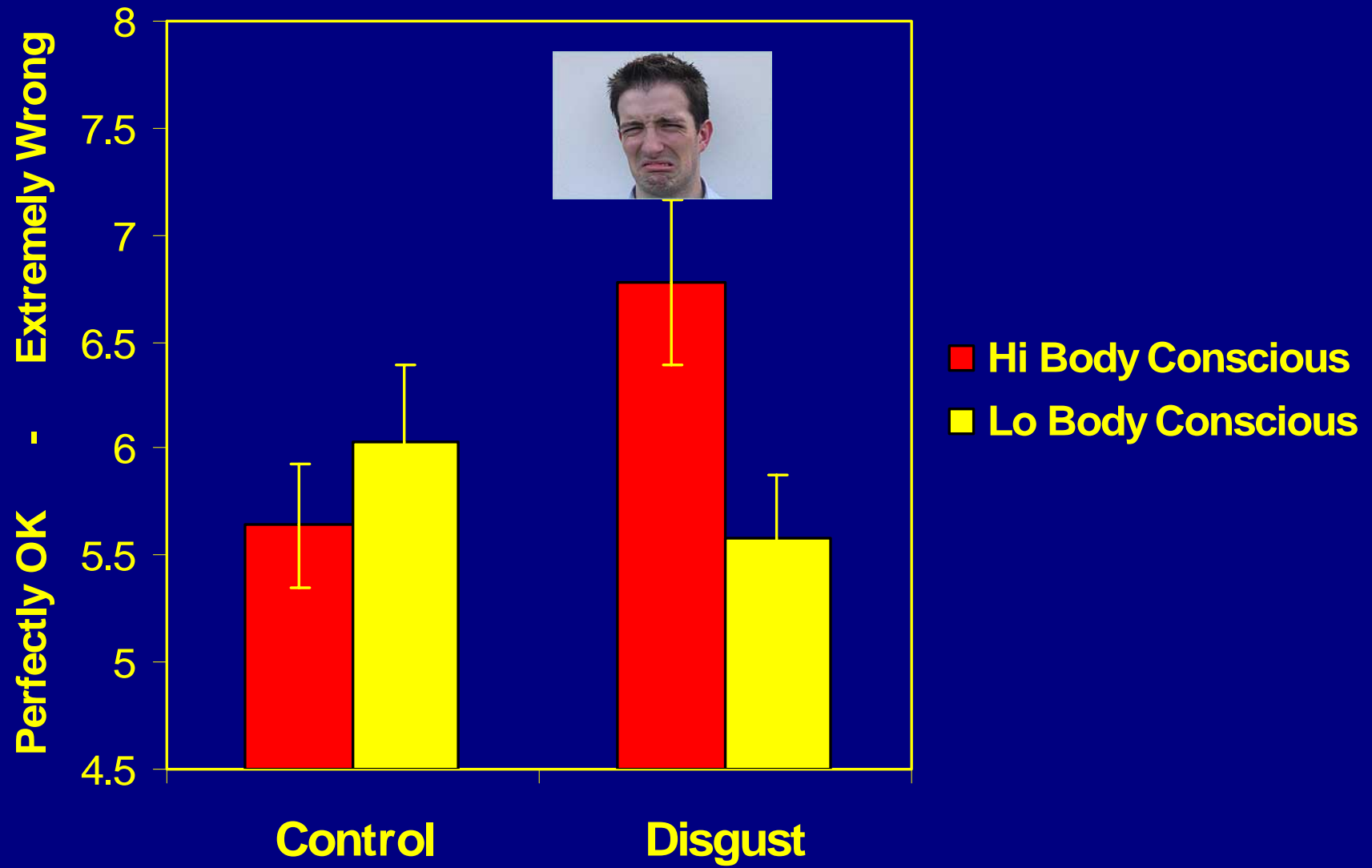
Personality: *Private Body Consciousness*

Judgment: *Moral Judgments*

Trolley. You are at the wheel of a runaway trolley quickly approaching a fork in the tracks. On the tracks extending to the left is a group of five railway workmen. On the tracks extending to the right is a single railway workman. If you do nothing the trolley will proceed to the left, causing the deaths of the five workmen. The only way to avoid the deaths of these workmen is to hit a switch on your dashboard that will cause the trolley to proceed to the right, causing the death of the single workman. How wrong is it for you to hit the switch in order to avoid the deaths of the five workmen?







Moral Philosophy



**Sentiment
Hume 1777**

**Intuition and emotion
driving forces,**

**Reasoning comes after
judgment is made.**

**No right answer to questions about
life satisfaction or morality**

**Would affect influence judgments of
physical reality?**

Affect & Perceptual Judgment

Task: *Estimate incline of hill*



Mood Induction: *Happy or sad music*

Measures: *Multiple measures*

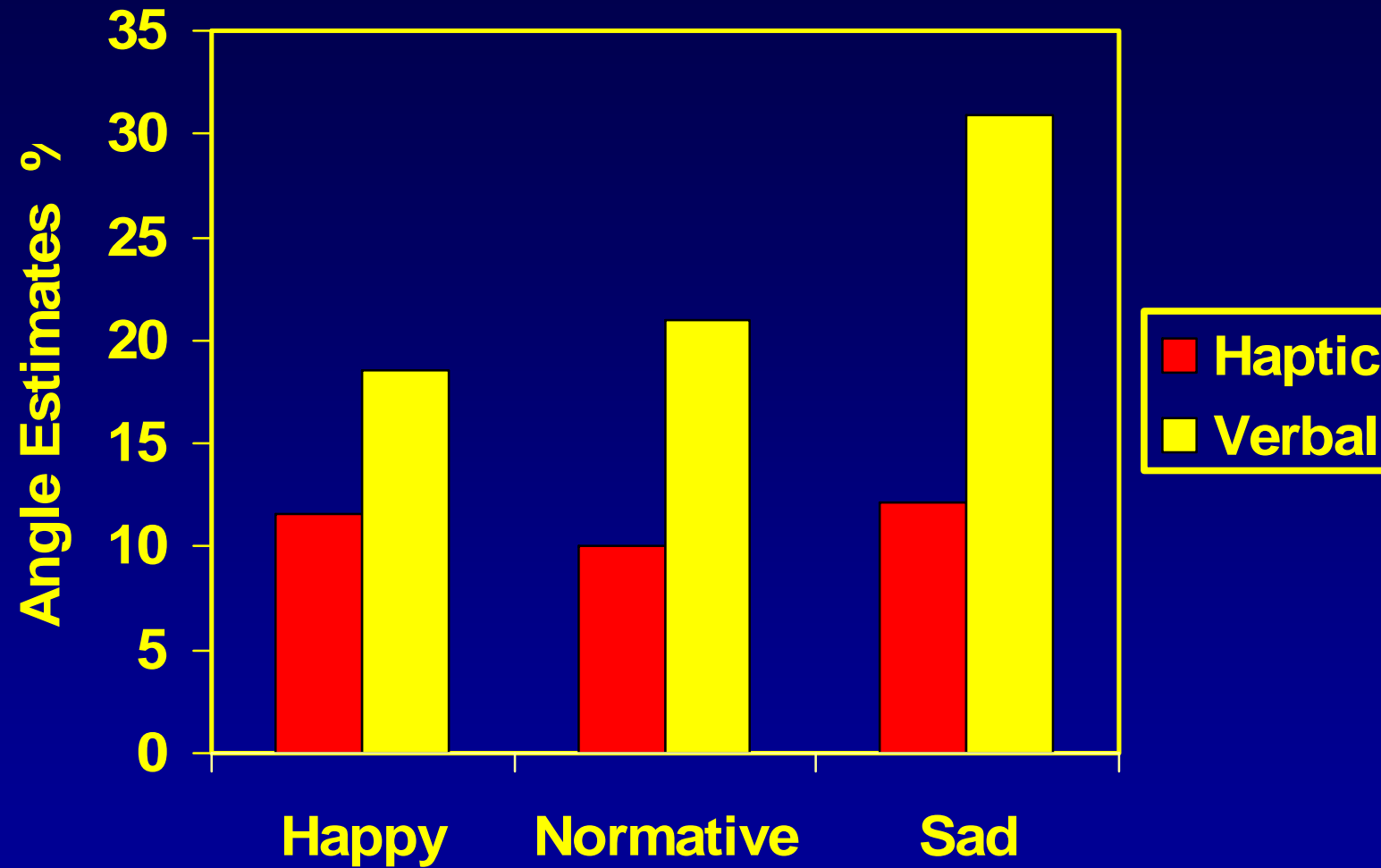
Verbal Judgments



I judge this hill
to be 30°

Haptic (Paddle Board) Measure





Sadness ~
physical **burden**

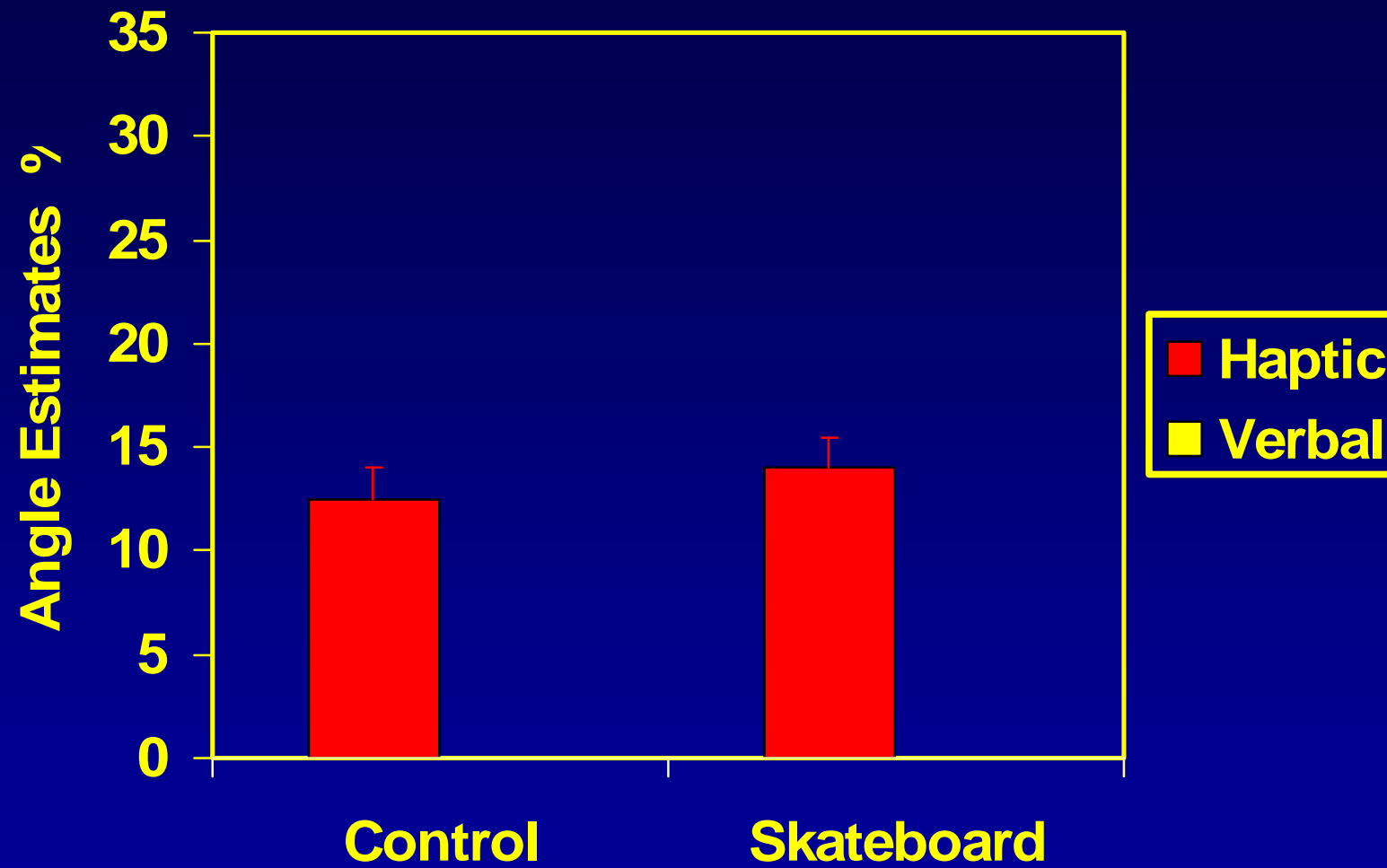


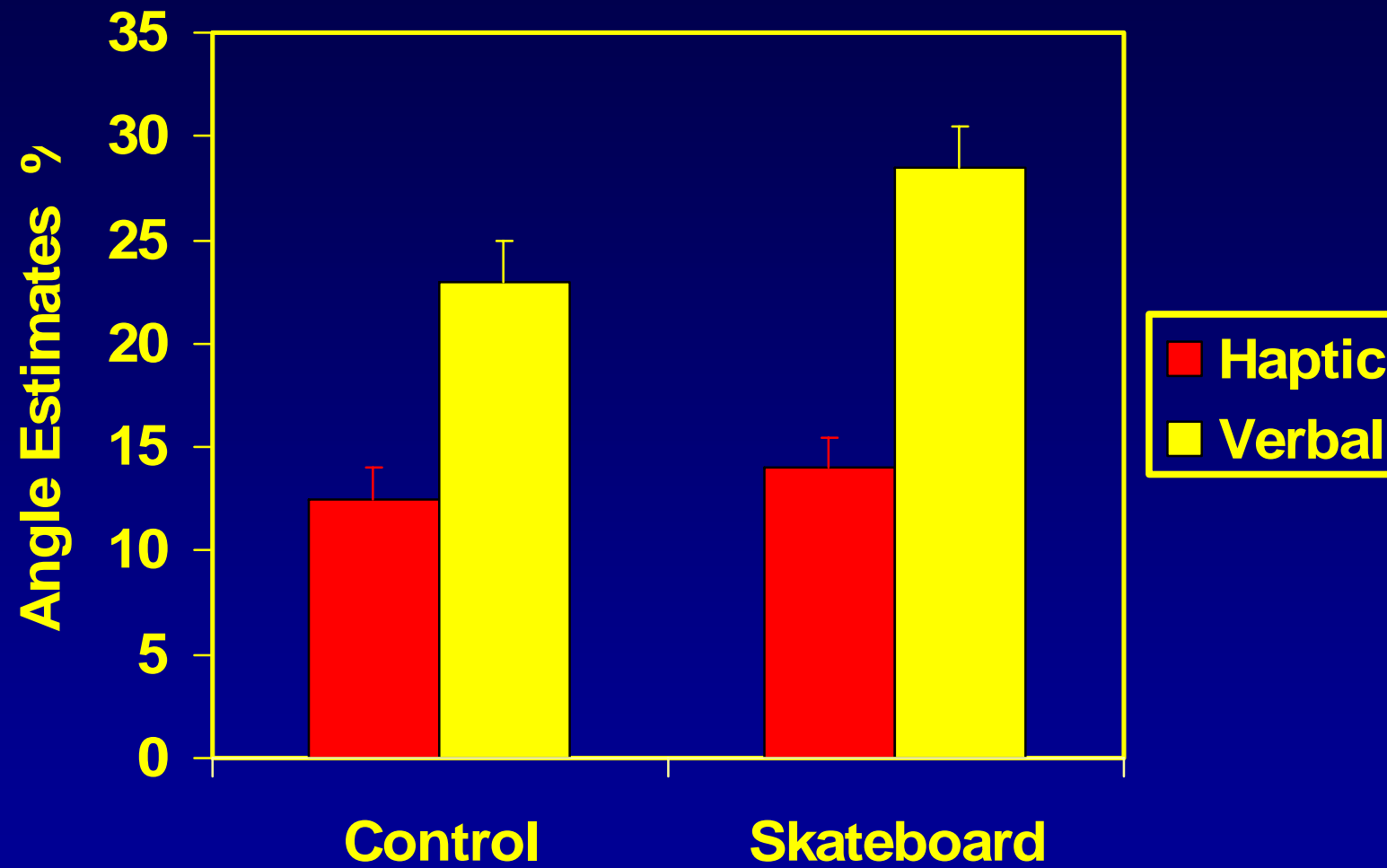
What if hill were estimated from the top?

on a skateboard?









(Stefanucci, Proffitt, & Clore, 2005)

Sadness and Fear make mountains out of molehills

Emotion → **“What”** (verbal estimates)

Emotion ~~→~~ **“How”** (haptic estimates)

So, how does emotion affect judgment of intelligent agents?

Happy → feel more life satisfaction

Disgust → believe acts more immoral

Sad → see uphill as harder

Fear → see downhill as riskier

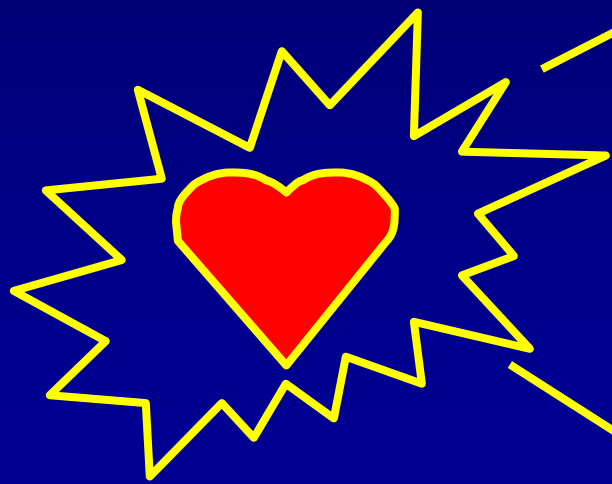
*But only when emotional agent
links affect to the
life, action, hill,
and not to its true cause*

II. Affect and Processing Style

**Positive
Feelings**

**Focused
on**

**Experienced
as ...**



***Stimulus
Objects***



Liking

***Task
Responses***



Efficacy

In a task focus

Happy mood → global focus

top-down processing

*because affect confers
value on own thoughts*

Sad mood → local focus

bottom-up processing

Montage Principle:

**Affect tends to be experienced as
a reaction to current mental
content**

Montage

Serge Eisenstein



Meaning of an actor's
expression depends
on what the viewer
sees next

A Russian experiment with film

Viewers saw actor's gaze as:

hunger when followed
by a bowl of soup,

joy by a child with a teddy bear

sorrow by a woman in a coffin

Kuleshov concluded that **editing rather than performance is the basis of a film's emotional impact on an audience.**

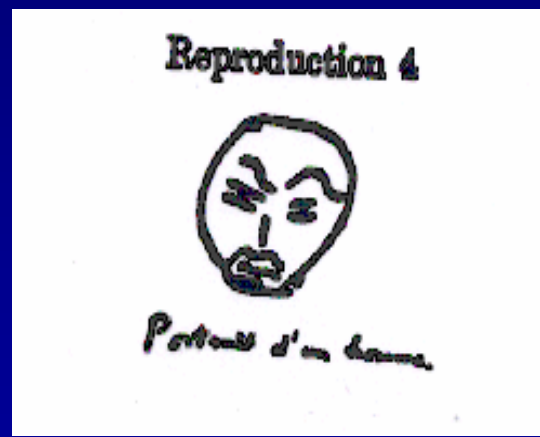
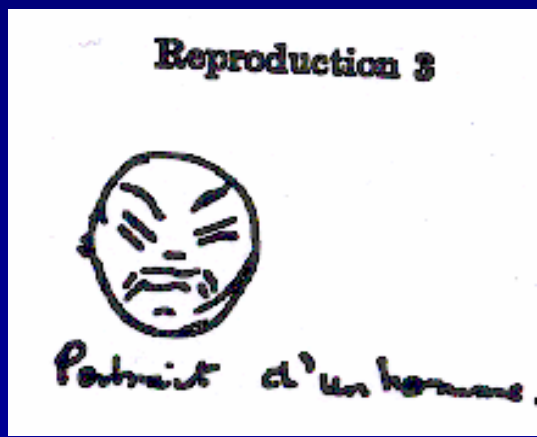
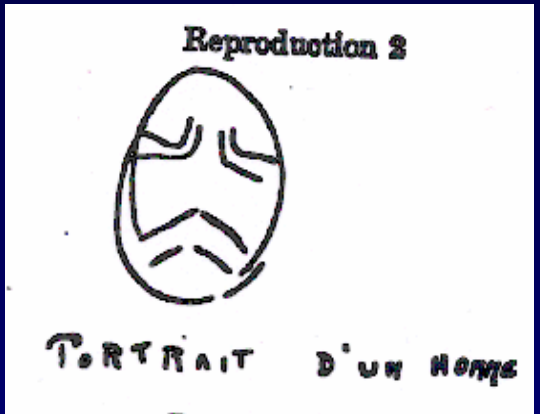
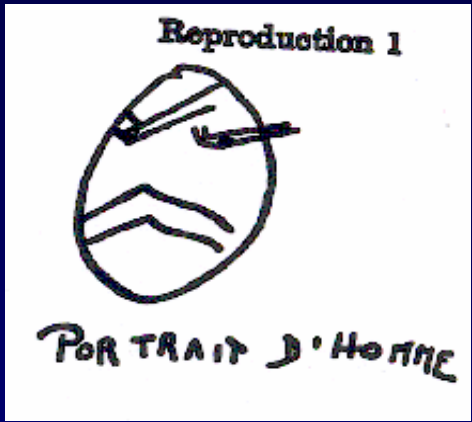
**We are our own audience,
our experience of our own affect
also depends on the editing.**

Schema-guided Memory

Gaspar & Clore, 2002

Bartlett (1932): *Remembering*

Mood: Event description



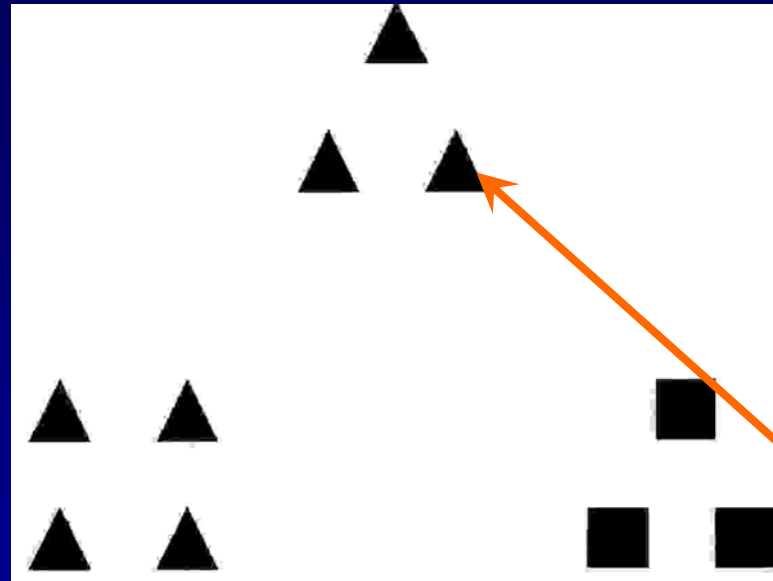


**RESULTS: Happy Mood drew
significantly more face-like
drawings**

*Because positive affect made
face-schema seem valuable*

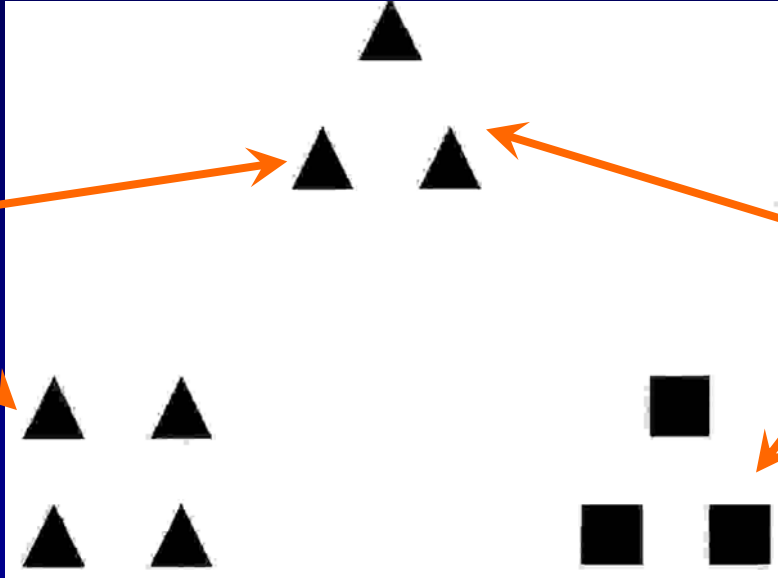
Global-Local Processing

Gaspar & Clore, 2002



which comparison figure is similar to target ?

**locally
similar**



**globally
similar**

**RESULTS: Happy mood attended
to the forest sad mood to the
trees**

*Because positive affect made
their global inclination seem
valuable*

Other Research

Script-guided Memory

Bless Clore Golisano Rabel & Schwarz 1996

Heuristic Reasoning

Gasper, 1999

False Memory Effect

Storbeck & Clore, 2006

Semantic Priming

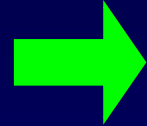
Storbeck & Clore 2005

The **textbook phenomena** of cognitive psychology turn out to be governed by **affective cues**.

In **sad** moods, they are diminished or nonexistent

What if the cognitive **revolution** of the euphoric 1960's had been attempted in the depths of the 1930's depression?

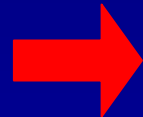
**Happy Affective
Feedback**



GO! for using knowledge,
schemas, global processing

-- relational processing

**Sad Affective
Feedback**



Stop!
focus on detailed, stimulus-
bound information

-- referential processing

Similar effects with other **subtle**
cues: smiley vs. frowny faces



Principles should operate in
tutorial situations when **avatar**
smiles or rewards student

Benefit – positive affective cues

- promote use of **knowledge**
- taking **big picture**
- **creativity**

Affective meaning

**Depends on how the meaning
of the affect is constrained**

Constraints on affective meaning

T i m e

		Current State	Chronic Disposition
O b j e c t	Object Salient		
	No Object Salient		

Constraints on affective meaning

	Current State	Chronic Disposition
Object Salient	<i>Emotion</i>	
No Object Salient		

Constraints on affective meaning

	Current State	Chronic Disposition
Object Salient	<i>Emotion</i>	<i>Attitude</i>
No Object Salient		

Constraints on affective meaning

	Current State	Chronic Disposition
Object Salient	<i>Emotion</i>	<i>Attitude</i>
No Object Salient	<i>Mood</i>	

Constraints on affective meaning

	Current State	Chronic Disposition
Object Salient	<i>Emotion</i>	<i>Attitude</i>
No Object Salient	<i>Mood</i>	<i>Temperament</i>

- **Affect can be powerful in 2 ways –**
 - constrained by an object (emotion)*
 - not constrained by an object (mood)*
- **Therapy**
 - turning moods into emotions*
 - by constraining information value*

Trauma and Communication

Buddhist therapy for pain

**Detachment from the world,
Meditation**

Implications?

benefit in

constraining the information from
negative affect

unconstraining the information
from positive affect